Alabama Charter Application for a 2022 Opening

New Charter Application #000651

Alabama Aerospace and Aviation High School

Submitted To:

Alabama Public Charter School Commission
Alabama Charter School Commission
50 North Ripley St.
P.O. Box 302101
Montgomery, AL 36104

Phone: 334-694-4908

Submitted By:

RUBEN MORRIS

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GENERAL

A. School Information

Open Date:	**August 15, 2022**
Proposed Name:	**Alabama Aerospace and Aviation High School**
School Type:	**High**
Grade Levels:	**[9, 10, 11, 12]**
School District:	**Bessemer City Schools**
Neighborhood / Community:	**Bessemer**
Organization Type:	**Non-profit Corportation**
Sponsoring Entity:	**Non-profit Organization**
Address:	**1731 Oak Park Ln Helena, Alabama 35080**
Phone:	**2054347051**
Fax:	
Web Site:	**www.alaahs.org**
Calendar Type:	**Extended School Year - 180 instructional days**
Educational Service Provider:	**(None)**

B. Primary Contact Person

Name:	**RUBEN C MORRIS**
Mailing Address:	
Mobile Phone:	**2054347051**
Alternate Phone:	**2054347051**
Email:	**rmorris@alaahs.org**
Current Employer:	**Alabama Aerospace and Aviation Schools, Inc.**

C. Attendance Projections

Grade Level	2022-23 Enrollment		2023-24 Enrollment		2024-25 Enrollment		2025-26 Enrollment		2026-27 Enrollment		At Capacity 2025-26	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
9	125	150	125	150	125	150	125	150	125	150	125	150
10			125	150	125	150	125	150	125	150	125	150
11					115	135	119	135	119	135	119	135
12							113	128	113	128	113	128
Total	**125**	**150**	**250**	**300**	**365**	**435**	**482**	**563**	**482**	**563**	**482**	**563**

D. Board Members

Name	Title	Contact Information	Current Employer
Brown, Aubri	Board Secretary	P: 205-441- 4293 M: 205-441- 4293 E: auri@exprealty.com	Legacy of Hope

French, Courtney	Board Member	P: 205-447- 5605 M: 205-447- 5605 E: cfrench@fpflaw.com	Fuston, Petway & French, LLP
Jones, Megan	Board Member	P: 251-404- 2135 M: 251-404- 2135 E: huntmegan114@yahoo.com	Self-employed
Knight, Charles	Board Chairperson	P: 205-915- 4595 M: 205-915- 4595 E: cknight500@bellsouth.net	ARGUS Security Solutions, LLC
Russell, Tramayne	Board Vice Chairperson	P: 407-670- 4748 M: 407-670- 4748 E: tramaynerussell@gmail.com	Nashville Soccer Club
Sims, Merrick	Board Member	P: 404-493-434 M: 404-493-434 E: merrick7467@gmail.com	MOS, LLC
Smith, Roderick J	Board Treasurer	P: 205-482- 8799 M: 205-482- 8799 E: Rjsmith06@gmail.com	United Parcel Service Airlines
Storey, Tiffany	Parent Representative	P: 205-253- 2836 M: 205-253- 2836 E: tsstorey@gmail.com	Children's Aid Society of Alabama
Walker, Jeff	Board Member	P: 205-975-5701 M: 205-975-5701 E: jeffw@uab.edu	University of Alabama at Birmingham
Wright, Tierra	Board Member	P: 205-276- 5354 M: 205-276- 5354 E: tbouyer@jeffersonstate.edu	Jefferson State Community College

E. Start-up Team Members

Name	Title	Contact Information	Current Employer
Brown, Veronique	Chief Academic Officer	P: 2053352285 M: 2053352285 E: vbrown@alaahs.org	Brown's Education Consulting, LLC
Morris, Ruben	Founder and Chief Executive Officer	P: 205-434-7051 M: 205-434-7051 E: rmorris@alaahs.org	Alabama Aerospace and Aviation High School

EXECUTIVE SUMMARY

1. Executive Summary

See the attachments for the Executive Summary and Attachment 1.

Attachments

Section 1: Executive Summary

1.1	(REVISED)AAHS Executive Summary	MORRIS, RUBEN C, 7/8/21 8:12 PM	PDF / 216.693 KB
1.2	Executive Summary	MORRIS, RUBEN C, 7/6/21 10:10 AM	PDF / 216.979 KB
1.3	ATTACHMENT 1	MORRIS, RUBEN C, 7/5/21 3:00 PM	PDF / 1.797 MB

EDUCATIONAL PROGRAM DESIGN AND CAPACITY

1. Program Overview

See the attachment for the Program Overview.

Attachments

Section 1: Program Overview

1.1	(REVISED) AAHS-Program Overview-A	MORRIS, RUBEN C, 7/8/21 8:16 PM	PDF / 1,006.981 KB
1.2	AAHS Program Overview	MORRIS, RUBEN C, 7/4/21 6:37 AM	PDF / 1,007.33 KB

2. Curriculum and Instructional Design

See the attachments for the Curriculum and Instructional Design narrative and Attachment 2 (sample course scope & sequence, course outcomes/standards).

Attachments

Section 2: Curriculum and Instructional Design

2.1	ATTACHMENT 2 Scope & Sequence/Standards	MORRIS, RUBEN C, 7/5/21 3:22 PM	PDF / 2.99 MB
2.2	Curriculum and Instructional Design Narrative	MORRIS, RUBEN C, 7/4/21 6:59 AM	PDF / 353.887 KB

3. Student Performance Standards

See the attachments for the Student Performance Standards narrative, items to satisfy Attachment 4 (file too large for a single attachment), and Attachment 5.

Attachments

Section 3: Student Performance Standards

3.1	Student Performance Standards-Narrative	MORRIS, RUBEN C, 7/5/21 4:48 PM	PDF / 121.068 KB
3.2	Attachment 5- AHSG	MORRIS, RUBEN C, 7/5/21 4:46 PM	PDF / 599.274 KB

3.3	Attachment 4/5-Social Science	MORRIS, RUBEN C, 7/5/21 4:40 PM	PDF / 1.741 MB
3.4	Attachment 4/5-Science	MORRIS, RUBEN C, 7/5/21 4:40 PM	PDF / 2.307 MB
3.5	Attachment 4/5-Mathematics	MORRIS, RUBEN C, 7/5/21 4:40 PM	PDF / 3.429 MB
3.6	Attachment 4/5-English Language Arts	MORRIS, RUBEN C, 7/5/21 4:40 PM	PDF / 2.496 MB
3.7	ATTACHMENT 4/5 Cover Sheet	MORRIS, RUBEN C, 7/5/21 4:40 PM	PDF / 65.395 KB

4. High School Graduation Requirements (High Schools Only)

See the attachments for the High School Graduation Requirements.

Attachments
Section 4: High School Graduation Requirements (High Schools Only)

4.1	AHSG-ALSDE	MORRIS, RUBEN C, 7/8/21 9:55 PM	PDF / 599.274 KB
4.2	High School Graduation Requirements	MORRIS, RUBEN C, 7/5/21 4:50 PM	PDF / 205.467 KB

5. School Calendar and Schedule

See the attachments for the School Calendar (Attachment 6) and Schedule (Attachment 7) requirements.

Attachments
Section 5: School Calendar and Schedule

5.1	ATTACHMENT 6-School Calendar	MORRIS, RUBEN C, 7/6/21 10:24 AM	PDF / 237.157 KB
5.2	ATTACHMENT 7- School Day & Week	MORRIS, RUBEN C, 7/4/21 7:27 AM	PDF / 479.5 KB

6. School Culture

See the attachment for School Culture.

Attachments
Section 6: School Culture

6.1	School Culture	MORRIS, RUBEN C, 7/5/21 5:08 PM	PDF / 113.447 KB

7. Supplemental Programming

See the attachment for Supplemental Programming.

Attachments
Section 7: Supplemental Programming

7.1	Supplemental Programming	MORRIS, RUBEN C, 7/5/21 5:09 PM	PDF / 100.811 KB

8. Special Populations and At-Risk Students

See the attachment for Special Populationa and At-Risk Students.

Attachments
Section 8: Special Populations and At-Risk Students

8.1	Special Populations & At-Risk Students	MORRIS, RUBEN C, 7/5/21 5:10 PM	PDF / 1.348 MB

9. Unique/Innovative Program Offering

See the attachment for Unique/Innovative Program Offering.

Attachments
Section 9: Unique/Innovative Program Offering

9.1	Unique/Innovative Program	MORRIS, RUBEN C, 7/5/21 5:26 PM	PDF / 89.17 KB

10. Student Recruitment and Enrollment

See the attachment for Student Recruitment and Enrollment (Attachment 8).

Attachments
Section 10: Student Recruitment and Enrollment

10.1	ATTACHMENT 8 Student Recruitment & Enrollment	MORRIS, RUBEN C, 7/4/21 4:28 PM	PDF / 1.249 MB

11. Student Discipline Policy and Plan

See the attachment for the Student Discipline Policy and Plan (Attachment 9).

Attachments
Section 11: Student Discipline Policy and Plan

11.1	ATTACHMENT 9 Student Discipline Policy and Plan	MORRIS, RUBEN C, 7/4/21 4:41 PM	PDF / 220.975 KB

12. Family and Community Involvement

See the attachment for Family and Community Involvement.

Attachments
Section 12: Family and Community Involvement

12.1	Family & Community Involvement	MORRIS, RUBEN C, 7/6/21 11:15 AM	PDF / 78.6 KB

13. Partnership or Contractual Relationships

See the attachments for Partnership or Contractual Relationships and Attachment 10.

Attachments
Section 13: Partnership or Contractual Relationships

13.1	ATTACHMENT10 Partner Letters	MORRIS, RUBEN C, 7/6/21 1:04 PM	PDF / 696.645 KB
13.2	Partnership or Contractual Relationships	MORRIS, RUBEN C, 7/6/21 12:54 PM	PDF / 40.822 KB

14. Educational Service Providers (ESP) and Other Partnerships

AAHS does not have any Educational Service Providers at this time.

Attachments

Section 14: Educational Service Providers (ESP) and Other Partnerships

– No Attachments –

15. Educational Program Capacity

See the attachment for Educational Program Capacity narrative, Attachment 13, and Attachment 14.

Attachments

Section 15: Educational Program Capacity

15.1	Attachment 14-Directors	MORRIS, RUBEN C, 7/5/21 5:54 PM	PDF / 286.051 KB
15.2	Attachment 13-Head of School	MORRIS, RUBEN C, 7/5/21 5:45 PM	PDF / 260.474 KB
15.3	Educational Program Capacity	MORRIS, RUBEN C, 7/4/21 6:00 PM	PDF / 79.561 KB

Notes

Logan Searcy, 7/8/21 8:24 PM:

I have unlocked the sections. Please let me know if this works. Thank you.

RUBEN MORRIS, 7/8/21 10:02 PM:

It did not. I am moving forward to resolve duplicates by marking them as "REVISED" per our discussion on 07-08-21.

OPERATIONS PLAN AND CAPACITY

18. Legal Status and Governing Documents

See the attachments for Legal Status and Governing narrative, Attachment 15, and Attachment 16.

Attachments

Section 18: Legal Status and Governing Documents

18.1	AAHS 501-C3	MORRIS, RUBEN C, 7/6/21 6:15 PM	PDF / 331.754 KB
18.2	ATTACHMENT 16-Signed_Assurances	MORRIS, RUBEN C, 7/6/21 3:04 AM	PDF / 194.74 KB
18.3	ATTACHMENT 15-AAHS Board By-laws	MORRIS, RUBEN C, 7/5/21 6:13 PM	PDF / 433.212 KB
18.4	Legal Status and Governing Documents	MORRIS, RUBEN C, 7/5/21 6:07 PM	PDF / 42.936 KB

19. Organization Structure and Relationships

AAHS starts with our commitment to serving the community. We expect to ensure clear lines of communication with roles, relationships, and responsibility. Our organizational chart ensures that clarity.

See Attachment 17.

Attachments

Section 19: Organization Structure and Relationships

19.1	ATTACHMENT 17 Organizational Chart	MORRIS, RUBEN C, 7/5/21 6:51 PM	PDF / 585.51 KB

20. Governing Board

See the attachments for Governing Board narrative, Attachment 18, and Attachment 19.

Attachments

Section 20: Governing Board

20.1	(REVISED) ATTACHMENT 19-Board-Forms-Signed	MORRIS, RUBEN C, 7/8/21 8:30 PM	PDF / 6.89 MB
20.2	ATTACHMENT 19-Signed Board Forms	MORRIS, RUBEN C, 7/6/21 12:36 PM	PDF / 6.809 MB
20.3	Governing Board	MORRIS, RUBEN C, 7/6/21 2:13 AM	PDF / 137.053 KB
20.4	ATTACHMENT 18 By-Laws	MORRIS, RUBEN C, 7/6/21 1:36 AM	PDF / 442.577 KB

21. Advisory Bodies

See the attachment for Advisory Bodies.

Attachments
Section 21: Advisory Bodies

21.1	Advisory Bodies	MORRIS, RUBEN C, 7/5/21 7:00 PM	PDF / 38.469 KB

22. Grievance/Complaint Process

See the attachment for the Grievance/Complaint Process.

Attachments
Section 22: Grievance/Complaint Process

22.1	Grievance/Complaint Process	MORRIS, RUBEN C, 7/6/21 3:24 PM	PDF / 90.159 KB

23. Staff Structure

See the attachment for Staff Structure/Chart (Attachment 21).

Attachments
Section 23: Staff Structure

23.1	ATTACHMENT 21 Staff Structure/Chart	MORRIS, RUBEN C, 7/5/21 6:58 PM	PDF / 126.846 KB

24. Staffing Plans, Hiring, Management, and Evaluation

See the attachments for Staffing, Plans, Hiring, Management, and Evaluation narrative, Attachment 22, Attachment 23, and Attachment 24.

Attachments
Section 24: Staffing Plans, Hiring, Management, and Evaluation

24.1	Attachment 24 Teacher Eval Tools	MORRIS, RUBEN C, 7/6/21 2:35 AM	PDF / 2.275 MB
24.2	ATTACHMENT 23 Leadership Eval Tools	MORRIS, RUBEN C, 7/6/21 2:35 AM	PDF / 1.24 MB
24.3	ATTACHMENT 22 Employee Manual	MORRIS, RUBEN C, 7/5/21 7:14 PM	PDF / 1.467 MB
24.4	Staffing Plans, Hiring, Management, and Evaluation	MORRIS, RUBEN C, 7/4/21 9:39 PM	PDF / 469.138 KB

25. Professional Development

See the attachment for Professional Development.

Attachments
Section 25: Professional Development

25.1	Professional Development	MORRIS, RUBEN C, 7/4/21 10:26 PM	PDF / 85.473 KB

26. Performance Management

See the attachment for Performance Management.

Attachments
Section 26: Performance Management

26.1	Performance Management	MORRIS, RUBEN C, 7/4/21 10:49 PM	PDF / 362.301 KB

27. Facilities

See the attachments for the Facilities narrative, Attachment 25, and additional support.

Attachments
Section 27: Facilities

27.1	ATTACHMENT 25 Additions-BAA Agreements	MORRIS, RUBEN C, 7/8/21 9:35 PM	PDF / 1.854 MB

27.2	(REVISED) AAHS Facilities Narrative	MORRIS, RUBEN C, 7/8/21 7:59 PM	PDF / 92.328 KB
27.3	FOL Letter of Support	MORRIS, RUBEN C, 7/8/21 10:19 AM	PDF / 821.757 KB
27.4	ATTACHMENT 26-Details-Facility Floor Plan	MORRIS, RUBEN C, 7/8/21 10:18 AM	PDF / 945.808 KB
27.5	Facilities Narrative	MORRIS, RUBEN C, 7/6/21 3:33 PM	PDF / 38.315 KB
27.6	ATTACHMENT 25-Facilities	MORRIS, RUBEN C, 7/6/21 11:40 AM	PDF / 351.637 KB

28. Start-Up and Ongoing Operations

See the attachments for the Start-Up and Ongoing Operations narrative and Attachments 27-30.

Attachments

Section 28: Start-Up and Ongoing Operations

28.1	Certificate of Insurance	MORRIS, RUBEN C, 7/8/21 9:09 AM	PDF / 18.867 KB
28.2	Start-Up & Ongoing Operations Narrative	MORRIS, RUBEN C, 7/6/21 3:13 PM	PDF / 50.356 KB
28.3	ATTACHMENT 28 Financial Plan Workbook	MORRIS, RUBEN C, 7/6/21 2:19 PM	PDF / 158.979 KB
28.4	ATTACHMENT 27 Start-up Plan	MORRIS, RUBEN C, 7/6/21 2:15 PM	PDF / 417.265 KB
28.5	ATTACHMENT 30 Transportation and Meals	MORRIS, RUBEN C, 7/6/21 2:10 PM	PDF / 75.747 KB
28.6	ATTACHMENT 29 Insurance	MORRIS, RUBEN C, 7/6/21 2:10 PM	PDF / 91.916 KB

29. Operations Capacity

See the attachment for Operations Capacity

Attachments

Section 29: Operations Capacity

29.1	Operations Capacity	MORRIS, RUBEN C, 7/6/21 3:05 PM	PDF / 47.86 KB

30. Unique/Innovative Operational Aspects

See the attachment for Unique/Innovative Operational Aspects.

Attachments

Section 30: Unique/Innovative Operational Aspects

30.1	Unique/Innovative Operational Aspects	MORRIS, RUBEN C, 7/6/21 3:19 PM	PDF / 38.672 KB

FINANCIAL PLAN AND CAPACITY

31. Financial Plan

See the attachments below for Financial Plan and Capacity components.

Attachments

Section 31: Financial Plan

31.1	ATTACHMENT 32-Documentation of Secured Funds	MORRIS, RUBEN C, 7/8/21 11:01 AM	PDF / 646.771 KB
31.2	ATTACHMENT 31-Budget Narrative	MORRIS, RUBEN C, 7/8/21 10:52 AM	PDF / 157.069 KB
31.3	ATTACHMENT 30-Budget	MORRIS, RUBEN C, 7/8/21 10:29 AM	XLSX / 54.64 KB

32. Financial Management Capacity

See the attachments for the Financial Management Capacity narrative and supporting documents.

Attachments

Section 32: Financial Management Capacity

32.1	New Schools Venture	MORRIS, RUBEN C, 7/8/21 11:14 AM	PDF / 315.266 KB
32.2	Daniel Foundation	MORRIS, RUBEN C, 7/8/21 11:14 AM	PDF / 163.348 KB
32.3	New Schools for Alabama	MORRIS, RUBEN C, 7/8/21 11:13 AM	PDF / 180.705 KB
32.4	Walton Foundation	MORRIS, RUBEN C, 7/8/21 11:12 AM	PDF / 244.261 KB
32.5	Financial Management Capacity Narrative	MORRIS, RUBEN C, 7/8/21 11:12 AM	PDF / 36.445 KB

EXISTING OPERATORS

33. Existing Operators

This section does not apply.

Attachments

Section 33: Existing Operators

– No Attachments –

Executive Summary

Mission & Vision

The Alabama Aerospace and Aviation High School (AAHS) seeks to launch the first aviation high school in Alabama for 9-12th grade students in Bessemer, AL. In accordance with the Alabama School Choice and Student Opportunity Act, AAHS desires an education partnership with Bessemer City Schools in introducing a high rigor, high support start-up charter school that will equip students from 35022, 35023, 35111, 35226, 35244, and other surrounding areas with 21st century skills to be leaders of the aerospace and aviation industry.

At AAHS, our mission is to provide a diverse group of students rigorous college prep and an authentic industry-aligned STEM education to prepare students to be leaders in the classroom and in the aerospace and aviation industry.

Our vision is to create clearly defined pathways into aviation and aerospace careers for all students creating a diverse pipeline of future industry leaders. AAHS will be located on the Bessemer Airport campus serving approximately 520 students grades 9-12 at full capacity. The school will begin with a founding Freshman class of 125 "Young Aviation Professionals."

Educational Need & Anticipated Student Population

Alabama aspires to be among the top performing states in K-12 education, and we are confident Bessemer City and surrounding area students can lead the charge. AAHS hopes to assist Bessemer in meeting the 71% Math/ELA proficiency goals set in Alabama's ESSA Plan for 2030. Our founding team recognizes the academic needs of Bessemer City and surrounding area families and are compelled to serve the local community by offering a high rigor college and career prep schooling experience. The tables below provide a snapshot of the student performance of Bessemer City and surrounding area schools.

End of Course Summative Assessment Competency[1]

School to State Comparison	Bessemer	Fairfield	Hueytown (Jefferson County)	Midfield	Tarrant	Wenonah (Birmingham City)
	18-19	18-19	18-19	18-19	18-19	18-19
School Math	7.8%	8.5%	23.2%	6.7%	18.8%	13.9%
State Math	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%
School ELA	7.3%	12.3%	26.0%	6.7%	14.5%	13.9%
State ELA	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%
School Science	10.7%	9.3%	25.6%	5.3%	11.6%	8.8%
State Science	42.6%	42.6%	42.6%	42.6%	42.6%	42.6%

When looking at the proficiency rates for Bessemer and surrounding area schools, there is a significant performance gap in Math, ELA, and Science compared to the state. The state proficiency rate in Math and ELA is 42.5%. Hueytown High School of Jefferson County scored 17 percentage points below the

[1] Schooldigger.com

state average in ELA and almost 20 percentage points lower than the state average in Math. Bessemer High scored 35 percentage points below the state average in both Math and ELA. Science proficiency (state at 42.6%) showed similar performance gaps with Hueytown scoring 17 percentage points and Bessemer scoring 32 percentage points below the state average. These deficiencies are true for all surrounding area schools. There is a great need for innovative and accelerated teaching methods and strategies in order to make significant progress towards the Alabama ESSA Plan's 2030 Math/ELA proficiency rate of 71%. With a greater STEM emphasis to address global economic needs, Science deficiencies must be attended to as well. The AAHS's model will provide the innovation, acceleration, and intentionality needed to close the gaps across Math, ELA, and Science.

High School Performance Ranking[2]

School to State Comparison	Bessemer	Fairfield	Hueytown (Jefferson County)	Midfield	Tarrant	Wenonah (Birmingham City)
	18-19	18-19	18-19	18-19	18-19	18-19
Avg Standard Score	4.82	5.71	23.80	3.59	10.21	7.48
Statewide Rank	357th	353rd	279th	362nd	322nd	342nd
Total # High Schools	366	366	366	366	366	366
AL State Percentile	2.5%	3.6%	23.8%	1.1%	12.0%	6.6%

Note: The Average Standard Score is calculated by normalizing and averaging each school's test scores across all tests and grades. That average score is then sorted.

Bessemer City High School and it neighboring high schools ranked in the bottom quartile compared to all other Alabama high schools. In fact, four schools ranked in the bottom 10% of all Alabama high schools. AAHS can help these schools/districts increase their state rankings.

College & Career Readiness Indicators[3]

2019-20 School Year	Bessemer	Fairfield	Hueytown (Jefferson County)	Midfield	Tarrant	Wenonah (Birmingham City)
Graduation Rate	77%	83%	88%	84%	77%	77%
ACT College & Career Readiness Rate	16%	24%	31%	17%	10%	12%
AP Course Participation	<1%	8%	16%	<1%	16%	10%

Alabama had a goal to reach a 90% graduation rate by year 2020. As seen above, neither Bessemer nor the surrounding area schools were able to reach this goal. The AP Course Participation rate shows a lack

[2] Schooldigger.com
[3] Greatschools.org

of exposure to rigorous coursework. When looking at the College & Career Readiness Rate, although many students are graduating, the majority are not ready for what is beyond high school.

AAHS understands how important parental involvement is to the holistic support of its students. We know this involvement is a non-academic challenge we will aggressively address by establishing and maintaining multiple communication modes via email, texting, newsletters, our website, and in-person and virtual meeting options. We will also leverage our relationships with community-based non-profit organizations, churches, and housing authorities as additional places to hold information sessions and general parent meetings. AAHS knows the strength of getting the "village" involved to address the needs of their children.

AAHS will provide the avenue for students to be ready! We believe that a rigorous, college-aligned academic model, and an aerospace and aviation STEM focus will help our students excel and immediately begin closing the proficiency gap. We hope to become a hub for academic excellence and innovation that can produce best practices that are replicable across our city. AAHS students will leave with options rather than limitations. They will be prepared to attend a 2-year/4-year academic institution or employment leading to job security, higher wages, and a better quality of life.

Education Plan/School Design

The AAHS academic model is rooted in intellectually rigorous, industry-based, and placed-based instruction where a high college-ready bar is achieved by all students. Prioritizing both college and career readiness drastically increases the likelihood that all AAHS students complete their high school requirements with viable options to engage the 2/4-year institution of their choice or the career of their dreams. Academically, our goal is for AAHS students to supersede the current district average by 3% in year 1 of operation and subsequently chart a 6% annual increase in ELA and Math proficiency. AAHS seeks to achieve this goal through:

Rigorous, Data Driven Instruction. Our instruction provides a healthy balance of teacher-led direct instruction, small group exploration, and independent practice all intended for students to bare the cognitive load. We normalize "productive struggle" and make student learning visible through small groups discussion, cold call, and daily writing tasks. Student mastery is the goal of every class every day. Because AAHS believes in the academic potential of all students, teachers aggressively track student data daily for possible reteach moments. Aiming to meet AAHS's academic goals for general education students, their teammates with disabilities, and their EL classmates keeps the staff and student body in a perpetual state of growth and achievement.

Supportive Learning Environment. AAHS's supportive learning environment equips each student with a caring adult and positive peer group the moment his or her high school journey begins. Affectionately known as "flight crews", student-driven, adult-guided advisories work to keep students actively engaged in the life of the school, socially responsible for upholding community values, and academically accountable to one another. AAHS's college-ready instruction challenges students in every class to work through productive struggle, and the school's high-support culture creates the ideal environment for them to do so as they track towards mastery. The AAHS team is also deliberate in offering multiple intervention opportunities for students in need of extended time or additional exposure to Alabama standards through small group instruction.

Authentic College & Career Development. AAHS offers students a unique schooling experience that affords them a diploma with aviation and aerospace credentials granting them immediate access to the college or career of their dreams. On campus, our students learn in ways that are rigorous, engaging, authentic, technologically advanced, and prepare them to be successful in college, the military, and the larger aerospace, defense, and aviation industry. Our highly-qualified faculty are prepared to implement a word-class, Alabama standards-aligned curriculum that is augmented with real-world tasks and experiences. Through our committed partnerships with industry leaders and postsecondary institutions, students have access to a wealth of opportunities largely unavailable to many students of color in America, especially those in Bessemer and surrounding areas.

Aggressive Goal-Setting

We believe Bessemer and surrounding area students are among Alabama's brightest, and AAHS is prepared to present such claims through data. The following AAHS goals are created via the Alabama Application Notes for Alabama Aerospace and Aviation High School Department of Education ESSA Plan non-proficient reduction rate goal setting format. Over a 5-year initial charter term, AAHS will achieve...

- 59% ELA proficiency and 56% Math proficiency
- 5-year average graduation rate equal to or better than the state average of 92%, outpacing ESSA's 2030 goal.
- 100% of students admitted to 2/4-year college or military enlistment.
- 100% of students complete a 4-year Aviation/Aerospace STEM pathway leading to industry recognized credentials or college credit
- African-American/low-socioeconomic students outperform their peers across the state by 15 percentage points in Math and ELA
- Black/Latinx students narrow state-wide achievement gap within 10 points of white peers

Annual Academic Goals

- Students achieve annual increase of 6% proficiency in ELA and Math
- Students outperform district teammates in Math/ELA by 3%
- Students rank in top 25% of growth in the state annually and the top 5% by year 3.

Non-Academic Goals

- Students average 95% daily attendance.
- School culture receives an 8 of 10 quarterly (positive school culture rubric)
- 90% of students report "feeling safe in school" and "having an adult support system at school". (SEL)
- 85% of families report two home/school connections quarterly.
- AAHS suspensions remain below 5% quarterly.

Community Engagement

AAHS has engaged with several industry leaders and corporations providing guidance regarding school design. Potential parents and community stakeholders were also primary conversation partners as we seek to meet the varied educational needs of 9-12th graders in Bessemer and the surrounding area. Of the industry leader conversations, three partners have stood out, The Southern Museum of Flight, Kaiser Aircraft, and Delta Airlines Tech Ops. From conversations with our "Big 3" we have also had the

opportunity to engage with a host of additional industry-related supporters like the Bessemer Airport Authority, the Birmingham Fred Shuttlesworth International Airport, the 117th Air Guard Air Refueling Wing, and the Blue Origin Aerospace company. All have graciously agreed to provide guidance in curriculum design of our aviation and aerospace-focused elective pathways.

Our conversations with Bessemer and surrounding area parents and students have revealed a deep desire for college and career readiness opportunities. Parents, above all, expressed their desire for choices beyond high school. Students seem to be emphatic about wanting real world learning experiences specific to careers.

Amidst the pandemic, we have held two socially-distanced community engagement session. Our "Spooky Flight" gathering in East Lake Park was enjoyed by 50 students and parents there to learn about AAHS and engage with flight simulators and drones. We also hosted a family day in George Ward Park attended by 65 students and parents.. Our community conversations continue as a series of 8 web-based Zoom sessions on the following dates: 12/1; 12/15; 1/5; 1/26; 2/9; 3/9; 4/6; and 5/4. Our AAHS "Street Team" continues to safely engage the Bessemer and surrounding area neighborhoods with marketing materials in English and Spanish.

With Covid restrictions lifting, using our simulator and drone trailer, we are hosting aviation and aerospace activities at area Best Buys. In partnership with area YMCA and Boys & Girls Clubs, we are hosting "A-Days" where students in grades 5-6th participate in 4 rotations of activities. The rotations include guest speakers from the industry, industry-tied career interest exploration, and personal simulation/drone time. Delta Airlines has provided in-person guest speakers from their Atlanta home base for most of the sites; they have also provided gifts for the students. We have had over 270 A-Day student participants thus far. A-Day student survey responses indicate a strong desire for students to attend AAHS!

Leadership & Governance

The Alabama Aerospace and Aviation High school has assembled a knowledgeable, high-capacity governing board. Our team's expertise spans across Law, Finances, and management with a total 50+ years in education. Each individual brings a unique set of skills necessary to ensure success and effective operation AAHS **(see Attachment 1)**.

Enrollment Summary

Grade Level	Number of Students					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**At Capacity 2025**
9	125	125	125	125	125	125
10	0	125	125	125	125	125
11	0	0	115	119	125	125
12	0	0	0	113	125	125
Total	125	250	365	482	500	500

Our primary enrollment chart at Alabama Aerospace and Aviation High School (AAHS) is based on a grade level capacity of 125 students per grade level. This scenario would require at least 125 completed enrollment applications and we project a waitlist of 50 students. We also anticipate AAHS opening with one grade level (9th grade) and backfilling each year in 9th and 10th grade to account for an 8% attrition rate beginning year 2 and a 5% attrition rate in year 4 for rising seniors. Among students who matriculate to their junior year at AAHS, we expect to retain a higher percentage going into their senior year. Our total capacity in this model with backfilling and 0% attrition represents a total enrollment of 500 students at AAHS.

Enrollment numbers support class sizes not to exceed 25 to accommodate AAHS' educational programming and teacher to student ratio. Based on the recruitment area, AAHS's anticipated student demographics are 70% black, 4% Latinx, 20% white, and 1% other. AAHS understands how important it is to meet the needs of our diverse student population. Black and Latinx students from the recruitment area have an average 40-43% literacy proficiency rate. Creating and maintaining a culturally responsive environment is a means to address performance deficiencies for our minority students. This requires AAHS to establish a positive, caring learning environment where students are highly engaged and learning is integrated, all key components for being culturally responsive.[4] Lower class sizes will better support our educational programming and teacher attentiveness.

[4] G. Gay. (2002). Preparing for culturally responsive teaching. Journal of Teacher Education, Vol. 53, No. 2

HIGH SCHOOL

ATTACHMENT 1

Leadership Team
&
Governance Board

Position/Title	Name	Current Job Title	Current Employer	Bio Information
Founder/ Chief Executive Officer/ Head of School	Mr. Morris, Ruben	CEO	Alabama Aerospace and Aviation High School	Ruben Morris moved into school leadership in what was at the time Denver Public School's only Innovation School Network, the Denver Summit Schools Network. His Innovation School experience began at a Turnaround School, Collegiate Prep Academy (CPA). While serving at CPA, he was also awarded a school leadership fellowship with Get Smart Schools (Now Catapult Leadership) established to train dynamic leaders on how to design and lead charter schools. He later completed a Principal Residency within Denver Public School at the Denver Center for International Studies at Montbello as the lead administrator for the high school. The very next year he went on to be the school's first middle school principal. Mr. Morris later transitioned to Colorado's only competency-based school district where he served as a high school administrator at Westminster High School. Upon returning to Birmingham in 2016, he served as the Interim Education Director for the Woodlawn Innovation Network in Birmingham City Schools. He later served as the Executive Director of the New Rising Star Community Support Corporation where he was instrumental in the planning of Birmingham's first public charter school. He also was the Interim Principal of the Middle and High School at Cornerstone Schools of Alabama. Most recently, he led Build Up, the nation's first and only private school workforce development program that turns inner city students into homeowners.
Director of Teaching & Learning/ Chief Academic Officer	Dr. Brown, Veronique	Consultant	Brown's Education Consulting, LLC	Dr. Veronique Brown is an experienced and skilled educator with in-depth secondary education experience. She has presented at numerous national/state conferences and provides professional development, coaching, and interventions in several school systems covering topics on proper special education inclusion practices, collaboration and co-teaching, instructing and servicing English Language Learners, building professional learning communities, teacher self-efficacy, and making data-driven decisions to improve student

				and faculty performance and school climate and culture. Dr. Brown holds teaching certifications in mathematics, English as a second language, special education, and educational leadership/administration. She is also a certified ACT Educator and SREB College and Career Counselor. She has worked with federal and state government officials, the Alabama State Department of Education, and business/industry entities in efforts to provide comprehensive academic, socio-emotional learning, and real-world experiences for students to better equip them to chart life choices.
Board Chairperson	Mr. Knight, Charles	Owner/operator	ARGUS Security Solutions, LLC	Charles Knight is an honor graduate and holds degrees in Law Enforcement, Criminal Justice/Business and a Master's in Public Administration. He is a veteran of the US Air Force and Air National Guard. He graduated with top honors from the US Air Force Security Police Academy and the Birmingham Police Academy where he was also recognized as the Outstanding Graduate and Top Gun. In his years of experience working in the law enforcement, private and government security fields, Charles Knight is known as a respected professional and leader. Mr. Knight has held highly responsible leadership positions in government and senior executive positions in the private sector.
Board Vice Chairperson	Mr. Russell, Tramayne	Director of Ticketing	Nashville Soccer Club	Tramayne Russell is an industry leader in professional sports sales and corporate relations. He has over 15 years in the industry across several major sports. He is an expert in high profile customer management and corporate partnership acquisition. Currently, he works the Director of Ticket Sales for the Nashville Soccer Club.
Board Secretary	Mr. Brown, Aubri	Organ Preservation Coordinator	Legacy of Hope	Auri Brown is passionate real estate professional with a deep knowledge of the Birmingham market. As a Birmingham native, he has spent the last nearly 20 years working in both the healthcare and real estate sectors. He is passionate about education and sees high quality

				school options as a critical piece to overall community development.
Board Treasurer	Mr. Smith, Roderick J	Pilot	United Parcel Service Airlines	Lieutenant Colonel (Ret) R. J. Smith graduated from Wenonah High School in Birmingham, Alabama and attended Alabama A&M University, Huntsville, Alabama. While attending Alabama A&M University, he enlisted in the United States Marine Corps Reserves. Colonel Smith served nine and a half years in the active Army before joining the Alabama Air National Guard to continue flying. Upon joining the Alabama Air National Guard, Colonel Smith earned his Air Force pilot wings.
Board Parent Representative	Mrs. Storey, Tiffany	Project Director	Children's Aid Society of Alabama	Tiffany Storey is a AAHS parent and a licensed professional counselor with 17+ years' experience working with families and adolescents in community service and outreach programs.
Board Member	Mr. French, Courtney	Attorney/Owner-Partner	Fuston, Petway & French, LLP	G. Courtney French is a top-rated attorney selected to Super Lawyers for 2014 - 2020. He works at Fuston, Petway & French, LLP, located in Birmingham, Alabama, and provides legal services for issues involving Personal Injury - General: Plaintiff to the surrounding community. Courtney French completed legal studies at Samford University Cumberland School of Law and graduated with the class of 1998. Courtney French passed the bar in 1998.
Board Member	Ms. Jones, Megan	Residential Manager	Self-employed	Megan Jones is an experienced educator with a love for learning and children. She began her career in education as a 4th grade teacher in Birmingham City Schools. She has taught on several different grade levels and also has been a private tutor. She brings a strong grasp of foundational learning needs and remedial education.
Board Member	Mr. Sims, Merrick	Owner/Operator	MOS, LLC	Merrick is career educator and STEM professional. Merrick brings experience and expertise as both a math coach and engineer. As a Birmingham native, he also is

				deeply committed to improving educational options for all students in the city of Birmingham.
Board Member	Ms. Wright, Tierra	Adult Education Director	Jefferson State Community College	Tierra Wright is a career educator with experience in both K- 12 education and higher education. She currently serves as the Adult Education Director at Jefferson State Community College.
Board Member	Dr. Walker, Jeff	Professor and Chair of the Department of Criminal Justice	University of Alabama at Birmingham	Jeffery T. Walker is a professor and Chair of the Department of Criminal Justice, the Interim Chair of the Department of Social Work, and the Director of the Center for the Study of Community Health (a CDC Prevention Research Center) at the University of Alabama, Birmingham. Dr. Walker has written 10 books and almost 100 journal articles and book chapters. He has obtained over $15 million in grants from the Center for Disease Control, Department of Justice, multiple divisions of the National Institutes of Health, National Science Foundation, and others. He is a past President of the Academy of Criminal Justice Sciences.

Ruben C. Morris

1731 Oak Park Lane, Helena, Alabama, 35080| 205-434-7051 | rubencmorris@icloud.com

Professional Experience

Alabama Aerospace and Aviation High School **2020-Present**

CEO/Founder

- Design and plan all elements of a public charter school including curriculum, education plan, and all school operations
- Recruit, select, hire, and develop all staff members and teachers
- Manage strategic relationships needed to secure seed funding and initial planning budgetary needs

Build Up **2018-2020**

Founding Program Director

- Provide strategic and operational leadership over the entire Build Up private school workforce development program
- Recruit, select, hire, and develop all instructional, construction, and support staff for the program
- Manage strategic relationships across multiple stakeholder groups resulting in increased program exposer and philanthropic contributions

Cornerstone Schools of Alabama **2017-2018**

Interim Middle School/High School Principal

- Create systems for the daily school operations including facility management, university partnerships, volunteer coordination, budget, teacher certification, and general school safety protocols
- Develop a strategic plan for the spiritual, academic, and character development of 225 students
- Build capacity in several stakeholders including teachers, staff, parents, community partners, and students to work together toward one mission

New Rising Star Community Support Corporation **2016-2017**

Interim Executive Director

- Serve as a primary thought leader, strategic planner, and philanthropic relationship builder needed to launch Birmingham, Alabama's first charter school
- Envision, manage, and lead collaborative community development projects in four areas including: affordable housing, education, recreation, and workforce development
- Create and execute a large-scale community development plan aimed at revitalizing several distressed areas of East Birmingham

Woodlawn Foundation **2016-2016**

Woodlawn Innovation Network Interim Education Director

- Develop a three-year strategic improvement plan to increase student achievement across all network schools
- Build, cultivate, and manage key strategic relationships with district personnel in order to leverage and advocate for resources needed in network schools
- Coach and support five turnaround principals within Woodlawn High School feeder pattern of Birmingham CitySchools

Adams County School District 50- Westminster High School

10th Grade Administrator **2015-2016**

- Create conditions and systems to support the academic achievement of approximately 500 students including establishing attendance supports and academic interventions
- Envision, plan, and facilitate school wide instructional priorities and goals leading to professional development including cycles of observation and feedback of competency based learning targets across all content areas
- Manage and lead all areas of our advanced academic programing including our International Baccalaureate Program and Advanced Placement program

Denver Public Schools- Denver Center for International Studies at Montbello

Middle School Principal (2014), DPS- Learn to Lead High School Principal Resident (2013) **2013-2015**

- Created systems and structures to coach, evaluate, and support the development of teachers with the goal of ensuring effective high quality instruction in every classroom
- Cultivated and implemented a student and adult culture of excellence that is rooted in core values and will lead to an over 70% reduction in school suspensions and in increase in attendance from 82% to over 90%
- Collaborated with district leadership and key stakeholders to envision and execute a post-secondary readiness plan that will ensure every student has the choice to go to college or purse whatever post-secondary option they choose leading to considerable increases in AP course enrollment, 100% college acceptance rate, and the highest composite ACT average in the network

Denver Public Schools- Collegiate Prep Academy High School

Assistant Principal, Get Smart Schools- Principal Fellow **2012-2013**

- Developed a yearlong professional development plan for teachers leading to dramatically improved instructional and classroom management practices including the creations of content data teams rooted in standards based data driven instruction establishing the first school wide data tracking system
- Collaborated with district and network leadership to create a strategy for college a career readiness including developing a new partnership with UC Denver to provide dual enrollment courses for students
- Wrote and secured an early college grant providing instructional coaches and over half a million dollars over four years to support post-

secondary readiness for students

KIPP Colorado- KIPP Sunshine Peak Academy
Teacher, Reading/Social Studies (7th Grade Team Lead) **2010-2012**
● Facilitated classroom instruction that led to 54% of reading students proficient or advanced on 2011 CSAP; 70% growth
● Collaborated with regional leadership to build and cultivate relationships with parents and community members to in order to cultivate support for furthering the regional mission of KIPP Colorado
● Provided instructional support to new to KIPP and struggling teachers including weekly observation and feedback cycles, regular check-ins, and professional development

Teach For America Atlanta
Director, District Strategy **2009-2010**
● Cultivated and leveraged district relationships with all school district partners and prospective partners from the building level to the superintendent in order to execute a growth strategy that would increase the overall footprint, maintain support, and dramatically increase the impact of the mission in Atlanta leading to the expansion of placement opportunities into three new school districts
● Built and managed relationships with university partners and regional education services agencies to ensure the certification of all corps members in the program
● Collaborated with other members of the regional Leadership Team to set the vision for the region and the priorities for each fiscal year

TGC Homes, Inc.
Project Manager, TGC Development, LLC. **2007-2009**
● Managed and supervised several construction projects simultaneously ensuring safety, productivity, efficiency, and timely completion streamlining company billing practices by implementing more accurate purchase order systems, which reduce losses and overage by 20% on average.
● Maintained accurate schedules, daily logs, budgets, material and vendor lists, and project specific documentation including: plans, permits, inspection requests, and engineering letters.
● Cultivated relationships with city inspectors and building code officials to ensure that the required quality building standards set by local, national, and international regulations are exceeded.
● Received extensive training on payroll taxes, payroll processing, and customer acquisition sales techniques.

Atlanta Public Schools- Ralph Bunche Middle School
Teacher, 8th Grade Social Studies (8th Grade Team Lead) **2006-2007**
● Created organized, standard specific, goal oriented lesson plans geared toward cultivating a passion for Georgia History.
● Compelled teammates to set ambitious measurable goals by adapting a positive influence through focus on excellence and teamwork.
● Administered various types of assessments to monitor student's comprehension of the material in order to tract measurable gains in student achievement.

Atlanta Public Schools- John Hope Elementary School (Teach For America Corps Member)
Teacher, 5th Grade (President, Local School Council) **2005-2006**
● Created an engaging, positive learning environment featuring structured whole group, small group, individualized instruction with hands-on lessons and computer applications.
● Presented monthly goals and objectives to John Hope Local School Council while leading monthly meetings; current projects include a writing campaign to revitalize the community pool.

Houston Independent School District- Patrick Henry Middle School (Teach For America Corps Member)
Teacher, 6th Grade Social Studies **2004-2005**
● Created and implemented Patrick Henry Middle School's 6th grade Thematic Social Studies curriculum that included students producing an 8-10 page research paper.
● Developed partnerships with parents, local businesses leaders, and other community leaders to increase understanding of the needs of the school and garner support for school-based initiatives
● Presented Teach For America in numerous classroom, one-on-one, and informational settings; established partnerships with professors, organizations, student leaders, and academic departments as a Teach For America recruitment volunteer

Education

MASTERS OF ARTS, SOCIAL CHANGE (OVERALL GPA 3.66) | May 2012 | ILLIF SCHOOL OF THEOLOGY, UNIVERSITY OF DENVER

Related coursework: Concentration in Non-Profit Management with coursework including: Financial Management, Leadership, Race/Class/Gender, Social Change Struggles, Identity/Power/Difference, Ethical Analysis

BACHELOR OF ARTS IN HISTORY, GRADUATED CUM LADE (OVERALL GPA 3.50) | MAY 2004 | MOREHOUSE COLLEGE ATLANTA, GA

Related coursework: Concentration in African-American Studies with coursework including: Public Speaking, African American Psychology, Sociology, Business Leadership

Current Board Service

Build Up **2020-Present**

TWC HUB CDC **2020-Present**

Veronique Zimmerman-Brown, PhD

112 Summerchase PKWY, Calera AL 30405

Mobile: (205) 335-2285

Email: vbrown@brownseducationconsulting.com

PROFILE

Veteran educator is seeking an administrative position with a progressive organization of learning. I am currently the owner and operator of an education consulting firm where I serve as the lead consultant with 20 direct reports. Previously, I was a program analyst for research, development, and evaluation for a non-profit educational organization. For three years I served as the project director for a U.S Department of Education grant where I supervised over 120 employees (seven direct reports), developed business, higher education, and community partnerships, and acquired donations and/or in-kind support for the purpose of providing enriching opportunities for students in 21 diverse school districts in Alabama's *Black Belt*. For eight years I was a faculty member of the School of Education at an internationally renowned research university and largest employer in the state of Alabama. I trained pre-service teachers, all while serving on multiple university committees. Prior to my time in higher education, I taught in Alabama public schools for 11 years where I served as a department chair. I hold current certifications in educational administration, special education, English as a Second Language, and math education. I have completed project management professional development and training as an ACT and college/career counselor certified trainer.

EDUCATION

2019 ACT, New York, NY & Nashville, TN
ACT Certified Educator

2017 Southern Region Educational Board, Atlanta, GA.
Certification as a Go Alliance College & Career counseling instructor/facilitator

2011-2012 University of Alabama at Birmingham, Birmingham, AL.
Doctor of Philosophy in Educational Leadership/Minor in Innovative Instructional Leadership

Dissertation: *Improving Performance: Examining the Link Between Self-Efficacy and Support for Secondary Female Math Teachers*

2009-2011 University of Alabama at Birmingham, Birmingham, AL.
Educational Specialist in Educational Leadership

2006-2007 University of Montevallo, Montevallo, AL.
Certification for Educational Administration

2005-2006 University of Alabama at Birmingham, Birmingham, AL
Certification for English for Speakers of Other Languages

2003-2004 University of Alabama at Birmingham, Birmingham, AL
Masters in Special Education-Teacher Certification for Collaborative Special Education

1992-1996 Alabama State University, Montgomery, AL
Bachelor of Science in Math Education-Teacher Certification for Secondary Mathematics

EXPERIENCE

2011-Present **CEO and Lead Education Consultant**- *Brown's Education Consulting, LLC*

- Assess school culture through survey administration, observations, and data collection
- Provide data analyses and reports to district/school administrators
- Identify, coordinate, and facilitate specific school and departmental professional development needs
- Develop ACT and/or State Assessment aligned curriculum programs and resource packages
- Provide professional development training
- Provide student level interventions (core-content and socio-emotional learning)
- Facilitate professional learning community activities and build leadership capacity through

collaboration
- Coordinate district, school, parental, and community leader meetings
- Provide grant writing support
- Locate and solicit resources

2017-Present **Program Analyst for Research, Development, and Evaluation**-*College Admissions Made Possible*
- Provide data management and analysis for programs and maintain assigned projects
- Use data sources to identify programmatic needs
- Participate in strategic planning with regards to program development
- Assist with program assessments and reporting ensuring program goals and grant requirements are met and documented
- Perform data validation and quality control checks to ensure adherence to program objectives
- Provide professional development and training

2014-2017 **Project Director –** *GEAR UP Alabama*
- Worked directly with universities, the Alabama Department of Education, 21 partnering school districts, vendors, and the federal sponsor's program officer for a grant servicing over 10,000 students, their parents, and teachers
- Supervised over 120 employees
- Coordinated/facilitated stakeholder meetings for continuous evaluation and input
- Produced monthly programmatic status reports (qualitative & quantitative data)
- Reviewed, monitored, approved, directed, and oversaw all financial transactions related to the grant
- Reviewed, monitored, provided guidance and served as the liaison to central administration in regards to all HR activities (labor sources, effort reports, hiring, training, terminations, time sheets, etc.) related to the grant
- Assured that non-financial reporting activities related to the grant were compiled and completed in a timely fashion and adhered to federal guidelines
- Researched and submitted supplemental grant proposals

2006-2014 **Instructor for EDU 200 & 500, Education as a Profession -** *University of Alabama - Birmingham*
- Guided students through the reflective process in evaluating motives for teaching
- Introduced the concepts of professional dispositions, professionalism, ethics, and foundations of education
- Trained students in the use of BlackBoard, Canvas, TaskStream, and Livetext for submitting artifacts and assessments
- Administered and evaluated writing and basic math skills test, remediating when necessary
- Assisted students in completing requirements for admission to the Teacher Education Program

2001-2007 **Math Department Chairperson / Presenter- Inclusion Workshops -** *Shelby County Schools*
Math Teacher/Algebra Math Team Coach: Site Location- Montevallo High School
- Facilitated professional development and professional learning team activities
- Observed and evaluated teachers within the math department and mentored new teachers
- Coordinated ninth grade practice exam for the Alabama High School Graduation Exam
- Taught Algebra I, Algebra II, Algebraic Connections, and Geometry
- Prepared students to compete in various math tournaments
- Conducted workshops on co-teaching and inclusion practices

AFFILIATIONS AND COMMUNITY INVOLVEMENT

- Jefferson/Shelby County Child Care Resource Center Board
- American Educational Research Association
- Research on Women and Education
- Secondary Science and Mathematics Association
- Junior Achievement Volunteer/Instructor
- ACT Preparation Workshop Organizer
- Into the Streets Community Service Volunteer
- Alabama Red Cross Volunteer
- March of Dimes Volunteer
- University of Montevallo Campus Ministry
- Montevallo High School Outreach Program

PROFESSIONAL RESUME

Charles F. Knight, CPP© **Phone: (205) 915-4595**
Post Office Box 380214
Birmingham, Alabama 35238 **Email: cknight500@bellsouth.net**

EDUCATION*:* M.P.A. – Jacksonville State University
B.S. – University of Montevallo
A.S. – University of Maine

PROFESSIONAL DESIGNATIONS:

CPP© Board Certified Protection Professional
Certifying Organization: ASIS International
Awarded after meeting all requirements and successful completion of written examination.

FSO Facility Security Officer
Certifying Organization: U.S. Department of Defense
Awarded after meeting all requirements and successful completion of written examination.

EMPLOYMENT HISTORY:

2010 to Present
Employer: ARGUS Security Solutions, LLC **Title: Founder and Chief Operating Officer**
Responsible for operation of a boutique security consulting firm providing crisis management services, security risk assessment and surveys, corporate investigations, and consultation to corporations, businesses, and non-profits across the Southeast.

2005 to 2009
Employer: Sloss Real Estate Company, Inc. **Title: Director of Property Management**
A highly responsible senior administrative position responsible for directing operations for twenty-two multi-tenant properties with over two million square feet of leased space throughout greater Birmingham.

2004 to 2005
Employer: The ARGUS Security Group **Title: President and Owner**
Returned to pursue business opportunities in the security-consulting and fraud investigation field serving clients across the US in healthcare, insurance, manufacturing, legal, real estate, business and industry

2003 to 2004
Employer: NaphCare, Inc. **Title: Executive Vice-President**
Senior Executive position, responsible for providing managed healthcare services to community correctional facilities, detention centers and jails in the U.S. Directed operations 24/7 with a team of 300 employees who provided care for 10K lives in 9 different states.

2001 to 2003
Employer: Eastern Health System **Title: Corporate Director of Security Services**
A highly responsible administrative position directing safety and security operations for a large healthcare system caring for thousands of patients daily and employing 2300 employees at 3 hospitals and 12 outpatient clinics

1999 to 2001
Employer: The ARGUS Security Group **Title: President and Owner**
Founded and administered a professional staff of retired and former police officers providing expert investigative, security consulting and security services to corporations, law firms, insurance companies, hospitals, schools and businesses throughout the Southeast.

1984 to 1999
Employer: ARGUS Protective Services, LLC **Title: Founder and Chairman**
Executive position administered and maintained double-digit growth and profits. Responsible for total operations and profitability of a full-service contract security company with annual gross sales under $20 million and 280 employees providing premium uniform security, investigations, alarm and electronic security services in Alabama and across the US.

1982 to 1999
Employer: The Harbert Corporation **Title: Corporate Director of World-Wide Security**
Senior level management position of Alabama's largest privately held corporation. Responsible for the implementation of worldwide security programs and operations that protected over 12,000 employees and one billion dollars in assets at multiple locations nationally and internationally. *Maintained position concurrently as Chairman of **ARGUS** Protective Services, LLC.*

PROFESSIONAL AFFILIATIONS:
Metropolitan Criminal Justice Executives Association
Birmingham Business Alliance
Rotary Club of Birmingham
ASIS International
US-DOJ – Law Enforcement Coordinating Committee (LECC)
Overseas Security Council (OCS) – US Department of State
Birmingham Chamber of Commerce - Public Safety Chair

CIVIC RESPONSIBILITIES:
Alabama Aeronautics and Aviation High School - Board Chair
METRO Crime Stoppers of Alabama, Inc.- Vice Chairman & Former Chair
State of Alabama Private Investigation Board - Chair
SafeHouse of Shelby County - Former Board Chair
Oak Mountain Middle School PTO – Former President
Bessemer Children's Advocacy Center - Founding Board Member
Shelby County Indigent Defense Commission - Founding Board Member
Boy Scouts of America - Assistant Scout Master & Pack Committee Chair

AURI S. BROWN

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auri.brown.realtor@gmail.com

EDUCATION: **Lawson State Community College**-Birmingham, AL
Associate of Nursing: December 2010

Shades Valley High School-Irondale, AL
Advanced Diploma: Class of 2000

Experience: **UAB Highlands**-Birmingham, AL
Instrument Technician: September 2001 – 2011

- Oversee the ordering of surgical supplies
- Process various data entries for surgery
- Stock and maintain inventory and par levels of surgical supplies
- Answer multiple phone lines of sales representatives and employees inquiring about surgical supplies
- Lifting objects weighing up to 100lbs

- **Legacy of Hope (Formerly The Alabama Organ Center)**

Organ Preservation Coordinator 2011 - present
Oversee the preservation of organs from harvest to transplant
Input serological panel per donor to generate national recipient list
Assist transplant surgeon with the removal, anatomy, and packaging of organs

Realtor for eXp Realty
Assist clients with their real estate goals such as;
Procuring a buyer for the sale of a client's property
Listing and selling a client's property at maximized value

ACTIVITIES & HONORS: **Lawson State Community College**:
University of Alabama Bachelor of Science and Nursing Scholarship: January 2008
Nominated Vice-President of Nursing Class

Morehouse College:
Partial Football Scholarship: May 2000

Shades Valley:
Secretary of Serteens: August 1999 – May 2000
Shades Valley Football Team: August 1996 – August 1999
Shades Valley Track Team: January 2000 – May 2000

COMMUNITY SERVICE: **Lawson Community College Health Fair**-Montevallo, AL: Fall 2007
Screen students and employees for hypertension and provided various health information.

KEY SKILLS: Proficient in Microsoft Word and Excel, Calculators, Email, Internet, Cash Register

REFERENCES: Available Upon Request

Tramayne D. Russell

5036 Gracious Drive
Franklin, TN 37064
407-670-4748 (cell) ◆ TramayneRussell@gmail.com

EXECUTIVE SALES MANAGEMENT
Sales, Retention & Business Development Expertise

Executive Summary: Proven sales leader who thrives in a fast-paced competitive environment. Highly adept at building successful sales and retention teams and maintaining strong relationships with clients as well as team members to foster continued growth.

CORE MANAGEMENT COMPETENCIES

- New Business Development
- Client Relationship Management
- Strategic Development of Client Partnerships
- Staff Management and Development
- Fostering Teamwork and Empowering Others

Nashville Soccer Club – Nashville, TN (May 2019 – present)
Director, Ticketing (May 2019 – present)
Position Overview: *(Reporting to the Chief Executive Officer)* Responsible for leading, training and developing a seasons, groups, service and operations team of 25+ ticketing professionals, accountable for launching the inaugural MLS season for Nashville SC. Team was directly responsible for breaking the state attendance record with over 59,000 fans in attendance for our opening match. Responsible for all sales and retention strategies both pre and post covi-19 pandemic. Accountable for hiring, evaluating and the ongoing training of staff, in addition to setting monthly and yearly revenue, call and meeting goals.

The Aspire Group – Atlanta, GA (April 2018 – May 2019)
Director, Sales (April 2018 – May 2019)
Position Overview: *(Reporting to the V.P. of Client Partner Development)* Responsible for leading, training and developing a new business team of 20 sales consultants, accountable for generating new full season ticket revenue for the Los Angeles Chargers for their final 2 seasons at the StubHub Center. Generated $2M in new business in a 4-month period (May 18– August 18) for the 2018 season. Accountable for hiring, evaluating and the ongoing training of staff, in addition to setting monthly and yearly revenue, call and appointment goals. Also responsible for maintaining and growing the relationship with Chargers leadership. In addition, the Chargers and LEGENDS have tasked our group with supporting sales efforts for the new $5 billion Los Angeles Stadium and Entertainment District through the sale of Premium Stadium Suite Licenses (SSL) by conducting market research, qualifying leads and setting sales appointments for qualified buyers at the LASED Premiere Center. Generated over $2.5M and counting in two months of sales, in season ticket revenue for the 2019 season.

PGA TOUR – Atlanta, GA (July 2017-April 2018)
Sales Manager (July 2017-April 2018)
Position Overview: *(Reporting to Executive Director)* Responsible for leading the sales efforts in generating $7.7 million in revenue through the sale of new corporate sponsorships as well as premium hospitality packages including Dining Chalets, Marquee and Veranda Suites, Executive and ULTRA Club seats for the TOUR Championship. Created marketing partnerships with local companies to increase exposure and grow their businesses with current and potential clients. Retained local accounts as well as Official Marketing Partners by creating and growing existing relationships with stakeholders. Developed new renewal strategies and sales initiatives for the 2018 TOUR Championship.

Van Wagner Sports & Entertainment – Atlanta, GA (May 2015-June 2017).
Sr. Sales Manager (May 2015-June 2017)
Position Overview: *(Reporting to Project Director)* Responsible for leading, training and developing a new business team of 10, charged with generating premium and season ticket revenue for the Atlanta Braves and SunTrust Park through the sale of Champion and Infiniti suites, Delta SKY360 Chairman and Executive seats as well as Infiniti Club Terrace Tables and Club seats and non-premium seats. Developed premium sales strategy to penetrate the Atlanta business community to increase B2B sales. Hired and evaluated staff, in addition to setting monthly revenue and meeting goals. Established pricing and benefits for premium products. Responsibilities also include building strong relationships with current A-List members and converting them from Turner Field to SunTrust park with a 75% conversation rate and increased spend approximately 161% more than their previous Turner Field spend. Sales team generated a 90% sellout of premium inventory, more than $50 million in project revenue. Personally, responsible for generating over $13M in sales revenue, which accounted for over 25% of total premium revenue.

Orlando Magic – Orlando, FL (September 2006 to 2015)
Premium Client Services Manager (June 2013-2015)
Position Overview*: (Reporting to Sr. Director of Client Services)* Responsible for generating new premium sales, service and the retention of all premium event level clientele representing $5.1 million in organizational revenue. Also responsible for business development and retention of the ICON Suite, an exclusive private luxury membership club in the Amway Center. Charged with managing and leading a premium game night team of 50 plus members which are accountable for overseeing the client experience and overall operations for the ICON Suite and the Fields Ultimate Lounge for all live events hosted at Amway Center. Work directly with our corporate partnership activation and marketing teams to ensure sponsor goals are met and to support member retention, provide a full menu of benefits and experiences to all members. Work very closely with our partners at Levy Restaurants to ensure that our premium standards are maintained for our clientele.

Results

- Achieved a department and organization leading 91% renewal rate
- Exceeded new sales goal by 43%
- Built ICON from just a concept to a premier industry leading exclusive premium club experience
- Increased ICON Suite memberships by 14%
- Reached an 88% ICON Suite renewal rate
- Develop premium game night team members - 10 team members promoted to various positions within the organization
- Achieved All-Star status in the Magic Volunteer Program

Ticket Services Manager (June 2011-2013)
Position Overview: (*Reporting to Sr. Director of Client Services*)
Charged with managing, developing and leading a Client Services Staff (3 full- time employees and 50+ event staff) responsible for new premium sales, service, and renewal focused management of premium event level clients representing $18.1 million in organizational revenue**.** Responsible for delivering benefits, amenities and service that exceeds the expectations of our premium event level clientele and Chairman's Suite members. $14.48 million (80% revenue) in renewal revenue was achieved for 2011, while finishing with the highest renewal rate in the organization. Generated $200,000 in additional product revenue through hospitality, season ticket, Chairman Suite memberships and All-Star sales. Responsible for overseeing the guest experience and overall operations for the Chairman's Suite presented by The Ritz-Carlton Destination Club and the Mercedes-Benz Star Lounge experience while working with Ritz-Carlton Destination Club sales team to maximize purchase of club membership points and packages. Manage the sales and renewal process for all newly sold and renewing Chairman's Suite and Mercedes-Benz Star Lounge client contracts. Assist in developing a long-term fan retention and growth strategy to exceed the annual season ticket holder renewal goal for premium event level clientele. Manage season ticket account touch point plan targeting fence-sitter account strategy, product and benefit utilization.

Season Ticket Account Services Manager, Courtside Seating (August 2010-2011)
Position Overview: (Reporting to Vice President of Ticket Services and Operations)
Responsible for new premium sales, service and retention focused management of premium courtside clients representing $5.4 million in organizational revenue. Accountable for the creation, development, launch and management of the exclusive ultra-premium Chairman's Suite presented by the Ritz-Carlton Destination Club, a private membership experience. Responsible for the ongoing coaching and development of a 16 member premium game night team. $4.8 million (89% revenue) was achieved, while finishing 1st organizationally. Responsible for the sale of new memberships, renewal and extension of current memberships. Delivered benefits, amenities and service that exceeds the expectations of Courtside and Chairman's Suite members. Successfully opened the Amway Center in October 2010

Season Ticket Account Representative (September 2006-2010)
Position Overview: (Reporting to Director of Season Ticket Services and Operations)
Responsible for the retention and management of over 600 season ticket accounts representing $3.3 to 3.6 million in revenue. Renewed customer base annually $3.1 million (85% revenue) in 2009, finished number 2nd organizationally, $3.1 million (88% revenue) in 2008, finished number 2nd organizationally, $2.8 million (84% revenue) in 2007, finished number 2nd organizationally. Maintained and cultivated relationships with clients to ensure that they are fully maximizing their season ticket experience.

EDUCATION

University of Central Florida – DeVos Sport Business Management Orlando, FL
Master of Business Administration
Master of Sport Business Management

- Received December 2005

University of South Alabama Mobile, AL
Bachelor of Science in Sport and Event Marketing

- Received May 2004

Computer Skills
Microsoft Office Applications, Archtics, CRM Dynamics, Salesforce and Hubspot

G. COURTNEY FRENCH

600 Luckie Drive, Suite 300
Birmingham, Alabama 35223
Telephone: (205) 977-9798
Email: cfrench@fpflaw.com or cfrench@myv949.com

PROFESSIONAL ASSOCIATIONS

Alabama Broadcasters Association
National Association of Black Owned Broadcasters
Alabama State Bar Association
Birmingham Bar Association
Magic City Bar Association
Alabama Lawyers Association

EDUCATION

Legal: **CUMBERLAND SCHOOL OF LAW**, **Samford University**
Birmingham, Alabama
Juris Doctor Degree, 1998

Undergraduate: **BIRMINGHAM-SOUTHERN COLLEGE**
Birmingham, Alabama
B.S. Secondary Education, August 1995

PROFESSIONAL EXPERIENCE

WATV RADIO STATION/V94.9 FM April 2017 – Present
Birmingham, Alabama
President/Owner

PETWAY, FRENCH & FORD, LLP 2019 – Present
Birmingham, Alabama
Partner/Attorney

FUSTON, PETWAY & FRENCH, LLP 2000 – 2019
Birmingham, Alabama
Partner/Attorney

COMMUNITY

BIRMINGHAM-SOUTHERN COLLEGE
Birmingham, Alabama
BOARD OF TRUSTEES

ALABAMA ASSOCIATION FOR JUSTICE
Montgomery, Alabama
PAST PRESIDENT

BIRMINGHAM BAR ASSOCIATION
Birmingham, Alabama
MEMBER

MAGIC CITY BAR ASSOCIATION
Birmingham, Alabama
MEMBER

Megan Jones

409 Greensprings Avenue South
Birmingham, Al 35205
251-404-2135
jones.meganelaine@gmail.com

OBJECTIVE

I am passionate about ensuring children everywhere have access to an education that is meaningful, supportive, and engaging, giving children the tools to become life-long-learners.

EXPERIENCE

Real Estate Transaction Coordinator
2019 - Present - Creating and managing contracts, coordinating between clients, real estate agents, and closing attorneys. Preparing appropriate paperwork for the purchase or selling of real property.

Property Manager
2019 - Present - Managing short-term rental properties. Providing hospitality, managing funds and coordinating with cleaners, repair men, and guests.

Kindergarten Team Leader
2018-2019 - Responsible for parent/teacher communications, leading and guiding team meetings, creating and implementing grade-level wide integrated material, planning events and field trips for the kindergarten classes.

Kindergarten Teacher
2015-2019 - Taught at Barrett Elementary School under a report card system and also Teaching Strategies Gold's holistic child development program. Focused on small group and one-on-one opportunities to help every child succeed and exceed.

Cross-Cultural Tutor
2016-2020 - Tutored ESL students in China through VIPkid. Used TPR (Total Physical Response) to communicate cross-culturally.

EDUCATION

Troy University, Troy, AL— degree in Elementary Education, 2015
Graduated Suma Cum Laude
GPA 3.8
Provost's List 2012-2014
Real Estate Licensing School 2019

QUALIFICATIONS

Real Estate Licensed
ARI certified
AMSTI certified
Teaching Strategies Gold certified
Proficient with Microsoft Words, Excel, Powerpoint, Promethean boards and Smartboards
Bilingual (English and Thai)

REFERENCES

- **Mrs. Tiki Hines** - (Principal of Barrett Elementary School)

- **Dr. Warren** (Professor at Troy)

- **Dr Bryant** (Reading coach at Barrett Elementary School)

TIFFANY S. STOREY

312 Lance Way
Birmingham, AL 35206

(205) 253-2836
tsstorey@gmail.com

PROFILE

Mid-career professional with 19+ years' experience in community service and outreach programs. Licensed professional counselor passionate about providing clients the best support to manage challenging life issues. Leadership developer with excellent time-management, planning and presentation skills, written and interpersonal communication proficiency, and a dynamic ability to build positive rapport with several different populations.

EDUCATION

Master of Science, Mental Health Counseling
Walden University, Minneapolis, MN 2013

- Honors: Chi Sigma Iota

Bachelors of Science, Business Management
Berea College, Berea, KY 2004

- Dean's List, Bonner Scholar Community Service Scholarship Recipient

PROFESSIONAL EXPERIENCE

Children's Aid Society of Alabama, Birmingham, AL **Mar 2018- current**
Project Independence Program Director

- Oversee the hiring, training and development of program staff; evaluate service outcomes and identify appropriate changes; manage fiscal planning and budget maintenance; provide clinical supervision and oversight for record/documentation compliance; establish and maintain community partnerships

Premier Mental Health Counseling, Birmingham, AL **Feb 2018 – current**
Outpatient Therapist/Consultant

- Conduct intake assessments as well as weekly individual and family therapy sessions with children, adolescents, and adults diagnosed with a variety of disorders using evidence based therapeutic interventions; develop treatment plans, process notes, and diagnostic summaries; assign diagnoses and case management; assess present developmental levels in critical domains and make treatment recommendations to clinical team including psychiatrist

BuildUP Ensley, Birmingham, AL **Sept 2018 – Sept 2020**
Counseling Consultant

- Assist teachers and staff serving children with special needs and other serious behavior problems using evidence-based theory and interventions; collect/document/write data, related reports, and child records for review and ongoing intervention; assist school staff in developing, implementing, and evaluating behavioral plans; assist school staff with implementing instructional strategies to instruct children; provide behavioral intervention for students1:1 or in group setting

Gateway Residential, Birmingham, AL **May 2017- Mar 2018**
Residential Program Manager

- Oversee the hiring, training, and development of all clinical and non-clinical residential team of 40 - 45; evaluate service outcomes and identify appropriate changes; supervise staff scheduling; mediate disputes between agency personnel; monitor and enforce the adherence to agency policies and procedures; manage fiscal planning and budget maintenance; provide clinical supervision and oversight for record/documentation compliance for clinical team of 4-6 clinicians

Hill Crest Behavioral Health, Birmingham, AL **Feb 2014 - Apr 2017**
Mental Health Counselor

- Conduct weekly individual, family and group therapy sessions with children, adolescents, and adults diagnosed with a variety of disorders; provide individual therapy to clients ages 13 to 18 years using Cognitive-Behavioral Therapy (CBT) and Dialectical Behavioral Therapy (DBT); maintain a case load of approximately 8 -12 weekly clients; develop and write treatment plans, process notes, and diagnostic summaries; conduct psychosocial assessments, treatment plans and weekly progress notes caseload of 12-14 clients

Without Walls Counseling, Birmingham, AL **January 2014-March 2015**
Behavior Intervention Consultant

- Provide assistance to school teachers and staff serving children with special needs and other serious behavior problems using principles of applied behavior analysis; assess present developmental levels in critical domains and implement behavior intervention plan; collect/document/write data, related reports, and child records for review and ongoing intervention; assist school staff in developing, implementing, and evaluating children's Individual Educational Plan (IEP) as well as Behavior Individual Plan (BIP); assist family members and school staff with implementing instructional strategies to instruct children; provide behavioral intervention activities for children 1:1 or in group setting

Hill Crest Behavioral Health, Birmingham, AL **March 2013-Nov. 2013**
Mental Health Counselor Intern

- Conduct weekly individual, family and group therapy sessions with children, adolescents, and adults diagnosed with a variety of disorders; provide individual therapy to clients ages 13 to 18 years using Cognitive-Behavioral Therapy (CBT) and Dialectical Behavioral Therapy (DBT); maintain a case load of approximately 8 -12 weekly clients; develop and write treatment plans, process notes, and diagnostic summaries; conduct psychosocial assessments, treatment plans and weekly progress notes caseload of 12-14 clients

Mayor's Office Division of Youth Services, Birmingham, AL **2012-2013**
Project Coordinator

- Implement and manage programs that advocate for youth inclusion and participation; established partnerships with various organizations throughout the city of Birmingham; co-facilitate all operational facets of mentoring program; Develop and maintain a detailed project schedule which includes administrative tasks and all sites involved in the project; Coordinate project meetings and maintain a task specific calendar and timeline

Abana Realty, Birmingham, AL **2006- 2010**
Licensed Realtor

Upscale Promotions, Birmingham, AL **2005- 2006**
Event Manager

PROFESSIONAL DEVELOPMENT

Clinical Presentation **September 2016**
Managing On the Job Stress, University of Alabama at Birmingham Birmingham, AL

Clinical Conference **August 2016**
Treatment Implications with Challenging Teens, Hill Crest Behavioral Health, B'ham, AL

Clinical Conference **February 2016**
Improving Ethical Decision Making, Hill Crest Behavioral Health Birmingham, AL

Doctor of Philosophy Student, Counseling Education and Supervision **2015-2016**
Walden University, Minneapolis, MN

Clinical Presentation **October 2015**
Care for the Caregiver: *Stress Management for Caregivers of Parents or Spouses with Deme ntia and/or Alzheimer*, University of Alabama at Birmingham Birmingham, AL

Clinical Presentation **April 2015**
Multicultural Leadership Development, Hill Crest Behavioral Health, Birmingham, AL

Clinical Presentation **Oct 2014; Aug 2014**
Classroom Management: *Seek First to Understand*, Bessemer High School Bessemer, AL

AFFILIATIONS

American Counseling Association (ACA) **2012 to Present**
Graduate Student Affiliate

PROFESSIONAL LICENSURES/CERTIFICATIONS

- Licensed Professional Counselor, Alabama License **(License# 3710)**

MERRICK O. SIMS

5468 Stone Cove Drive
Atlanta, Georgia 30331
(404) 493-4343
E-mail: moscontractors@gmail.com

PROFESSIONAL PROFILE:

Attentive General Contractor with solid track record for ensuring client satisfaction while adhering to industry quality standards and sticking within established budgets. Displaying profound knowledge of construction regulations, local zoning ordinances and techniques for meeting an assortment of construction and building challenges. Dedicated to adhering to safety guidelines while completing projects.

EDUCATION:

EDUCATIONAL SPECIALIST DEGREE – EA&S – July 2008
Lincoln Memorial University (Harrogate, Tennessee)

MASTER OF BUSINESS ADMINISTRATION – April 1999
University of Phoenix (Phoenix, Arizona)

BACHELOR of SCIENCE – MECHANICAL ENGINEERING – May 1994
Southern University and A&M College (Baton Rouge, Louisiana)

EDUCATION CERTIFICATION:

- **Leadership Endorsement**
- **Middle Grades (4-8) Math**
- **High Grades (9-12) Math**

PROFESSIONAL CERTIFICATIONS:

- **Alabama General Contractor: 53552**
- **Louisiana General Contractor: 69303**

EMPLOYMENT HISTORY:

General Contractor

4/11 – Present **MOS, LLC** **Alabama & Georgia**
Position: Owner
General Contractor
Company: MOS, LLC

- Oversee resolution of all issues during project construction and commissioning phases.
- Carefully coordinate plans and specs to keep projects running smoothly.
- Facilitate processing of RFI's, submittals, and samples among the general contractor, subcontractors, owner, and the owner's consultants.
- Qualify competitive subcontractor bids prior to execution of contracts.
- Educate sub contractors on quality standards throughout the construction process
- Obtain notices of completion and compliance certifications from construction administrators.
- Efficiently record and reject incorrect deliveries of material to site.
- Review and investigate Proposed Change Order Requests (PCOR)

Math Teacher

In addition to my experience and strong educational background, I love working with children. I have an engaging teaching style, the ability to interact well with parents and colleagues, and a willingness to create and promote an inclusive learning environment. I participate in professional and curricular development, and serve as an advisor to students. I contribute to the larger school community through coaching and sponsoring other extracurricular programs.

8/15 – 8/19	**WESTLAKE HIGH SCHOOL** Position: Math Teacher (Algebra I & II) / Softball Coach	**Atlanta, GA**
8/11 – 8/15	**THE WESTMINSTER SCHOOLS** Position: Math Teacher (Algebra 1) / Baseball and Football Coach	**Atlanta, GA**
8/09 – 8/11	**ATLANTA PUBLIC SCHOOL SYSTEM** **MARGARET FAIN ELEMENTARY SCHOOL** Position: Math Coach	**Atlanta, GA**
8/06 – 8/09	**DOUGLAS COUNTY SCHOOL SYSTEM** **CHESTNUT LOG MIDDLE SCHOOL** Position: 8th Grade Math Teacher / Football Coach	**Douglasville, GA**
8/05 – 8/10	**UNIVERSITY OF PHOENIX** Position: Online / Algebra 1 Instructor	**Phoenix, AZ**

Mechanical Engineer

I was responsible for specifying requirements, executing and evaluating designs, analysis, development, testing and controlling major engineering projects. I communicated technical direction to other engineers and engineering support personnel (i.e. supplier residents). I was the technical liaison between purchasing, and internal manufacturing. I worked with the suppliers to resolve supplier-manufacturing issues, implemented and monitored advanced quality-planning systems.

6/02 – 8/06	**GENERAL MOTORS CORPORATION** **TRUCK GROUP** Position: Design Release Engineer	**Warren, MI**
6/00 – 8/02	**GENERAL MOTORS CORPORATION** **TRUCK GROUP** Position: Vehicle Assembly Engineer	**Pontiac, MI**
6/98 – 8/00	**GENERAL MOTORS CORPORATION** **TRUCK GROUP** Position: Total Vehicle Quality Engineer	**Pontiac, MI**
6/96 – 8/98	**GENERAL MOTORS CORPORATION** **TRUCK GROUP** Position: Sr. Experimental Test Engineer	**Milford, MI**
6/94 – 6/96	**GENERAL MOTORS CORPORATION** **TRUCK GROUP** Position: Production Supervisor	**Flint, MI**

COMMUNITY ORGANIZATIONS:

- Omega Psi Phi Fraternity, Incorporated
- Word of Faith Church
- Jack and Jill – Atlanta Chapter

RODERICK J. SMITH

112 Harvill Lane
Birmingham, AL 35217
205-482-8799 Cell
rjsmith06@gmail.com

CERTIFICATES AND RATINGS:

Airline Transport Pilot; B-707/B720 Type; BE-400/MU-300 Type; Certified Flight Instructor (Multi Engine Airplane); Instrument Instructor; Commercial Pilot License – Airplane Single & Multiengine Land, Rotorcraft – Helicopter; Instrument Airplane & Helicopter, FAA First Class Medical Certificate; Radiotelephone Operator Permit

FLIGHT TIME:

TOTAL **4928 (No civilian conversion factor or simulator included)**

Turbine PIC	1561	Transoceanic	304
Multiengine	4665	Actual Instruments	923
Turbo-Jet	3685	Simulated Instruments	126
Turbo-Prop	408	Night	1029
Single Engine	31	NVG	18
Rotorcraft-Helicopter	233	Combat	863
Simulator	288	Combat Support	287
Instructor	639		

PROFESSIONAL EXPERIENCE:

FIRST OFFICER UNITED PARCEL SERVICE AIRLINES (September 2015 - Present). Services as second in command of heavy multiengine turbofan aircraft. Conducting worldwide cargo operations. **(Boeing 757/767)**

INSTRUCTOR PILOT/AIRCRAFT COMMANDER (April 2001 – May 2015).

Alabama Air National Guard, 117 Air Refueling Wing. Instructor pilot in heavy turbofan aircraft. Conducted global in-flight refueling operations. Served as Chief of Squadron Scheduling, Chief of Safety and Chief of Current Operations. Also served on State Diversity Council. **(KC-135/Boeing 707)**

STUDENT PILOT (May 2000 – April 2001). U.S. Air Force, Columbus AFB, Mississippi. Trained in jet aircraft operations. **(T-37, T-1/BE-400)**

MISSION PILOT (September 1993 – September 1994). U.S. Army 3rd MI Battalion, Camp Humphreys, Korea. Qualified pilot in turboprop aircraft. Served as Maintenance Officer. Managed 40 military and civilian personnel. Responsible for all aspects of aviation and systems maintenance, including a $100M budget of sensitive equipment. **(RC-12D/H/BE-200)**

STUDENT PILOT (May 1993 – August 1993). U.S. Army, Ft. Huachuca, Arizona. Trained in Improved Guardrail V Electronic Warfare Aircraft and related systems. **(RC-12D/ BE-200)**

STUDENT PILOT (February 1992 – March 1993). U.S. Army, Ft. Rucker, Alabama. Trained in helicopter and fixed-winged operations. **(UH-1H, U-21/ BE-A90, C-182, PA-38)**

EDUCATION:

Alabama State University, Montgomery, AL. BS, Criminal Justice, ***cum laude***. (May 1990)
Auburn University at Montgomery, Montgomery, AL. Commissioned 2LT through U.S. Army R.O.T.C.; ***Distinguished Military Student/Graduate***. (June 1989)

COMMUNITY INVOLVEMENT:

Junior Achievement of Greater Birmingham (January 2008 – Present) Classroom Volunteer
Hoover High School Mentorship Program (October 2013 – Present) Mentor
Organization of Black Aerospace Professionals/Aviation Career Academy (July 2013 - July 2019)

Tierra Wright

205.276.5354• tbwright16@gmail.com

PROFILE SUMMARY: A job candidate with an extensive secondary and post-secondary background with updated knowledge about current educational and career trends and the proven ability to prepare students for both academic and career advancement. Documented success in providing professional development opportunities that engage and develop instructors to challenge students intellectually. Committed to inspiring others to work at their highest level while working under busy or stressful situations.

EDUCATION

Master of Education in Business/Marketing Education
Auburn University, Auburn, AL, Aug 2005

Bachelor of Science in Business/Marketing Education
Auburn University, Auburn, AL, May 2004

SKILLS SUMMARY

- Effective verbal and written communication skills when interacting with various stakeholders
- Proven ability to complete multiple job tasks simultaneously
- Providing quality educational experiences using industry related software and hardware
- Implementing programs designed to carry out organizational missions
- Strong pc skills including the use of Microsoft Office
- Creating Excel spreadsheets for projects and tracking of related data
- Providing career counseling and tracking of students to prepare them for the workforce
- Knowledge of educational learning styles and experience using varied teaching methods to address learning styles
- Implementing all policies and procedures for statewide and district level assessments
- Collaborating with stakeholders to create a school and community climate that embraces cultural diversity

WORK EXPERIENCE

Director of Adult Education, Jefferson State Community College, Birmingham, AL, January 2020-Present

- Coordinates all Adult Education programs within the College's service areas
- Works closely with the Alabama Community College System, local education administrators and Adult Education teachers of each system
- Works closely with the WIOA partners (Career Center/One Stop)
- Works closely with Technical Education (credit) programs' Division Chairs and with Skills Training division (non-credit) programs promoting career pathways for Adult Education students
- Surveys community needs and resources
- Coordinates all Adult Education publicity within designated area
- Completes all reports required by Alabama Community College System and local operating systems
- Selects and recommends qualified teaching staff for employment
- Organizes ongoing in-service training programs for all Adult Education personnel
- Determines the target area in terms of the number of prospective learners, their needs and possible methods of recruitment
- Involves teachers and learners in planning the program
- Implements continuous evaluation of the total program
- Establishes a robust Career Pathways Program to prepare participants with work skills and competencies to obtain gainful employment

Tierra Wright

205.276.5354• tbwright16@gmail.com

- Creates an enrollment management plan to increase enrollment, retention and completion rates that meet/exceed established outcomes
- Complies with all policies of the Alabama Community College System and the College

Jefferson State Community College, Birmingham, AL
Career Development Program Coordinator, June 2019-January 2020
Career Services Specialist, March 2016-June 2019

- Facilitated Career Pathways orientation and student follow-up
- Assisted in career planning and job placement activities for students and graduates
- Worked with faculty and local business to develop and support job placement for College students and recent graduates
- Provided career counseling and guidance to prepare students for job placement
- Coordinated with the director and other college personnel to track and analyze job placement activities of students and graduates, including conducting satisfaction surveys
- Assisted with maintaining resource materials for students, graduates and community clients related to company and business information
- Documented job placement activities and coordinates this with the director to prepare requested reports
- Developed and conducted career development workshops/presentations for Back to Work 50+ grant
- Promoted positive campus/community relations for the One Stop Career Center

Teacher
Birmingham City Schools, Birmingham, AL, Aug 2014-March 2016
Leeds City Schools, Leeds, AL, Aug 2012-May 2014
Jefferson County Schools, Birmingham, AL, July 2005-June 2012

- Developed schemes of work, lesson plans and tests that were in accordance with established procedures
- Planned, prepared and delivered lesson plans and instructional materials that facilitated active learning
- Assigned and graded class work, homework, tests and assignments
- Observed and evaluated student's performance and development
- Communicated necessary information regularly to students, colleagues and parents regarding student progress and student needs
- Updated all necessary records accurately and completely as required by laws, district policies and school regulations
- Maintained accurate and complete records of students' progress and development
- Encouraged and monitored the progress of individual students and used information to adjust teaching strategies
- Provided appropriate feedback on work
- Maintained discipline in accordance with the rules and disciplinary systems of the school
- Managed student behavior in the classroom by establishing and enforcing rules and procedures
- Used relevant technology to support and differentiate instruction
- Demonstrated preparation and skill in working with students from diverse cultural, economic and ability backgrounds

WVITA
JEFFERY T. WALKER

(July 5, 2021)

EDUCATION

Ph.D.	1992 Sam Houston State University	Criminal Justice Huntsville, Texas
M.A.	1988 University of Arkansas	Criminal Justice Little Rock, Arkansas
B.S.	1984 University of Arkansas	Business Computers Personnel Management Fayetteville, Arkansas

PROFESSIONAL EXPERIENCE

2015 - Present — Professor and Chair
Department of Criminal Justice
University of Alabama, Birmingham

Scope of the Organization:

The Department of Criminal Justice consists of five academic programs across three program areas (BS and MS in Criminal Justice; MS in Forensic Science; BS Digital Forensics and an and MS in Cyber Security (jointly with the Department of Computer Science)). The Department also houses the Computer Forensics Research Lab. Total budget for the Department is just over $1.5 million annually, not counting grant expenditures. There are about 300 undergraduate majors and 30 master's students in criminal justice; about 30 master's students in forensic science; and about 150 undergraduate students in digital forensics and 40 master's in Cyber Security. There are 13 full time faculty.

Responsibilities:

- Making decisions on all personnel, academic, and budgetary affairs.
- Raising funds.
- Managing the personnel and office routines in the Department.
- Providing oversight of all graduate and undergraduate programs.
- Developing and implementing the strategic plan for the Department, graduate programs, and undergraduate programs.
- Promoting excellence in graduate and undergraduate education.
- Providing leadership for and administrative oversight of interdisciplinary programs and courses within the Department.

- Developing and implementing outreach initiatives at regional, national, and international levels.

Major achievements:

- Increased credit hour production by 71% 2015-2019 (70% undergraduate, 82% graduate)
- BSDF grown from 0 to 130 majors in 3 years.
- More than tripled grant activity and funding in 5 years.
- Recruited three female tenure-track faculty members in first 5 years.
- Implemented interdisciplinary BS in Digital Forensics to support MS in Cyber Security.
- Redesigned graduate Computer Forensics certificate to make it applicable to interdisciplinary students seeking knowledge in computer forensics.
- Computer Forensic certificate accepted at as a part of the MS/MS in Interdisciplinary Graduate Studies.
- Led redesign of the Pre-Law program to strengthen student admission to law schools and to make the program more interdisciplinary.

2020 - Present	Director Center for the Study of Community Health and the CDC Awarded Prevention Research Center
2021 - Present	Senior Scientist (Center Appointment) Center for Clinical and Translational Science
2020 - 2021	Interim Chair Department of Social Work University of Alabama, Birmingham
2019 - Present	Senior Scientist, Community Health Scholar Center for the Study of Community Health
2017 - Present	Professor (Secondary Appointment) Department of Health Behavior, School of Public Health University of Alabama, Birmingham
2016 - Present	Professor (Center Appointment) Computer Forensics Research Lab University of Alabama, Birmingham
2016 - 2020	Professor (Secondary Appointment) Department of Electrical and Computer Engineering University of Alabama, Birmingham
2011 - 2015	Chair Department of Criminal Justice University of Arkansas, Little Rock

Scope of the Organization:

The Department of Criminal Justice consisted of five academic programs (AS, BA, MA, MS, and PhD) in criminal justice and three Centers (Juvenile Justice, Environmental Criminology, and Senior Justice). Total budget for the Department was just over $2 million annually. There were about 400 undergraduate majors, 60 master's students and 15 PhD students. There were 13 full time faculty and about 20 adjunct faculty. There were three professional staff members (advisor, office manager, and technical advisor).

Responsibilities:

- Making decisions on all personnel, academic, and budgetary affairs.
- Raising funds.
- Managing the personnel and office routines in the Department.
- Providing oversight of graduate and undergraduate programs.
- Serving on the Dean's Council.
- Developing and implementing the strategic plan for the Department, graduate programs, and undergraduate programs.
- Promoting excellence in graduate and undergraduate education.
- Providing leadership for and administrative oversight of interdisciplinary programs and courses within the Department.
- Developing and implementing outreach initiatives at regional, national, and international levels.

Major achievements:

- Developed and implemented a strategic plan for the Department encompassing a new vision and a set of new goals.
- Developed with faculty a strengthened governance document for the Department.
- Strengthened shared governance.
- Strengthened the recruitment of underrepresented minority students by participating in local and state minority student recruitment events.
- Recruited three female tenure-track faculty members in two years.
- Successfully retained a minority faculty member.
- Enhanced the research productivity/quality and teaching effectiveness of the Department: more faculty members published in the leading journals.
- The Department received recognition by the University administration as one of the best departments at the university for high research productivity, student achievement, and increases in enrollment.
- Faculty in the Department received all three major awards of the University (teaching, research, and service).
- Helped substantially increase funds for student scholarships (from $0 in the 1990s to $600,000).

1997 - 2011 Graduate Coordinator/Doctoral Coordinator
Department of Criminal Justice
University of Arkansas, Little Rock

Scope of the Organization:

Initially, the graduate program consisted of an in-class Master of Arts program. I developed and implemented an on-line Master of Science program and then moved it to an accelerated format. I developed and implemented a PhD program in 2010 with approximately 15 doctoral students (all receiving funding and working on an assistantship).

Responsibilities:

- Making decisions on all personnel, academic, and budgetary affairs related to graduate education.
- Fostering and expanding intramural and extramural connections.
- Designing and revising curricula for the MA, MS and PhD programs.
- Coordinating course offerings.
- Hiring and supervising graduate assistants.

Major achievements:

- Developed and implemented a fully online Master of Science program (the first at the university).
- Developed an implemented a research-based PhD program.
- Developed and implemented the Strategic Plan for the PhD program to be nationally ranked.
- PhD program was ranked in *US News and World Report* rankings for criminology/criminal justice doctoral programs within two years of start.
- Significantly enhanced financial support for graduate assistants.
- Developed and obtained funding for a Distinguished Lecture Series that brought top people in the discipline to campus.

1999 - 2015	Professor Department of Criminal Justice University of Arkansas, Little Rock
2002 – 2009	Professor (Joint Appointment) Department of Health Policy and Management College of Public Health University of Arkansas for Medical Sciences
2001 - 2008	Professor and CJ Track Coordinator (Joint Appointment) Public Policy PhD University of Arkansas, Fayetteville
1994 - 1999	Associate Professor University of Arkansas, Little Rock

1990 - 1994	Assistant Professor University of Arkansas, Little Rock

GRANTS RECEIVED

2021-2026	Co-mentor (K08; Robert Cannon) National Institutes of Health/ Digestive Diseases and Nutrition Geographic Variation in Non-HCC MELD Exceptions and Its Effect on Liver Transplant Waitlist Outcomes
2021-2022	Principal Investigator Centers for Disease Control and Prevention A Shot in the Arm for Birmingham: Overcoming COVlD Vaccine Hesitancy Among Underserved Populations. $500,000 grant to examine the reason for COVID vaccine hesitancy and what messaging could motivate people to get vaccinated.
2020-2023	Investigator National Institutes of Health/National Institute for Allergies and Infectious Diseases Dynamic COVID-19 Community-Engaged Testing Strategy in Alabama (COVID COMET AL) $5 million P30 grant to evaluate the success of a community-engaged, rapid scale-up testing strategy to reduce the disproportionate burden of COVID-19 in underserved rural counties.
2019-2024	Principal Investigator Centers for Disease Control and Prevention CHEER Center for the Study of Community Health $3.75 million R01 grant to conduct a randomized control trial testing neighborhood and family improvement through interventions at the family and community levels.
2019-2020	Principle Investigator Center for the Study of Community Health, Health Scholars Program Taking a Bite out of Blight: Blight Reduction Efforts by Birmingham United Neighborhoods. $70,000 grant to support and evaluate a blight reduction program in Birmingham neighborhoods.
2018-2019	Co-Principal Investigator Department of Homeland Security, Science and Technology $4.1 million grant to examine terrorist use of social media and to develop algorithms to identify potential jihadist.

2017-2019	Co-Principal Investigator National Science Foundation. Secure and Trustworthy Cyberspace $300,000 grant to train and educate judges and prosecutors in legal aspects of cybersecurity and computer forensics.
2016-Present	Co-Principal Investigator National Science Foundation CyberCorps Scholarship for Service Grant to fund and educate students in Criminal Justice and Computer Science in cybersecurity. Total funding $3.5 million
2016 - 2017	Principal Investigator U.S. Department of Commerce, National Institute of Standards and Technology, National Cybersecurity FFRDC $19,000 grant to examine cybersecurity adoption policies within different business sectors.
2011 - 2013	Principal Investigator U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention $200,000 grant to develop an integrated database of juvenile demographics, maltreatment, and justice issues and to study juvenile maltreatment and case processing in Arkansas.
2007 - 2008	Co-Principal Investigator U.S. Department of Justice, National Institute of Justice $35,000 grant to study demographic and situational characteristics of correctional staff committing sexual violence in prison
2007	Principal Investigator Summer Research Support Grant University of Arkansas, Little Rock $5,000 grant to develop pilot project examining crime data using principles of complex systems science
2005	Co-Principal Investigator U.S. Department of Justice, Bureau of Justice Statistics $50,750 grant to study sex offender recidivism in relation to sex offender registration and notification laws in Arkansas

2004	Co-Principal Investigator U.S. Department of Justice, Bureau of Justice Statistics $69,350 grant to study the incidence of deaths in police custody in Arkansas in relation to subculture of violence theory and alcohol availability
2003 - 2004	Co-Principal Investigator U.S. Department of Justice, Bureau of Justice Statistics $49,850 grant to study the effects of sentencing policies and practices on sentencing outcomes in the State of Arkansas
2002 - 2007	Co-Investigator National Institute of Drug Abuse (R01) Principally responsible for criminal justice aspects of a $8.4 million, multi-year, multi-state grant to examine stimulant abuse in rural areas Awarded an additional $300,000 to continue the study two additional years.
2002 - 2007	Co-Principal Investigator U.S. Department of Justice Project Safe Neighborhoods $299,000 grant to examine the influence of gun control laws on the incidence of violent crime
2001 - 2002	Principal Investigator U. S. Department of Justice, Bureau of Justice Statistics $325,500 grant to study the effectiveness of sex offender registration and notification laws in the U.S.
2000 - 2001	Principal Investigator U. S. Department of Justice, Bureau of Justice Statistics $273,155 grant to study the relationship between economic conditions and crime in the Mississippi Delta region of Arkansas
1999 - 2000	Project Director Arkansas Department of Correction Directed all facets of a $200,000 a year grant from the Arkansas Department of Correction. Project consisted of six projects undertaken by a team of five faculty members
1999 - 2000	Principal Investigator U. S. Department of Justice, Bureau of Justice Statistics $100,196 grant to study the influence of pre-trial incarceration on burglars and rates of burglary in Pulaski County, Arkansas

1998 - 1999	Principal Investigator U. S. Department of Justice, Bureau of Justice Statistics $81,196 grant to study sex offender characteristics, movement patterns between rural and urban offenders, policies for sex offender registration, use of the internet by sex offenders to avoid registration, and resources used by law enforcement
1995	University of Arkansas at Little Rock Blue Ribbon Curriculum Grant $5,000 grant to develop multimedia material in criminal justice following the concepts of critical thinking and multiculturalism
1993 - 1994	Principal Investigator City of Little Rock $21,628 grant to evaluate the influence of Neighborhood Alert Centers on crime and the quality of life in the city
1993 - 1994	Associate Project Director National Highway Transportation Safety Administration $83,000 grant to train law enforcement officers in Arkansas in the adjudication of DWI cases
1992	Project Consultant Traffic Safety Section of the Arkansas Highway Department $15,435 grant to conduct joint training for law enforcement officers and traffic engineers in Arkansas
1991 - 1992	Director National Highway Transportation Safety Administration $101,000 grant to train law enforcement officers, prosecutors, and municipal judges in Arkansas in the adjudication of DWI cases
1991	Project Coordinator National Highway Transportation Safety Administration $17,000 grant to train municipal judges in Arkansas in the handling and adjudication of DWI cases
1990 - 1991	Associate Director National Highway Transportation Safety Administration $60,000 grant to train police officers in Arkansas in DWI sobriety testing
1990	Research Assistant National Institute of Justice Improving the Investigation of Homicides and the Apprehension Rate of Murders

PUBLICATIONS

Journals

Dierenfeldt, Rick, Shaun A. Thomas, Timothy C. Brown, and Jeffery T. Walker. 2021. "Street Culture and Gun Violence: Exploring the Reputation–Victimization Paradox." *Journal of Interpersonal Violence*, 36(1-2): 552-578. 10.1177/0886260517730028.

Walker, Jeffery T. 2020. Mentoring Faculty Members. *The Criminologist*, 45(November/ December):34.

Chichester, Keith, Grant Drawve, Alejandro Giménez-Santana, Michelle Sisson, Brandi McCleskey, Daniel W. Dye, Jeffery Walker, Sylvie Mrug, Karen Cropsey. 2020. Pharmacies and features of the built environment associated with opioid overdose: A geospatial comparison of rural and urban regions in Alabama, USA. *International Journal of Drug Policy*, 79. https://doi.org/10.1016/j.drugpo.2020.102736.

Walker, Jeffery T. 2020. The Importance of Mentoring. *The Criminologist*, 45(July/August):28.

Moak, Stacy C., Jeffery T. Walker, Martha Earwood, and Gabby Towery. 2020. Using Reentry Simulations to Promote Changes in Attitude toward Offenders: Experiential Learning to Promote Successful Reentry. *American Journal of Criminal Justice* 45(1):126-144.

Griffin, Vanessa W., Gavin M. Lee, Anthony G. Vito, and Jeffery T. Walker. 2019. "It's Not So Black and White: A Conjunctive Analysis of Racial Differences in Incidents of Prison Misconduct." *Corrections: Policy, Practice and Research*, 4(2):126-152.

McNeal, Brittani and Jeffery T. Walker. 2016. "Parental Effects on the Exchange of Sex for Drugs or Money in Adolescents." *American Journal of Criminal Justice*, 41(4):710-731.

Drawve, Grant, Shaun A. Thomas, and Jeffery T. Walker. 2016. "Bringing the Physical Environment back into Neighborhood Research: The Utility of RTM for Developing an Aggregate Neighborhood Risk of Crime Measure." *Journal of Criminal Justice*, 44:21-29.

Walker, Jeffery T. 2016. "How to Manage the Move to Full Professor." *Journal of Criminal Justice Education*, 27(2):255-270.

Lee, Chang-Hun, Stacy C. Moak and Jeffery T. Walker. 2016. "Effects of Self-Control, Social Control, and Social Learning on Sexting Behavior among South Korean Youth." *Youth and Society*, 48(2):242-264.

Drawve, Grant, Jeffery T. Walker, and Marcus Felson. 2015. "Juvenile Distance-to-Crime and Hot Spots." *Cartography and Geographic Information Science*, 42(2):122-133.

Moak, Stacy C. and Walker, Jeffery T. 2014. "How to be a Successful Mentor." *Journal of Contemporary Criminal Justice*, 30(4):427-442.

Drawve, Grant, Shaun A. Thomas, and Jeffery T. Walker. 2014. "The Likelihood of Arrest: A Routine Activity Theory Approach." *American Journal of Criminal Justice*, 39(3):450-470.

Burgason, Kyle A. and Jeffery T. Walker. 2013. "Optimal Foraging Theory's Application to Internet Sex Offender Search Behavior: A Theoretical Model for Computer Forensic Investigations." *Journal of Forensic Investigations*, 1(1):1-6.

Thomas, Shaun, Stacy C. Moak, and Jeffery T. Walker. 2013. "The Contingent Effect of Race in Juvenile Court Detention Decisions: The Role of Racial and Symbolic Threat." *Race and Justice,* 3(3):252-269.

Moak, Stacy C., Shaun A. Thomas, Jeffery T. Walker, and Shaun Gann. 2012. "The Influence of Race on Preadjudication Detention: Applying the Symbolic Threat Hypothesis to Disproportionate Minority Contact." *Journal of Juvenile Justice*, 2(1):73-90.

Maddan, Sean, J. Mitchell Miller, Richard D. Hartley, and Jeffery T. Walker. 2012. "Sympathy for the Devil: An Exploration of Judicial Guideline Departures in the Prosecution of White-Collar Offenders and Street Offenders." *American Journal of Criminal Justice*, 37:1-15.

McCoy, Tana, Patti Ross Salinas, Jeffery T. Walker, and Lance Hignite. 2012. "An Examination of the Influence of Strength of Evidence Variables in the Prosecution's Decision to Dismiss Driving While Intoxicated Cases." *American Journal of Criminal Justice*, 37(4):562-579.

Moak, Stacy C., Johanna Thomas, Shaun Thomas, Jeffery T. Walker, and Tom Zawisza. 2012. "Entering the Rabbit Warren: The Trials, Tribulations (and Some Successes) of Integrating Juvenile Justice Data." *ACJS Today*, XXXVI (4):7-12.

McCoy, Tana, Jeffery T. Walker, and Elaine Rodney. 2012. "Predicting Preadjudication Detention Decisions: An Examination of Family Status and Race." *Journal of Ethnicity in Criminal Justice,* 10(2):87-10.

Walker, Jeffery T. and Rocio Roles. 2012. "The Biometric Prison: Technological Advancements in Tracking Inmates and Staff." *Correctional Discourse*, 6(1):1-32.

Walker, Jeffery T. and Stacy C. Moak. 2012. "Law Knowledge for Law Enforcement Officers." *Law Officer*, 10:1-3.

Maddan, Sean, J. Mitchell Miller, Jeffery T. Walker, Ineke H. Marshall. 2011. "Utilizing Criminal History Information to Explore the Effect of Community Notification on Sex Offender Recidivism." *Justice Quarterly*, 28(2):303-324.

Moak, Stacy C., Jeffery T. Walker, and Gavin Lee. 2011. "Does the Shoe Fit? Using Child Pornography Laws to Respond to Sexting." *International Journal of Crime, Criminal Justice, and Law*, 5(1):35-52.

Walker, Jeffery T. and Stacy C. Moak. 2010. "Child's Play or Child Pornography: The Need for Better Laws Regarding Sexting." *ACJS Today*, XXXV(1):1-9.

Maddan, Sean, Jeffery T. Walker, and J. Mitchell Miller. 2009. "The BMI as a Somatotypic Measure of Physique: A Rejoinder." *Social Science Journal*, 46(2): 394-401.

Walker, Jeffery T. and Kilby Raptopulous. 2008. "Journal Editors and Journal Writers: Service vs. Publications as a Measure of Faculty and Department Productivity." *Journal of Criminal Justice Education*, 19(2):251-274.

Walker, Jeffery T. 2008. "Ecological Theory and Complex Systems: The Future of Criminology." *Crime Patterns and Analysis*, 1(1):75-96

Maddan, Sean, Jeffery T. Walker, and J. Mitchell Miller. 2008. "Does Size Really Matter?: A Reexamination of Sheldon's Somatotypes and Criminal Behavior." *Social Science Journal*, 42(2):330-344.

Vásquez, Bob E., Sean Maddan, and Jeffery T. Walker. 2008. "The Influence of Sex Offender Registration and Notification Laws in the United States: A Time Series Analysis." *Crime and Delinquency*, 54(2):175-192.

Walker, Jeffery T., Ronald G. Burns, Jeffrey Bumgarner, and Michele Bratina. 2008. "Federal Law Enforcement Careers: Laying the Groundwork," *Journal of Criminal Justice Education*, 19(1):110-135.

Walker, Jeffery T. 2007. "Advancing Science and Research in Criminal Justice/Criminology: Complex Systems Theory and Non-Linear Analyses." *Justice Quarterly*, 24(4):555-581.

Walker, Jeffery T. 2007. "Eliminate Residency Restrictions for Sex Offenders." *Criminology & Public Policy*, 6(4):863-870.

Hartley, Richard D., Sean Maddan, and Jeffery T. Walker. 2006. "Sentencing Practices Under the Arkansas Sentencing Guideline Structure." *Journal of Criminal Justice*, 34(5):493-506.

Miller, J. Mitchell, Holly E. Ventura, Sean Maddan, and Jeffery T. Walker. 2003. "Academic-Led Delinquency Prevention Program Delivery: An Overview of the Southern Region Violence and Substance Abuse Prevention Center Approach." *Journal of Criminal Justice*, 26(2):177-201.

Walker, Jeffery T. and Kristi M. McKinnon. 2003. "*Atwater et. al v. City of Lago Vista*: Police Authority to Make Warrantless Misdemeanor Arrests." *Journal of Contemporary Criminal Justice*, 19(2):239-252.

Vandiver, Donna M. and Jeffery T. Walker. 2002. "Female Sex Offenders: An Overview and Analysis of 40 Cases." *Criminal Justice Review*, 27(2):284-300.

Walker, Jeffery T., James W. Golden, and Amy C. VanHouten. 2001. "The Geographic Link between Sex Offenders and Potential Victims: A Routine Activities Approach." *Justice Research and Policy*, 3(2):15-33.

Walker, Jeffery T. and John A. Boyeskie. 2001. "The Discourse of Criminality: From Beccaria to Postmodernism--Why Does It Matter?" *Critical Criminology*, 10(2):107-122.

Walker, Jeffery T. and Candis A. Loveless. 1999. "Yes, The Police Are In Chaos." *Police Forum*, 9(1):9-15.

Walker, Jeffery T. 1998. "The Role of a Literature Review in Publication." *Journal of Criminal Justice Education*, 9(2):iii-vi.

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Walker, Jeffery T. 1995. "Cyberconferencing." *Journal of Criminal Justice Education*, 6(2):337-341.

Walker, Jeffery T., Bill Watt, and E. Ashley White. 1994. "Juvenile Activities and Gang Involvement: The Link between Potentially Delinquent Activities and Gang Behavior." *Journal of Gang Research*, 2(2):39-50.

Walker, Jeffery T. 1994. "Fax Machines and Social Surveys: Teaching an Old Dog New Tricks." *Journal of Quantitative Criminology*, 10(2):181-188.

Walker, Jeffery T. 1994. "The Virtual Visiting Professor." *The Criminologist*, 19(2):6-7.

Walker, Jeffery T. and Louie C. Caudell. 1993. "Community Policing and Patrol Cars: Oil and Water or a Well-Oiled Machine?" *Police Forum*, 3(3):1-9.

Walker, Jeffery T. 1993. "New Beginnings for ACJS Today." *ACJS Today*, 11(4):1-3.

Fyfe, James J. and Jeffery T. Walker. 1991. "*Garner* Plus Five Years: An Examination of Supreme Court Intervention and Legislative Prerogatives." *American Journal of Criminal Justice*, 14(2):167-188.

del Carmen, Rolando and Jeffery T. Walker. 1990. "Supreme Court Removes Roadblocks to DWI Enforcement." *Police Liability Review*, 2:4-6.

Books, and Book Chapters

Hasan, Ragib, Yuliang Zheng, and Jeffery T. Walker. 2020. Digital Forensics Education Modules for Judicial Officials (pp 46-60). In Kim-Kwang Raymond Choo, Tommy Morris, Gilbert L. Peterson, and Eric Imsand (eds) *National Cyber Summit (NCS) Research Track*. Switzerland: Springer Nature.

Walker, Jeffery T. and Sean Maddan. 2020 *Statistics in Criminal Justice and Criminology: Analysis and Interpretation*, Fifth Edition. Sudbury, MA: Jones and Bartlett, Inc. First Edition, 1999; Second Edition, 2005; Third Edition 2009; Fourth Edition, 2013.

del Carmen, Rolando and Jeffery T. Walker. 2020. *Briefs of Leading Cases in Law Enforcement*, Tenth Edition. New York, NY: Routledge Publishing. First Edition, 1991; Reprint with revisions, 1993; Second Edition, 1995; Third Edition, 1997; Fourth Edition, 2000; Fifth Edition, 2004; Sixth Edition, 2006; Seventh Edition, 2008 Eighth Edition, 2012; Ninth Edition, 2015.

Walker, Jeffery T. and Craig Hemmens. 2019. *Legal Guide for Police*, Eleventh Edition. Newark, NJ: Lexus-Nexus. Seventh Edition, 2008; Eighth Edition, 2010; Ninth Edition, 2011; Tenth Edition, 2015.

Walker, Jeffery T. and Grant R. Drawve. 2018. *Foundations of Crime Analysis: Data, Analyses, and Mapping*. New York, NY: Routledge Publishing.

Walker, Jeffery T. and Rick Dierenfeldt. 2014. "The Restriction and Likely Elimination of the Exclusionary Rule." In Craig Hemmens (ed.) *Current Legal Issues in Criminal Justice*. New York, NY: Elsevier Publishing.

Burkey, Chris, Tusty ten Bensel, Jeffery T. Walker. 2013. *Forensic Investigations of Sex Crimes*. New York, NY: Elsevier Publishing.

Bohm, Robert M. and Jeffery T. Walker (eds.). 2012. *Demystifying Myths in Crime and Criminal Justice*, Second Edition. London: Oxford Press. First Edition, 2005.

Walker, Jeffery T. and Sean Maddan. 2011. *Understanding Statistics for the Social Sciences, Criminal Justice, and Criminology*. Burlington, MA: Jones and Bartlett.

Walker, Jeffery T. (ed.). 2011. *Social, Ecological, and Environmental Theories of Crime*. Farnham, England: Ashgate Publishing Limited.

del Carmen, Rolando V., Craig Hemmens, Valerie Bell, David Brody, Sue C. Collins, Claire A. Nolasco, Jeffery T. Walker, and Marvin Zallman. 2010. *Criminal Procedure and the Supreme Court*. Lanham MD: Rowman & Littlefield Pub., Inc.

Maddan, Sean and Jeffery T. Walker (eds.). 2010. *Criminology and Criminal Justice: Theory, Research Methods, and Statistics.* Sudbury, MA: Jones and Bartlett Publishers.

Walker, Jeffery T. 2010. "Advancing Science and Research in Criminal Justice/Criminology: Complex Systems Theory and Non-Linear Analyses." Reprinted *Justice Quarterly* article in Bruce A. Arrigo and Dragan Milovanovic (eds.) *Postmodernist and Post-Structuralist Theories of Crime*. Surrey, United Kingdom: Ashgate Publishers.

Maddan, Sean, Jeffery T. Walker, and J. Mitchell Miller. 2010. "Physique, Somatotypes, and Crime." In Thomas J. Hickey (ed.), *Taking Sides: Clashing Views in Crime and Criminology*, Ninth Edition. Columbus, OH: McGraw-Hill.

Walker, Jeffery T. 2009. "Child Lures." In Janet K. Wilson (ed), *The Praeger Handbook of Victimology*. Santa Barbara, CA: Praeger.

Walker, Jeffery T. 2009. "Terrorism." In Janet K. Wilson (ed), *The Praeger Handbook of Victimology*. Santa Barbara, CA: Praeger.

Walker, Jeffery T. 2009. "Social Disorganization." In *21st Century Criminology: A Handbook*, ed. J. Mitchell Miller. Thousand Oaks, CA: Sage.

Walker, Jeffery T. and Ken Randall. 2004. "School Violence in America: Is it Safe To Go To School?" *In Deaf Education at the Dawn of the 21st Century: Old Challenges, New Directions*, Robert K. Rittenhouse (ed.). Hillsboro, OR: Butte Publications

Walker, Jeffery T. (ed.). 2002. *Policing and the Law*. Upper Saddle River, NJ: Prentice Hall.

Walker, Jeffery T. 2002. "Laws of the State and the State of Law: The Relationship between Police and Law." In *Policing and the Law*. Jeffery T. Walker (ed.). Upper Saddle River, NJ: Prentice Hall.

Golden, James W. and Jeffery T. Walker. 2002. "That Dog Will Hunt: Canine Assisted Search and Seizure." In *Policing and the Law*. Jeffery T. Walker (ed.). Upper Saddle River, NJ: Prentice Hall.

Teeter, Thomas A., Janet L. Bailey, Don D. Cherepski, John Faucett, Robert J. Hines, Nickolas S. Jovanovic, Pete Tschumi, Jeffery T. Walker, and Gretchen B. Watson. 1999. *Preparing for a New Century: Information Technology*. ERIC Document Number ED433021.

Walker, Jeffery T. 1997. "Re-Blueing the Police: Technological Changes and Law Enforcement Practices." In *Contemporary Policing: Personnel, Issues, and Trends*, M. L. Dantzker (ed.). Boston: Butterworth-Heinemann.

Walker, Jeffery T. 1993. "Human Ecology and Social Disorganization Revisit Little Rock." Pp. 46-78 in *Varieties of Criminology*, Gregg Barak (ed.). New York: Pegmon Press.

Walker, Jeffery T. 1993. *Ecology and Youth Activities*, Washington D. C.: National Criminal Justice Reference Service.

Non-Peer Reviewed Publications (indicates student coauthor)*

Walker, Jeffery T. 2021. "Ecological Fallacy." *Encyclopedia of Research Methods and Statistical Techniques in Criminology and Criminal Justice*. J. C. Barnes and David R. Forde (eds.). Hoboken, NJ: John Wiley and Sons, Inc.

Walker, Jeffery T. 2019. Social Disorganization. In *Encyclopedia of Urban and Regional Studies*. Hoboken, NJ: Wiley-Blackwell Publishers.

Walker, Jeffery T. and Thomas Zawisza.* 2014. "Social Disorganization Theory." *Encyclopedia of Theoretical Criminology*, J. Mitchell Miller (ed.). Hoboken, NJ: John Wiley and Sons, Inc.

Miller, Ashley* and Jeffery T. Walker. 2009. "Singer Michael Jackson Charged with Child Molestation." In *Great Events from History: Modern Scandals*, Carl L. Bankston III (ed.). Pasadena, CA: Salem Press.

Walker, Jeffery T. and Jennifer Hutchinson.* 2009. "Atherton Report Exposes San Francisco Police Corruption." In *Great Events from History: Modern Scandals*, Carl L. Bankston III (ed.). Pasadena, CA: Salem Press.

McSherry, Joseph B. and Jeffery T. Walker.* 2009. "Singer R. Kelly is Acquitted on Child Pornography Charges." In *Great Events from History: Modern Scandals*, Carl L. Bankston III (ed.). Pasadena, CA: Salem Press.

Walker, Jeffery T. and Phillip J. Hammons.* 2009. "Anti-Drug Abuse Acts." In *Encyclopedia of Race and Crime*, Helen Taylor-Greene and Shaun L Gabbidon (ed.). Thousand Oaks, CA: Sage.

Walker, Jeffery T. and Joseph B. McSherry.* 2009. "Drug Cartels." In *Encyclopedia of Race and Crime*, Helen Taylor-Greene and Shaun L Gabbidon (ed.). Thousand Oaks, CA: Sage.

Walker, Jeffery T. and Tusty Zorah.* 2008. "U.S. Marshalls of the Old West." In *Icons of Crime Fighting*, Jeffrey B. Bumgarner (ed.). Westport CT: Greenwood Press.

Walker, Jeffery T. and Kilby Raptopulous.* 2008. "J. Edgar Hoover." In *Icons of Crime Fighting*, Jeffrey B. Bumgarner (ed.). Westport CT: Greenwood Press.

Zohra, Tusty* and Jeffery T. Walker. 2008. "Post Shooting Review." In *Encyclopedia of Police Science*, Jack R. Green (ed.). New York, NY: Routledge.

Walker, Jeffery T. and Tusty Zohra.* 2008. "Air India Flight 182." In *The Eighties in America*. Pasadena CA: Salem Press.

Walker, Jeffery T. and Kilby Erwin.* 2008. "Gangs in the 1980s." In *The Eighties in America*. Pasadena CA: Salem Press.

Walker, Jeffery T. and Nicholas Ten Bensel.* 2008. "Tylenol Murders." In *The Eighties in America*. Pasadena CA: Salem Press.

Walker, Jeffery and Amy C. VanHouten.* 2004. "Deadly Force". In *Encyclopedia of Criminology*, Richard A. Wright and J. Mitchell Miller (ed.). New York: Taylor and Francis, Publishers.

Walker, Jeffery T. and Kim Holland.* 2004. "Drug and Alcohol Testing". In *Encyclopedia of Law Enforcement*, Larry E. Sullivan (ed.). Thousand Oaks, CA: Sage Publishing, Inc.

Walker, Jeffery T. and Matthew Pate. 2004. "Keeping Focused on Neighborhood Watch." *Sheriff*, 56(3):44-45 &.

Reprinted in Ohio Crime Prevention Association Newsletter, April, 2005.

Walker, Jeffery T. 2003. "School Violence". In *Encyclopedia of Juvenile Justice*, ed. Marilyn D. McShane and Frank P. Williams III. Thousand Oaks, CA: Sage Publishing, Inc.

Walker, Jeffery T. 1996. "Crime." In *Encyclopedia of Modern Social Issues*. Pasadena CA: Salem Press.

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TECHNICAL REPORTS AND OTHER PUBLICATIONS

Maddan, Sean, Ineke H. Marshall, and Jeffery T. Walker. 2006. *The Efficacy of Sex Offender Registration and Notification Laws in Arkansas: Utilizing Criminal History Information to Explore Sex Offender Recidivism*. Little Rock, AR: Arkansas Crime Information Center.

Maddan, Sean, Gwen Ervin-McLarty, Jeffery T. Walker, and Richard D. Hartley. 2006. *An Examination of the Link between Alcohol Availability and Violent Crime in Arkansas*. Little Rock, AR: Arkansas Crime Information Center.

VanHouten, Amy C., Bob E. Vasquez, Sean Maddan, Jeffery T. Walker, and Gwen Ervin-McLarty. 2005. *An Examination of the Incidence of Deaths in Relation to Police Custody in Arkansas.* Little Rock, AR: Arkansas Crime Information Center.

Walker, Jeffery T. and Amy L. Proctor. 2004. *Audit of Criminal History Records of the Arkansas Crime Information Center*. Little Rock, AR: University of Arkansas, Little Rock.

Murray, Rebecca K., Sean Maddan, and Jeffery T. Walker. 2004. *Examining the Spatial Nature of Methamphetamine Related Crime in Conway, Arkansas*. Little Rock, AR: Statistical Systems, Inc.

Walker, Jeffery T., Sean Maddan, Amy C. VanHouten, and Gwen Ervin-McLarty. 2004. *The Influence of Sex Offender Registration and Notification Laws in the United States*. Little Rock, AR: Arkansas Crime Information Center.

Walker, Jeffery T., Richard D. Hartley, Sean Maddan, Amy C. VanHouten, and Gwen Ervin-McLarty. 2004. *Measuring the Nature and Scope of Sentencing Practices in the State of Arkansas*. Little Rock, AR: Arkansas Crime Information Center.

Walker, Jeffery T. and Amy C. VanHouten. 2001. Wrote content for National Sheriff's Association web page USAONWATCH, which promoted using Neighborhood Watch to fight terrorism.

Walker, Jeffery T., James W. Golden, and Gwen Ervin-Mclarty. 2001. *Free to Burglarize: The Affects of Pretrial and Preincarceration Release of Burglars in Burglary Activity.* Little Rock, AR: Arkansas Crime Information Center.

Walker, Jeffery T. 2000. *Recruiting in the Sprit of Service*. Washington, D.C.: Police Foundation.

Walker, Jeffery T. and Gwen Ervin-Mclarty. 2000. *Sex Offenders in Arkansas: Characteristics of Offenders and Enforcement of Sex Offender Laws*. Little Rock, AR: Arkansas Crime Information Center.

Walker, Jeffery T. and James P. Woodie. 1995. *CPR Training: Law Enforcement Opinion in Arkansas*. Little Rock, AR: Arkansas Law Enforcement Training Academy.

Golden, James W., Jeffery T. Walker, and Heather N. Craig. 1995. *Law Enforcement Agency Growth in Arkansas: A Comparison*. Little Rock, AR: Criminal Justice Institute.

Walker, Jeffery T., Robert M. Berry, and Lee Colwell. 1994. *Defining Small, Non-Urban and Rural Law Enforcement Agencies*. Little Rock, AR: Criminal Justice Institute.

Walker, Jeffery T. and Heather N. Craig. 1993. *Crime and Policing in Little Rock, Arkansas: A Report of the Findings of the 1993 Little Rock Community Policing Survey*. Little Rock, AR: Little Rock Police Department.

Arkansas Institute of Government, Criminal Justice Institute, and Little Rock Police Department. 1993. *Little Rock Police Department Patrol Overtime Evaluation*. Report to the City of Little Rock on using overtime to increase police presence in the city.

Walker, Jeffery T. 1992. *Crime and Policing in Little Rock, Arkansas: A Report of the Findings of the 1992 Little Rock Community Policing Survey*. Little Rock, AR: Little Rock Police Department.

PROFESSIONAL PAPERS PRESENTED

Hasan, Ragib, Yuliang Zheng and Jeffery T. Walker. "Digital Forensics Education for Judicial Officials." Paper presented at the Annual Meeting of the National Cyber Summit, Huntsville, AL June 2020.

Walker, Jeffery T., Stacy C. Moak, Lindsay Leban, and Susan Davies. "Putting the Social in Social Determinants of Health." Paper presented at the Annual Meeting of the American Society of Criminology; San Francisco, CA, November 2019.

Walker, Jeffery T. "Mapping is not Geospatial Analysis." Paper presented at the Built Environment Symposium. Birmingham, AL, November 2019.

Walker, Jeffery T. "The Supreme Court and the Fourth Amendment." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; New Orleans, February 2018.

Walker, Jeffery T., Stacy C. Moak, and Joyce Vance. "Criminalization of Poverty." Paper presented at the Annual Meeting of the Peace and Justice Studies Association; Birmingham, AL, October 2017.

Walker, Jeffery T. "Supreme Court Decisions Related to the Fourth Amendment." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Denver, CO, March 2016.

Walker, Jeffery T. "Career Planning for Promotion to Full Professor." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Denver, CO, March 2016.

Walker, Jeffery T. "Criminological Research and Complexity." Paper presented at the Public Policy, Self-Organization, and Public Space meeting, Auburn AL, November 2015.

Walker, Jeffery T. "Supreme Court Decisions Related to the Fourth Amendment." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Orlando, FL, March 2015.

Dierenfeldt, Rick, Jeffery T. Walker, and Stacy C. Moak. "Food Deserts, Crime, and Neighborhood Context." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Orlando, FL, March 2015.

Moak, Stacy and Jeffery T. Walker. "Neighborhood Studies: An Interdisciplinary Approach to Examining the Ways in which Art and History Create Community Identity to Reduce Crime and Delinquency." Poster presented at the Annual Meeting of the Environmental Criminology and Crime Prevention Symposium, The Netherlands, June 2014.

Walker, Jeffery T. "Supreme Court Decisions Related to the Fourth Amendment." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Philadelphia, PA, March 2014.

Zawisza, Thomas and Jeffery T. Walker. "Mixing Police Enforcement with Design." Paper presented at the Annual Meeting of the American Society of Criminology; Atlanta, GA, November 2013.

Drawve, Grant, Kyle A. Burgason, Thomas Zawisza, and Jeffery T. Walker. "Social Disorganization: A Risk Terrain Modeling Approach." Paper presented at the Annual Meeting of the American Society of Criminology; Atlanta, GA, November 2013.

Walker, Jeffery T. and Stacy C. Moak "Bohemian Rhapsody: The Creative Class and Stable Communities." Paper presented at the Annual Meeting of the Environmental Criminology and Crime Prevention Symposium, Philadelphia, PA, July 2013.

Drawve, Grant and Jeffery Walker. "Arrest Likelihood and Routine Activities Theory." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Dallas, TX, March 2013.

Walker, Jeffery T. "Supreme Court Decisions Related to the Fourth Amendment." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Dallas, TX, March 2013.

Thomas, Shaun, Stacy Moak, and Jeffery Walker. "Disproportionate Minority Contact and Community Context: The Role of Racial and Symbolic Threat." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; New York, NY, March 2012.

Walker, Jeffery T. "Supreme Court Decisions Related to the Fourth Amendment." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; New York, NY, March 2012.

Walker, Jeffery T. and Stacy C. Moak. Surfing and Foraging Behavior of Sexual Predators on the Internet. Paper presented at the 16th Annual World Congress of Criminology; Kobe, Japan, August 2011.

Walker, Jeffery T. Pushing Phase Space Boundaries: Propositions for a Theory of Neighborhoods as Complex Dynamic Systems. Paper presented at the Annual Meeting of the Environmental Criminology and Crime Prevention Symposium, Durban, South Africa, July 2011.

Lee, Chang Hun, Stacy Moak, and Jeffery T. Walker. "Effects of Self/Social-Control, Prior Delinquency and Perceived Peer Pressure on Sexting Behavior among South Korean Youths." Paper presented at the Annual Meeting of the American Society of Criminology; San Francisco, CA, November 2010.

Walker, Jeffery T. and Stacy C. Moak. 2010. The Move from Surfing to Foraging: The Beginnings of a Model of Foraging Behavior of Sexual Predators on the Internet. Paper presented at the Annual Meeting of the Environmental Criminology and Crime Prevention Symposium, Brisbane Australia, July 2010.

Walker, Jeffery T. "Supreme Court Decisions Related to the Fourth Amendment." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; San Diego, CA, February 2010.

Walker, Jeffery T. "Computer Crimes." Paper presented at the Annual Meeting of the Arkansas Criminal Justice Association; Malvern, AR, January, 2010.

Walker, Jeffery T. "Sexting." Paper presented at the Annual Meeting of the Arkansas Criminal Justice Association; Malvern, AR, January, 2010.

Walker, Jeffery T. and Stacy C. Moak. "The Beginnings of Chaos: Establishing Complexity in Criminology." Paper presented at the Environmental Criminology and Crime Analysis Symposium; Brasilia, Brazil, July, 2009.

Walker, Jeffery T. "The Supreme Court, Terrorism, and The Fourth Amendment." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Boston, MA, March 2009.

Moak, Stacy C., Lisa Hutchinson, and Jeffery T. Walker. 2008. "Comparing Dual System-Involved Youth in Arkansas: Do Differences Exist Between Dependent Youth Who Commit Delinquent Acts and Youth Who Enter the Court Directly Through Delinquency Referrals?" Paper presented at the Annual Meeting of the Southern Criminal Justice Association; New Orleans, LA, October 2008.

Walker, Jeffery T. "The Fourth Tribe: A Metatheory of Environmental Criminology." Paper presented at the Environmental Criminology and Crime Analysis Symposium; Anchorage, AK, July 2008.

Walker, Jeffery T. "The Supreme Court and Criminal Justice: Decisions of the 2007 Term." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Cincinnati, OH, March 2008.

Walker, Jeffery T. "The Influence of Terrorism on Law Enforcement and Corrections." Paper presented at the Annual Meeting of the Arkansas Criminal Justice Association; Hot Springs, AR, January 2008.

Walker, Jeffery T. "The Beginnings of Chaos: Developing and Examining Preliminary Data for Building a Complex Systems Model of Criminal Behavior." Paper presented at the Annual Meeting of the American Society of Criminology; Atlanta, GA, November 2007.

Walker, Jeffery T. "A Call to Advance Science and Research in Criminal Justice: Complex Systems Theory and Non-Linear Analyses." Presidential Address presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Seattle, WA, March 2007.

Walker, Jeffery T. and Kilby Raptopoulos. "Journal Writers: Publication v. Service as a Measure of Faculty and Department Productivity." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Seattle, WA, March 2007.

Pate, Matthew, Jeffery T. Walker, and James W. Golden. "Mobility and Change in Crime Hotpots: A Spatial and Temporal Analysis." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Seattle, WA, March 2007.

Lee, Gavin, Sean Maddan, and Jeffery T. Walker. "Serial Killers: Specifying a Theoretical Model for An Extreme Outlier." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Seattle, WA, March 2007.

Walker, Jeffery T. "The Geographic Link Between Sex Offenders and Potential Victims: A Routine Activities Approach." Paper presented at the Grand Rounds, College of Public Health, University of Arkansas Medical Sciences, 2007.

Maddan, Sean and Jeffery T. Walker. "Southern Comfort: The Relationship between the Availability of Alcohol and the Southern Subculture of Violence in Arkansas." Paper presented at the Annual Meeting of the American Society of Criminology; Los Angeles, CA, November 2006.

Walker, Jeffery T. "The Supreme Court and Criminal Justice: Decisions of the 2005 Term." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Baltimore, MD, March 2006.

Walker, Jeffery T. and James W. Golden. "Is the Fox Guarding the Henhouse? Sex Offenders, Housing Restrictions, and Targets of Opportunity." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Baltimore, MD, March 2006.

Walker, Jeffery T. "Complex Systems and Criminological Theory: Is it Time to Explore Phase Space?" Paper presented at the Annual Meeting of the American Society of Criminology; Toronto, Canada, November 2005.

Walker, Jeffery T. and James W. Golden. "Box Stores and Mom and Pops: Mixed Use Areas, Revitalization, and Crime." Paper Presented at the Annual Meeting of the American Society of Criminology; Toronto, Canada, November 2005.

Golden, James W. and Jeffery T. Walker. "Box Stores and Mom and Pops: Analysis of Business and Crime in Neighborhoods in Little Rock." Paper presented at the Arkansas GIS User's Forum, Hot Springs, AR, November 2005.

Burns, Ronald, Jeffery T. Walker, and Michele Bratina. "A Student Guide to Careers in Federal Law Enforcement." Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice; Oklahoma City, OK, September 2005.

Walker, Jeffery T. "Releasing Data to the Public: The Role of the Media." Paper presented at the Annual Meeting of the American Society of Uniform Crime Reporting Programs; Little Rock, AR, September 2005.

Walker, Jeffery T. "The Role of Academic Institutions and Organizations in Combating Terrorism. Invited presentation at the Turkish Conference on Democracy and Global Security; Istanbul, Turkey, June 2005.

Vásquez, Bob E., Sean Maddan, Amy C. VanHouten, and Jeffery T. Walker. "Registration and Notification: An Interrupted Time Series Analysis of the Efficacy of Sex Offender Laws in the U.S." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Chicago, IL, March 2005.

Walker, Jeffery T. "The Supreme Court and Criminal Justice: Decisions of the 2004 Term." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Chicago, IL, March 2005.

Maddan, Sean, Amy C. VanHouten, and Jeffery T. Walker. "Examining the Incidence of Deaths in Relation to Police Custody." Paper presented at the Annual Meeting of the American Society of Criminology; Nashville, TN, November 2004.

Maddan, Sean, Richard D. Hartley, Amy C. VanHouten, and Jeffery T. Walker. "Measuring the Nature and Scope of Sentencing Practices in the State of Arkansas." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Las Vegas, NV, March 2004.

Walker, Jeffery T. "The Supreme Court and Criminal Justice: Decisions of the 2003 Term." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Las Vegas, NV, March 2004.

Walker, Jeffery T., Sean Maddan, and Amy C. VanHouten. "The General Deterrent Properties of Sex Offender Registration and Notification Laws." Paper presented at the Annual Meeting of the American Society of Criminology; Denver, CO, November 2003.

Walker, Jeffery T. "Gradeless Student Assessment in Graduate Programs in Criminal Justice." Paper presented at the Annual Meeting of the Midwestern Criminal Justice Association; Chicago, IL, October 2003.

Miller, J. Mitchell, Jessica L. McGowan, Holly E. Ventura, and Jeffery T. Walker. "Academic-Led Delinquency Program Delivery: An Examination of the Southern Region Violence and Substance Abuse Prevention Center Model." Paper presented at the Annual Meeting of the Southern Criminal Justice Association; Nashville, TN, September 2003.

Walker, Jeffery T. "Making the Grade: Moving Graduate Criminal Justice Courses to a Gradeless System of Assessment." Paper presented at the Annual Meeting of the Southern Criminal Justice Association; Nashville, TN, September 2003.

Walker, Jeffery T. "Mapping Your Future: Using AIBRS Data and GIS for Crime Analysis." Paper presented at the Annual Meeting of the Arkansas Incident Based Reporting System Conference; Little Rock, AR, September 2003.

Walker, Jeffery T. "Terrorism and Law Enforcement in Arkansas Post 9/11". Paper presented at the meeting of the Arkansas Terrorism Task Force (U.S. Attorney for the Eastern District of Arkansas); Little Rock, AR, July 2003.

Walker, Jeffery T. "Terrorism and Weapons of Mass Destruction: Myths and Realities". Paper presented at the Annual Meeting of the Arkansas Criminal Justice Association; Hot Springs, AR, May 2003.

Walker, Jeffery T. "Recent Supreme Court Decisions Concerning Pornography and Drug Arrests". Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Boston, MA, March 2003.

Walker, Jeffery T. "The New War: Using the Military to Combat Terrorism". Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Boston, MA, March 2003.

Walker, Jeffery T. "Call To Arms! Homeland Defense against Terrorism in America." Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice; San Antonio, TX, October 2002.

Walker, Jeffery T. "Supreme Court Decisions in 2001 Concerning Search and Seizure." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Anaheim, CA, March 2002.

Maddan, Sean, Amy C. VanHouten, and Jeffery T. Walker. "On the Register: The Efficacy of Sex Offender Registration Laws in Arkansas." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Anaheim, CA, March 2002.

Walker, Jeffery T. and Amy C. VanHouten. "Crime and Poverty in the Delta." Paper presented at the Annual Meeting of the American Society of Criminology; Atlanta, GA, November 2001.

Golden, James W. and Jeffery T. Walker. "Sex Offenders and Geographic Information." Paper presented at the Annual Meeting of the Arkansas Geographic Information Association; Lake DeGray, AR, October 2001.

Walker, Jeffery T. "Recent Supreme Court Cases in Policing." Roundtable at the Annual Meeting of the Southwestern Association of Criminal Justice; San Antonio, TX, October 2001.

Vandiver, Donna M. and Jeffery T. Walker. "Female Sex Offenders in Arkansas: Characteristics and Trends of Offending". Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Washington, DC, March 2001.

Walker, Jeffery T. "Hiring in the Spirit of Service". Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Washington, DC, March 2001.

Walker, Jeffery T., James W. Golden, and Amy C. VanHouten. "Sex Offenders and Potential Targets: A Routine Activities Approach Using GIS Analysis." Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice; El Paso, TX, October 2000.

Walker, Jeffery T. and Tammy C. Williams "Mommy Is It Safe To Go To School?: School Violence in America" Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; New Orleans, LA, March 2000.

Walker, Jeffery T. "Nuggets of Gold and Rivers of Numbers: Data Requirements for Chaos and Complexity." Paper presented at the Annual Meeting of the American Society of Criminology; Toronto, Canada, November 1999.

Walker, Jeffery T. "Distance Education: The Need for System-Wide Agreement." Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice; Dallas, TX, October 1999.

Walker, Jeffery T. "Sex Offenders in Rural Areas: Characteristics and Differences from Urban Offenders." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Orlando, FL, March 1999.

Walker, Jeffery T. and Candis A. Loveless. "Yes, The Police are in Chaos." Paper presented at the Annual Meeting of the American Society of Criminology; Washington, D.C., November 1998.

Walker, Jeffery T. "The Forgotten Ones: Criminology and Game Law Violators." Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice; San Antonio, TX, October 1998.

Walker, Jeffery T. "Virtual Paper: Term Papers, Tests and Thesis Completion in Distance Learning." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Albuquerque, NM, March 1998.

Walker, Jeffery T. "The Future of Education: Distance Education and the Dumbing Down of Higher Education" Presented at the Annual Meeting of the Southwestern Association of Criminal Justice; Corpus Christi, TX, October, 1997.

Walker, Jeffery T. "Non-Linear Analysis for Neighborhood Research: A Theoretical Model and Design." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Louisville, KY, March 1997.

Walker, Jeffery T. "Chaos Theory and Social Disorganization: Breaking New Ground." Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice; Tucson, AZ, September 1996.

Walker, Jeffery T. "Social Disorganization and Chaos Theories: A New Paradigm for Neighborhood Analysis of Crime." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Las Vegas, NV, March 1996.

Walker, Jeffery T. "Setting the Stage: Productivity of Doctoral Program Graduates." Presented at the Annual Meeting of the Southwestern Association of Criminal Justice; Houston, TX, October 1995.

Walker, Jeffery T. "Computer Applications in Teaching." Didactic Seminar presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Boston, MA, March 1995.

Walker, Jeffery T. "Social Ecology and Crime: A Planning Consideration". Presented at the Annual Meeting of the Arkansas Chapter of the American Planning Association; Hot Springs, AR, February 1995.

Walker, Jeffery T. "Surfing the World: The Use of the Internet to Conduct a Global Criminal Justice Conference.'" Presented at the Annual Meeting of the Southwestern Association of Criminal Justice; Hot Springs, AR, October 1994.

Walker, Jeffery T. "The Evolution of Gang Formation: What Do We Know About Why Juveniles Join Gangs?" Presented at a meeting of the FBI Retired Agents Association; Little Rock, AR, May 1994.

Walker, Jeffery T. "Police and Correctional Use of Force: Legal and Policy Standards and Implications." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Chicago, IL, March 1994.

Walker, Jeffery T. "A Combined-Arms Approach for Preventing Juvenile Crime." Paper presented at the Arkansas Juvenile Violence Conference (Sponsored by the Office of Juvenile Justice Delinquency Prevention); Little Rock, AR, March 1993.

Walker, Jeffery T. "A Multimedia Walk Through the Criminal Justice System: A Teaching Tool." Paper presented at the Annual Meeting of the American Society of Criminology; Phoenix, AZ, October 1993.

Walker, Jeffery T. "Reflections on 'Rethinking' the 'New Criminology.'" Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice Educators; Dallas, TX, October 1993.

Walker, Jeffery T. "DOS and DOS Applications in Law Enforcement." Paper presented in the Criminal Justice Institute Seminar Series; Little Rock, AR, August 1993.

Walker, Jeffery T. and Louie C. Caudell. "Community Policing and Patrol Cars: Oil and Water or a Well-Oiled Machine?" Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Kansas City, March 1993.

Walker, Jeffery T. "Police Use of Force: Legal and Administrative Survival in the 1990's." Paper presented in the Criminal Justice Institute Seminar Series, Little Rock, AR, January 1993.

Walker, Jeffery T. "Ecology and Youth Activities: An Individual Level Analysis." Paper presented at the Annual Meeting of the American Society of Criminology; New Orleans, LA, November 1992.

Walker, Jeffery T. "Computer Mapping in Criminal Justice Research." Paper presented at the Annual Meeting of the American Society of Criminology; New Orleans, LA, November 1992.

Walker, Jeffery T. "Fax Machines and Social Science Surveys: Teaching an Old Dog New Tricks." Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice; Grand Junction, CO, October 1992.

Walker, Jeffery T. "Shaw and McKay Revisit the City of Little Rock, Arkansas." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Pittsburgh, PA, March 1992.

Walker, Jeffery T. "Putting It All Together: Integrating Computer Technology for Effective Documents." Paper presented at the Annual Meeting of the American Society of Criminology; San Francisco, CA, November 1991.

Walker, Jeffery T. "Community Policing: Is This the Education Requirement We've Been Looking For?" Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice; San Antonio, TX, October 1991.

Walker, Jeffery T. "The Future of Law Enforcement: Hot Spots, Community Policing, and Urban Environments" Paper presented at a meeting of FBI Retired Agents Association; Little Rock, AR, October, 1991.

Walker, Jeffery T. "Are You Drunk: A Demonstration of Field Sobriety Testing." Presented at the Annual Meeting of the Arkansas Criminal Justice Association; Little Rock, AR, August 1991.

Walker, Jeffery T. "Community Oriented Policing in the 90's: Viability for Federal Law Enforcement." Presented at the Annual Meeting of the FBI National Academy Associates, Petit Jean, AR, July 1991.

Walker, Jeffery T. "Hot Spots or Concentric Rings: The Human Ecology of Delinquency in the 90's." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Nashville, TN, March 1991.

Walker, Jeffery T. "Computers, Statistics, and Other Useless Tools in Criminal Justice Education." Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice; El Paso, TX, October 1990.

Walker, Jeffery T. "Deadly Force: Legality, Practices, and Liability." Paper presented in the Criminal Justice Institute Seminar Series; Little Rock, AR, April 1990.

Walker, Jeffery T. "One Man's Terrorist . . .: An Examination of the Ideology and Criminality of National and International Terrorists Groups." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Denver, CO, March 1990.

Walker, Jeffery T. "The Impact of Assignment on Police Stress." Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice; Corpus Christi, TX, October 1989.

Walker, Jeffery T. "An Examination of the Impact of the *Garner* Decision on State Statutes." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences; Washington, DC, March 1989.

Walker, Jeffery T. "Sentencing Guidelines: Overview and Effect." Paper presented at the Annual Meeting of the Southwestern Association of Criminal Justice; Corpus Christi, TX, October 1988.

EDITORIAL AND JOURNAL EXPERIENCE

2018 - 2021	Editorial Board *American Journal of Criminal Justice*
2018 - Present	Editorial Board *Justice Evaluation Journal*
2018 - 2020	Editorial Board *International Journal of Cybersecurity Intelligence and Cybercrime*
2015 - Present	Editorial Board *Criminal Law Bulletin*
2015 - 2020	Editorial Board *Journal of Criminal Justice and Law*
2015 - 2016	Editorial Board

Technology and Crime

2013 – 2017 Editorial Board
Journal of Forensic Investigations

2012 - 2015 Editorial Board
Journal of Intelligent Systems

2012 - 2015 Scientific Board
Probation Junior (International Journal for Young Scholars)

2007 - 2011 Editor
Crime Patterns and Analysis

2007 - 2009 Editorial Board
21st Century Criminology: A Reference Handbook
Sage Publications

2004 - 2007 Editorial Board
Journal of Crime and Justice

2003 - 2008 Editorial Board
The Southwest Journal of Criminal Justice

2000 - 2003 Editor in Chief
Critical Criminology

1996 - 1999 Editor
Journal of Criminal Justice Education

1992 - 1997 Editor
ACJS Today

1992 - 1997 Editorial Board
Journal of Gang Research

1991 - 1994 Editor
The Informant (Arkansas Criminal Justice Association)

1989 - 1990 Assistant Editor
Criminal Justice Research Bulletin

SERVICE TO DISCIPLINE BASED ORGANIZATIONS AND AGENCIES

2021 - Present Executive Committee
Center for Clinical and Translational Science

2021	Reviewer National Science Foundation Smart and Connected Cities Panel (Health)
2021	Member Homewood Alabama, police use of force task force
2021	Member Alabama Aeronautical High School Board
2021	Member Mayor's Police Use of Force Policy Task Force City of Homewood, Alabama
2019 - Present	Participating Member Birmingham United Neighborhoods, which supports blight reduction and neighborhood improvement in 8 neighborhoods in Birmingham.
2019 - 2020	Board Member Link and Lease – nonprofit helping provide housing for homeless people coming out of rehabilitation programs.
2018 - 2020	Southern Commonweal Community Engagement Collaborative Collaborative of public health efforts at southeastern region schools
2018	Facilitator Local Public Health Assessment Jefferson County Department of Health
2018	Reviewer National Science Foundation Smart and Connected Cities Panel
2018 - 2019	Member Birmingham Safe Neighborhoods Task Force U.S. Attorney and Birmingham Mayor's Office
2018 - 2020	Member Birmingham Mayor's Task Force on Police Innovation
2018 - Present	Member, Board of Directors Alabama Crime Stoppers
2016 - 2020	Member, Academic Advisory Council National Cybersecurity FFRDC

2016 - 2018	Member, Stakeholder Group SHAPE BHM Community group funded by PEW Foundation to improve the economic and social conditions in Birmingham, AL.
2016 - 2018	Steering Committee Member Alabama Healthy Homes Initiative
2016 - 2017	Member My Brother's Keeper Alliance, Birmingham
2015 - 2017	Board Member One Roof Organization for Homeless Relief in Alabama
2015 - 2017	Chair Supervisory Training Development Committee Metropolitan Criminal Justice Executives Association
2015 - Present	Instructor Criminal Justice Investigator Seminar Training for police and private investigators in northern Alabama.
2013 - 2015	Participating Member Clinton Health Matters Initiative Committee to renew U.S. cities (created and overseen by President Bill Clinton).
2012 - 2015	Instructor Little Rock Police Department Academy
2008	Peer Reviewer National Science Foundation
2007 - 2009	Member School and University Safety Resource Center Advisory Board National Sheriff's Association
2007 - 2009	Member Appointed by Governor to Arkansas Legislative Task Force on Criteria and Qualifications for Chiefs of Police
2007 - 2008	Chair/Facilitator

Blue Ribbon Commission on Public Safety
City of Benton, Arkansas

2007 Member
Pulaski County Jail Task Force Committee
University of Arkansas, Little Rock

2005 - 2007 Member
Strategic Prevention Framework, State Incentive Grant Advisory Committee

Member, State Epidemiological Workgroup

2005 - 2011 Member
Research Advisory Committee
International Association of Chiefs of Police

2003 - 2006 Board Member
Arkansas Incident Based Reporting System Advisory Council

2000 - 2003 Member
Community Justice Commission
City of Bryant, Arkansas

2000 - 2001 Member
Taskforce on Domestic Violence
Arkansas Coalition Against Domestic Violence

2000 - 2001 Member
Vision Little Rock
City of Little Rock, Arkansas

1999 - 2000 Member
National Advisory Council on Distance Learning

1995 - 1999 Member
Maumelle Civil Service Commission

Chair 1997 - 1999
Secretary 1995 - 1997

1995 - 1998 Member
Advisor's Committee on Juvenile Research
Arkansas Advocates for Children

1995	Peer Reviewer National Institute of Justice
1994 - 1996	Instructor Arkansas Law Enforcement Training Academy
1994 - 1995	Member Governor's Task Force on Law Enforcement
1994 - 1995	Member Urban Revitalization Development Committee City of Little Rock, Arkansas
1994	Appointed by Governor to Working Group for Law Enforcement Issues
1993 - 2003	Commissioner Appointed by Governor to Arkansas Commission on Law Enforcement Standards and Training
1993	Developed a curriculum and delivered a course in investigation, searching, and seizing computers that was attended by 17 officers from the Arkansas State Police.
1993	Served as a member of a team in a joint project with the Little Rock Police Department, the Arkansas Institute of Government, and the Criminal Justice Institute to evaluate the effectiveness of paying overtime for officers to make additional patrols in the city.
1991	Little Rock Police Department, Chief and Staff Officers Developed training program and briefed the Chief command staff on requirements for implementing community policing.

CONSULTING EXPERIENCE

2019 - 2020	Data Analyst ShapeBham Joint effort of the Regional Planning Commission of Greater Birmingham and the City of Birmingham. Duties included gathering data and conducting complex analyses to rank neighborhoods in Birmingham across 40 different characteristics.
2018	Expert Witness Alabama Office of Indigent Defense Counsel Expert witness in matters of reasons for criminality in life without

Parole sentences.

2018 — Expert Witness
Jefferson County, Alabama Public Defender's Office
Expert witness in matters of adolescent development in relation to life without parole sentences.

2017 - 2018 — Expert Witness
Alabama Office of Indigent Defense Counsel
Expert witness in matters of reasons for criminality in life without Parole sentences.

2017 - 2018 — Technical Assistance Provider
Office of Justice Programs
Provided technical assistance in Center Point, Alabama to collect and analyze data, developing an understanding of the crime and police conditions in the city, and inform policy for effective change.

2017 — Expert Witness
Law Offices of Hall and Davis, Bessemer, Alabama
Expert witness in matters of adolescent deviance and crime, gangs, and prison behavior.

2016 - 2017 — Expert Witness
Law Offices of Aiken and Bridges, Florence, South Carolina
Expert witness in matters of police use of deadly force and suicide by cop.

2015 - 2016 — Expert Witness
Law Offices of Kirby Riffle, Pocahontas, Arkansas
Expert witness if matters of eyewitness testimony, interrogation, and criminal investigations

2011 — Expert Witness
Law Offices of John Wesley Hall, Little Rock, Arkansas
Expert witness in a case involving computer forensic analysis of child pornography

2005 - 2009 — Expert Witness
Page, Scranton, Sprouse, Tucker and Ford P.C., Columbus, Georgia
Expert witness in a case involving police use of deadly force

2005, 2009 — Expert Witness
Federal District Court, Eastern District of Arkansas
Expert witness in matters of terrorism, concealed weapons, and

safety on commercial aircraft

2001 - 2007 Trainer/Consultant/Researcher
National Sheriff's Association
Provided training, guidance, and research in community policing, police liability, mental health, and weapons of mass destruction

2001 - 2002 Expert Witness
Duncan, Rainwater, and Associates, Little Rock, Arkansas
Expert witness in issues of private security and liability

1998 - 2003 Trainer/Consultant/Researcher
Police Foundation/Community Policing Consortium
Provided training, guidance, and research in community policing

1996 - 1998 Expert Witness
Alaniz and Schrader, Houston, Texas
Expert witness in cases concerning demographics and ecological structure of population areas

1994 - 1998 Expert Witness
Rose Law Firm, Little Rock, Arkansas
Expert witness in cases considering the impact of high crime areas on physical and psychological well-being

1994 - 1995 Expert Witness
Hoover, Doughtery, and Kooistra, Little Rock, Arkansas
Expert witness in cases concerning patterns of community characteristics generally and as they relate to crime and ATM crimes

1993 - 1994 Technical Advisor
United States Department of Justice
International Criminal Investigation Training and Assistance Program
Developed a management information system for the Colombian Attorney General's Office

1993 Consulting Expert/Expert Witness
Welch, Mathis, and Adcock, Little Rock, Arkansas
Consulting expert and expert witness in the areas of police policies and procedures, police training, arrest procedures, and police use of force

1991 - 1995 Instructor
Law Enforcement Management Institute

	Instructor in supervision and management courses for police officers in the ranks of sergeant to chief of police
1991 - 1993	Computer Consultant U.S. Bureau of Justice Statistics Search Group
1991	Computer Consultant Ninth Judicial District Drug Task Force
1990 - 1992	Computer Consultant Arkansas Drug Task Force Commission
1990	Mountain Home City Council Member of a team of consultants advising the Mountain Home city council on revision of rank, position, and salary of police and fire officers
1990	Little Rock Police Department Joint Hostage Negotiation and SWAT Team Training Served in planning and executing a hostage situation for training of the critical incident teams of the Little Rock Police Department

PROFESSIONAL ASSOCIATIONS

American Society of Criminology

Member	1992 - Present
Chair, Mentoring Committee	2020 - 2021
Faculty Mentor	1994 - Present
Community/Crime Division, Publication Committee	2017- 2019
Mentoring Committee	2013 - 2015
Mentor of the Year Committee	2013 - 2014
Nominations and Elections Committee	2009 - 2010
Awards Committee, Critical Criminology Division	2004 - 2005
Secretary/Treasurer, Critical Criminology Division	1999 - 2001
Program Committee Member	1998 – 1999

Academy of Criminal Justice Sciences

Member	1988 - Present
President	2006 - 2007
First Vice President	2005 - 2006
Second Vice President	2004 - 2005
Secretary	2000 - 2002
Chair, Bruce Smith Award Committee	2016 - 2017
Nominations and Elections Committee Member	1996 - 1997, 2008 - 2009

Teller Committee	2013 - 2014
Awards Committee Member	2012 – 2013, 2018 - 2020
JCJE Editor Selection Committee Member	2007 - 2008
JQ Editor Selection Committee Member	2009 - 2010
Publications Committee Member	1996 - 1997
Program Committee Member	1995 - 1996, 2010 - 2011, 2011 - 2012
Secretary/Treasurer of Police Section	1994 - 1996
Chair, Police Section Membership Committee	1994 - 1996
Secretary, Critical Criminal Justice Section	2009 - 2001
Chair, Critical Criminal Justice Election Comm	2010 - 2011

Southern Criminal Justice Association

Member	2003-2004
	2008-2012
	2015 - Present

Metropolitan Criminal Justice Executives Association

Member	2015 - Present
President	2019 - Present
Vice President	2018 - 2019
Treasurer	2017 - 2018

Southwestern Association of Criminal Justice

Member	1988 - 2015
President	1994 - 1995
First Vice President	1993 - 1994
Second Vice President	1992 - 1993
Secretary/Treasurer	1991 - 1992
Secretariat	1990 - 1992

Arkansas Criminal Justice Association

Member	1991 - 2015
President	1994 - 1995
First Vice President	1993 - 1994
Second Vice President	1992 - 1993
Secretary/Treasurer	1991 - 1992
Board Member	2002 - 2006, 1998-2000, 2010-2012
Chair, Annual Conference Committee	1992 - 1994
Chair, Publication/Public Relations Committee	1992 - 1993

Honor Society Membership

Phi Kappa Phi – National Honor Society
Pi Gamma Mu – International Social Science Honor Society

Order of the Sword and Shield – National organization representing the Homeland Security, Intelligence, Cyber Security, and Protective Security disciplines.

DISSERTATION COMMITTEE SERVICE

2018 - 2019 Committee Member
Johnathan Adams
PhD, Developmental Psychology, University of Alabama, Birmingham

2018 - 2019 Committee Member
Keith Chichester
PhD, Medical/Clinical Psychology, University of Alabama, Birmingham

2018 - 2019 Committee Member
Michael Lipscomb
PhD, Systems Engineering, University of Alabama, Birmingham
Information Provisioning in Community Resource Systems

2017 - 2019 Committee Member
Arsh Aorah
PhD, Systems Engineering, University of Alabama, Birmingham
Do Not Judge Ransomware By Its Extension

2017 - 2019 Committee Member
Darrell Fielder
PhD, Systems Engineering, University of Alabama, Birmingham
Transdisciplinary Problem-Solving Using Convergence-Based Engineering Modeling and Communication Theory

2017 Committee Member
Rocio Roles
PhD, Criminal Justice, University of Arkansas, Little Rock
Serving Their Country and Their Communities: An Exploratory Study of the Impact of Military Presence on County-Level Crime Rates

2016 Chair
Brittani McNeal
PhD, Criminal Justice, University of Arkansas, Little Rock
An Application of General Strain Theory to Prison Misconduct and Recidivism

2016 Committee Member
Rick Dierenfeldt
PhD, Criminal Justice, University of Arkansas, Little Rock

Disentangling the effects of violent subculture and structure: A multi-level analysis of race-specific gun violence in urban U.S. counties.

2015 Chair
Grant Drawve
PhD, Criminal Justice, University of Arkansas, Little Rock
A Multilevel Approach to Recidivism: The Role of Risk for Criminal Opportunities at the Neighborhood Level

2015 Committee Member
Alesa Liles
PhD, Criminal Justice, University of Arkansas, Little Rock
Female Homicide Offenders: A Mixed Methods Life Course Examination.

2015 Committee Member
Chris Rush Burkey
The Effects of Residency Restrictions on Sex Offenders and the Community

2014 Chair
Thomas Zawisza
PhD, Criminal Justice, University of Arkansas, Little Rock
Campus and Community Crime: Journey-To-Crime and Hot Spot Analysis of Crimes Occurring Around a University.

2014 Committee Member
Kyle Burgason
PhD, Criminal Justice, University of Arkansas, Little Rock

2012 Chair
Gavin Lee
PhD, Criminal Justice, University of Arkansas, Little Rock
An Examination of the Correlates of Prison Misconduct in the Arkansas Prison System.

2005 Outside Reader
Rebecca Deering
D. Psychology, Deakin University, Australia
Female Perpetrated Child Sexual Abuse: Impact, Professional Perspectives, and Management

UNIVERSITY SERVICE

University of Alabama, Birmingham

2020	Chair Search Committee, Chair of Department of Anthropology
2020	Member Search Committee, Chair of Department of Psychology
2019	Member Philosophy Promotion and Tenure committee for Professor Chan.
2019	Member College of Arts and Sciences Alumni Awards Committee
2019	Member Tenure Committee, Arie Nakhmani Department of Electrical and Computer Engineering
2018	Chair Search Committee, Chair of Political Science /Public Administration
2018	Reviewer Community Health Scholars Grant Program School of Public Health
2018	Member Tenure Committee, Karthikeyan Lingasubramanian, Department of Electrical and Computer Engineering
2016 - 2019	Member University-Wide Community Engagement Task Force Member; External Relations Subcommittee
2016	Reviewer Community Health Scholars Grant Program School of Public Health
2015 - 2017	Member Search Committee, Chair of Sociology
2015 - 2017	Member Research Capacity Building Committee
2015 - Present	Member Executive Risk Oversight Committee

College of Arts and Sciences

University of Arkansas, Little Rock

2014 - 2015	Chair Chair's Council
2013 - 2014	Chair Task Force on Program Alignment
2013	Chair Chancellor's Committee on Campus Safety
2013	Member Chair's Task Force on University Reorganization
2012 - 2013	Chair Athletic Academic Support Committee
2011 - 2012	Member Assessment Committee College of Professional Studies
2011	Member Tenure Committee for Karen Russ University of Arkansas, Little Rock Library
2010	Member Research Strategic Planning Committee
2010	Member Student Research Symposium Committee
2010	Member Pedestrian Safety Committee
2008	Member Campus Safety Committee
2007 - 2008	Member Equity and Student Athlete Well-Being Subcommittee NCAA Self Study Committee
2007 - 2009	Member Acquisition, Discovery, & Application of Knowledge self-study subcommittee for North Central Accreditation

2007 - 2009	Member Tenure Policy Committee
2007 - 2009	Member Appeals Committee
2006 - 2007	Member Campus Continuity in Emergencies Committee
2005 - 2007	Member Faculty Roles and Rewards Task Force Chair, Rewards Subcommittee
2004 - 2008	Member University District Task Force Chair Public Safety Workgroup
2004 - 2005	Member University Student Identification Number Conversion Committee
2003 - 2004	Member Professional Development Courses Task Force College of Professional Studies
2001 - 2003	Faculty Advisor UALR Criminal Justice Society
2001	Member Ad Hoc Committee on Graduate Academic Code
2000 - 2002	Member Tenure Committee
2000	Member University Network Security Committee
1999 - 2001	Member Faculty Research Committee 2000 - 2001 Chair
1998 - 1999	Member Chancellor's Information Technology Committee

1998 - 1999	Member Distance Education Policy Committee
1998 - 2001	Member Distance Learning Committee
1996 - 1999	Member Graduate Council 1998 - 1999 Vice Chair
1996 - 1998	Member University Tenure Committee
1996 - 1998	Member University Appeals Council
1996 - 1997	Member University Core Assessment Committee
1995 - 1997	Member and Chair University Traffic Committee
1995 - 1997	Member University Urban Grants Committee
1994 - 1996	Member University Faculty Senate
1994 - 1997	Member Behavioral Standards Committee
1994 - 1995	Member Assessment Planning and Review Committee Chair, Subcommittee on University Data for Assessment
1994 - 1995	Member Assessment Resource Group
1993 - 1995	Member and Chair Faculty Research Committee
1993 - 1994	Member and Chair College of Professional Studies Faculty Council
1993	College Representative Graduate Council Review Committee

1992 - 1995	Mentor--TEAM Level III *Teaching Enhancements Affecting Minority Students*
1992 - 1994	College Representative and Vice Chair Provost's Computing Advisory Committee
1991	Faculty Mentor Ron McNair Project
1990 - 2015	Departmental Liaison University Library Committee

Other Institutions

2016	External Program Reviewer Department of Criminal Justice Sul Ross University
1998	External Program Reviewer Department of Criminal Justice University of Texas at Brownsville
1994	Accreditation Reviewer College of Social and Behavioral Sciences University of Tennessee at Chattanooga

INVITED LECTURES AND PRESENTATIONS

March	2019	"Building Community and Learning from the Past" Birmingham Progress Club
February	2018	You have to know your place: Geography and Crime University of West Georgia
February	2018	Association of Certified Fraud Examiners Meeting Cybercrime and Cybersecurity
May	2017	Crime as a Public Health Issue Civitan International Lecture Series
April	2017	Non-Linear Dynamics, Neighborhood Deterioration, and Crime Pennsylvania State University, Willkes-Barre

March	2017	UAB Geographic Information Systems Users Group Presentation on use of social and crime data in geographic analyses.
June	2016	Crime as a Public Health Issue: The Interaction of Social, Economic, Physical, and Geographic Influences of Neighborhoods Civitan International Lecture Series
April	2016	Medical Education Speaker's Network Presentation on Human Trafficking
April	2016	School of Engineering Research Colloquium Complex Systems and Neighborhood Change
June	2012	Invited Speaker Asian Forum of Corrections Seoul, Korea
April	2011	Honors Convocation Speaker Sam Houston State University
March	2010	Invited Lecturer Criminology Speaker Series University of Tampa
June	2008	Invited Lecturer Modeling of Complex Social Systems Program Simon Fraser University, Canada
February	2007	Invited Lecturer University of Texas San Antonio
April	2004	Invited Lecturer Alpha Phi Sigma Annual Lecturer Series University of South Carolina

MEDIA INTERVIEWS

Over 300 media interviews and community presentations in Arkansas from 1989 – 2015.

October	2015	WBRC Fox 6 Evening News Interview concerning cybersecurity jobs and computer crime
July	2015	WVTM Nightly News

		Interview concerning traffic stop in Texas that turned confrontational
July	2015	Al.Com Newspaper Interview concerning biological/social influences for multiple family members who are convicted of murder
September	2015	WBRC Fox 6 Evening News Interview concerning murder trends in Birmingham
September	2015	WBRC Fox 6 Evening News Interview concerning school shooting in Oregon and what can be done to prevent such occurrences
December	2015	The Weld Newspaper Interview concerning violence prevention efforts in Birmingham Alabama and its potential influence on gun crime
December	2015	NBC13 Nightly News Interview concerning return on investment of taxpayer dollars to a police department.
February	2016	WBHM Issues and Ales Panel Discussion Panel discussion on crime and responses to crime in Birmingham
March	2016	WBHM's News Radio Panel on Crime in the Greater Birmingham Area
April	2016	WBRC and UAB Panel on education in the Alabama prison system
June	2016	WBRC Fox 6 Evening News Interview concerning relationship between heat and crime
January	2017	WVTM Special Report Live interview during concerning hostage situations during a hostage situation at a bank in Tuscaloosa, AL
March	2017	WBRC Fox 6 Evening News Interview concerning credit card skimming at ATMs Also aired on local NPR Additional interview aired a second night
March	2017	*Kaleidoscope* Interview concerning rising crime levels in Birmingham.

April	2017	*Birmingham Times* Interview concerning public health and crime.
April	2017	*B Metro* Interview concerning neighborhoods and crime.
April	2017	*Weld* Interview concerning poverty, education, and crime nexus.
May	2017	WBRC Nightly News Interview concerning sex offenders returning to the community following release from prison.
November	2017	WBRC Nightly News Interview concerning Digital Forensics program at UAB and careers in technology for high school students.
June	2018	UAB News Interview concerning safety on vacation and in hotels.
August	2018	WBRC Nightly News Interview concerning ability of sex offender registry to accurately maintain address records for sex offenders.
October	2018	Fox 6 News Interview concerning fake chain mail messages on Facebook Messenger.
October	2018	ABC 33/40 Evening News Interview concerning iPhone Security.
January	2019	WIAT-TV CBS 42 Evening News Interview of impact of police shootings on people's interest in becoming a law enforcement officer.
February	2019	Fox 6 News Interview concerning court decision overruling parts of the Alabama sex offender law.
May	2020	WBRC Nightly News Interview concerning enforcement of Corona Virus shelter in place laws.
June	2020	WBRC Nightly News

		Interview concerning protests and how police agencies can move forward to improve race relations.
June	2020	Fox 6 News Interview concerning defunding or dismantling police agencies.
June	2020	Anniston Star Newspaper Interview concerning what restructured police agencies might look like.
June	2020	Fox 6 News Interview concerning police citizen review boards.
June	2020	ABC 33/40 Evening News Live interview on progress of policing in the U.S. in response to protests and calls for police reform.
June	2020	WBRC Nightly News Interview concerning Presidential Executive Order requiring training and changes in police practices.
June	2020	WVTM Nightly News Interview concerning Presidential Executive Order requiring training and changes in police practices.
June	2020	WBRC Nightly News Interview concerning TikTok being used for spying and whether Trump could unilaterally ban the program.
November	2020	Birmingham Watch Interview concerning right-wing elements in law enforcement agencies.
June	2021	WBHM National Public Radio Interview concerning how police can better connect to the Community and reduce crime.

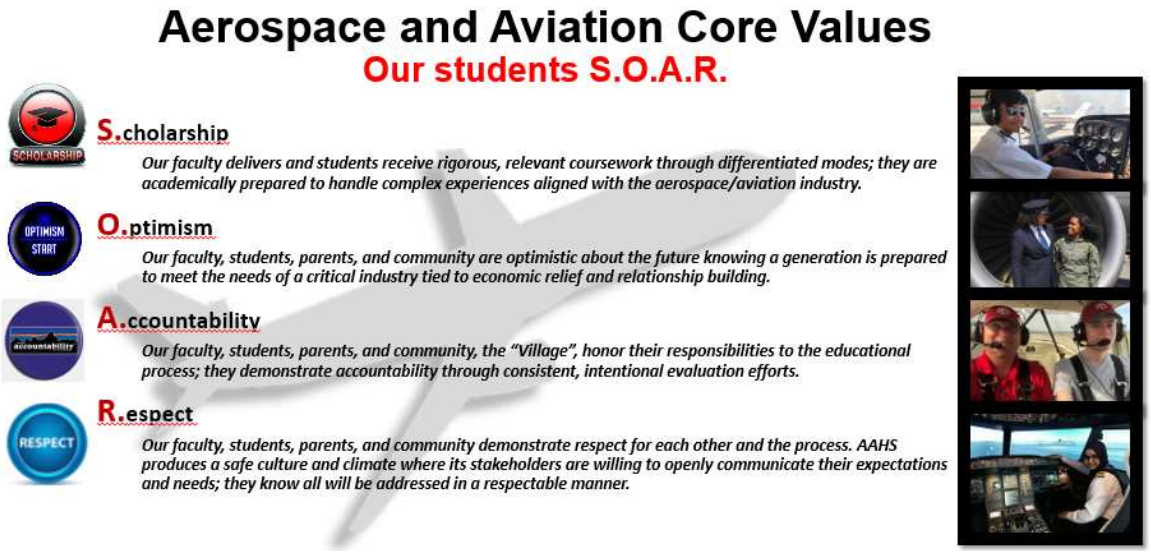
AWARDS AND HONORS

2020	Sam Brown Bridge Builder Award University of Alabama, Birmingham University award for "building bridges among faculty across campus and between the campus and community."

2018	Outstanding Mentor Academy of Criminal Jusitce Sciences
Summer 2019 2017 2015	Invited Visiting Professor Karl Franz University Graz, Austria
2016	Chairman's Award Award for service to the Metropolitan Criminal Justice Executives Association.
2015	Student Choice Award, Faculty Member of the Year University of Arkansas, Little Rock
2010	Faculty Excellence in Research University of Arkansas, Little Rock University award based on national panel examination of faculty research.
2010	Founder's Award Academy of Criminal Justice Sciences National/international award given annually for outstanding contribution to criminal justice/criminology
2008	Delegation Leader Eisenhower Foundation, People to People Criminal justice professional delegation to China
2006	Faculty Excellence Award for Research College of Professional Studies University of Arkansas, Little Rock
2001	Mentor of the Year American Society of Criminology National award given annually to the person voted by students as the best mentor in the American Society of Criminology
1997	Faculty Excellence Award for Research College of Professional Studies University of Arkansas, Little Rock
1995	Frederick M. Thrasher Award National Gang Crime Research Center Presented for outstanding scholarly research in gang activity

Program Overview

The Alabama Aerospace and Aviation High School's overarching goal is to equip and empower the next generation of diverse leaders poised to transform the aerospace and aviation industry by leading from a core set of values focused on **S**cholarship, **O**ptimism, **A**ccountability, and **R**espect. Reflecting these values while meeting all the needs of our diverse student population will require culturally responsive practices grounded by strong content knowledge tied to aligned pedagogical practices, high engagement, and an intentional respect and connection to multiple cultures.[1] Using aerospace and aviation pathways in conjunction with core content instruction provides a substantiated means for our students to learn in ways that are rigorous, engaging, connected, authentic, and technologically advanced, ensuring that they will be adequately prepared for college, the military, or industry-related careers. Our students will S.O.A.R. to new heights by engaging in challenging curriculum and experiences, while filling any individual academic and non-academic foundational gaps; success lies in personalizing student instruction while fostering independence.



Academic Approach

In efforts to address both class and individual student needs, AAHS will follow an academic approach designed to create a common language for teacher and student achievement.[2] Our academic approach provides a cohesive structure made up of proven components, but it is also adaptable so as to work with varying teaching styles, content areas, and student needs (while maintaining the core structure of the framework). Teachers maintain their creativity and autonomy in addressing class and individual student needs, thus personalizing not only the learning experience for students but also the instructional experience for teachers.

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[1] G. Gay. (2002). Preparing for culturally responsive teaching. Journal of Teacher Education, Vol. 53, No. 2

[2] Saskatchewan Education. (2011). Instructional Approaches: A Framework for Professional Practice. Retrieved from https://www.stf.sk.ca/sites/default/files/powerful_instructional_practices_2011.pdf

Industry-Based Education

AAHS students will have the unique opportunity to learn from an industry-based education model that cultivates relevance between academics and actuality. Leveraging support from industry affiliates, the Alabama Community College System, and curriculum development experts, students will cohesively engage and master both industry and Alabama State Course of Study standards. As outlined by the Alabama High School Graduation guidelines, students are required to obtain credits in English Language Arts, Mathematics, Science, Social Studies, Physical Education, Health Education, Career Preparedness, Career and Technical Education and/or Foreign Language and/or Arts Education.

At AAHS, we fully expect our students will enroll at various academic performance levels. However, in addition to our rigorous core curriculum and instructional strategies, our industry-based aerospace/aviation educational model will help mitigate unique student needs. According to Federal Aviation Administration (FAA) research, aerospace curriculum effectively addresses the needs of students in all grade and ability levels. Aerospace and aviation programming provides practical application opportunities in all subject areas. The FAA also recognizes aviation education as a means for schools to meet career preparedness and career technical education requirements; all states have either approved courses in aviation and space curriculum or endorsed its inclusion in curriculum.[3] AAHS has used this industry-based integrated approach to create graduation and industry-aligned credentialed pathways for its students. AAHS believes this approach will help its students not just meet, but exceed performance indicators.

At AAHS, industry-trained teachers and mentors are able to provide the instruction, practice, and assistance needed to help students develop aptitude in information processing and develop the problem-solving skills needed for college and industry-based career success. The Industry-Based Model provides the real-world connections needed to optimize learning. Research shows students who experience connective curriculum outperform those using more traditional approaches. At the high

[3] A Model Aerospace Curriculum - Federal Aviation Administration. Retrieved from https://www.faa.gov/education/educators/curriculum/middle/media/Middle_Model_Aerospace_Curriculum.pdf

school level, students involved in connective learning increased their content knowledge, expanded their technical skills, and positively shifted their attitude towards technology more than their traditional-educated counterparts.

At August Martin High school, a model aviation high school recognized by the Federal Aviation Administration, industry-based learning that includes extended reinforcement activities is seen as an essential element to student success. Numerous studies have found that industry-based learning can promote student learning in all core content areas. Also, Lee Conway, an aviation education research pioneer, provided substantial data to support industry-based methods in connecting academics to advanced education, career opportunities, and soft-skill development.[4] Using an industry-based model, AAHS students will connect academics to industry to life-skills to resilient behaviors-all tied to sustainable success. This cross-curricular industry-related approach will get AAHS students college and career ready!

AAHS believes students should find real-world relevance in what they are learning; this is important for content mastery, application, and retention. Therefore, AAHS will also facilitate and cultivate industry-based apprenticeships, internships, and work-based learning opportunities for all students based on a student selected aviation, aerospace, or defense career pathway. All pathways will satisfy AHSG core and elective requirements for graduation while simultaneously generating either college credit or course requirements for industry-based credentials. Students will acquire tangible evidence of relevance.

Place-Based Education

Alabama Aerospace and Aviation High School will eventually be housed in a state-of-the-art customized new construction on the Bessemer Airport Campus. This provides a unique, exciting opportunity for place-based learning. Place-based learning provides students with opportunities to engage in learning that utilizes the context of the local environment; students are able to use the environment as a learning tool. Traditional school settings often present content that is disconnected from the student's lived experience. However, having tangible access to aircrafts, hangers, equipment, and other industry-based resources, while seeing and hearing actual flights, allows students to make immediate connections to instruction. Students are able to develop relevant expertise and can enhance their communities by proposing solutions to local ecological and social problems.

Place-based learning allows our actual classrooms to be a second teacher. Our place-based model is aligned to curriculum standards. AAHS students will master Alabama Course of Study standards using industry-based practice problems, writing activities, and projects. Both the ALCOS English Language Arts curriculum and our aerospace/aviation curriculum call for mastery in language, reading, writing, speaking, and listening. Modeling, solving equations, mathematical reasoning, working with statistical data are all competences associated with math, science, and industry-based curriculum. Making the social science, history, and economic connection is easy; knowing the history of the field helps students understand why certain rules, regulations, and policies are in place. The aerospace/aviation field drives the global economy by providing necessary logistical functions for the distribution of vital global resources.

[4] Engels, M. et al., "The Confluence Approach: Developing scientific literacy through project-based learning and place-based education in the context of NGSS" 2017, Electronic Journal of Science Education, v23

The Place-Based model provides the ideal setting for interactive instructional strategies. These strategies rely heavily on discussion and sharing among participants. Students learn from peers and teachers to develop social skills and abilities, organize thoughts, make cultural connections, and develop rational arguments. It allows for a range of different types of groupings and interactive methods.[5] Because the school facility mirrors actual aerospace and aviation settings, teachers will be able to not only provide direct instruction but point to in-person examples to facilitate meaningful discussions. When provided with a scenario or problem and with the teacher's aid, students are able to use the environment that considers multiple variables that are not as apparent within text alone. Students are also better able to include multiple hypotheses based on real-time and surrounding conditions. The engagement with the environment and opportunities to explore perspectives will help students develop their problem-solving skills.

As a means of facilitation, AAHS teachers will use direct instruction to provide foundational content. Once the foundation has been laid, students will engage in the experimental instructional approach where they are encouraged to use the investigation process, while using their industry-aligned environment as a springboard for inquiry on how to address an assigned exercise. Teachers will supervise while students manipulate objects in their environment, test hypotheses, and work together to solve or prove something exciting. Students are able to 'see' or 'relate' concepts better, hence contributing to sound conceptions.

Rigorous Classroom Instruction

Research has found a correlation between physical and cognitive strengthening. Consistent concerted activities will increase information retention, productivity, efficiency, and endurance. Mental resistance training is a proven strengthening strategy; it positively impacts cognition functions.[6] Rigorous instruction is based on the principle that the brain will work to overcome a resistance force caused by rigor when it is required to do so. When you employ rigor repeatedly and consistently, your brain becomes stronger.[7] Students with learning deficiencies are able to close the gap and accelerate in verbal reasoning, visual synthesis, and active analysis.[8]

To facilitate "mental resistance training" proven to enhance cognitive performance, AAAHS students will consistently engage in rigorous standards-based academic core area coursework and activities; core areas include English Language Arts, Mathematics, Social Science, and Science--all ALSDE diploma minimum credit hour required areas. However, AAHS students will exceed ALSDE minimum requirements.

Our core area teachers will serve as "cognitive coaches" assisting students in meeting their optimal mental fitness goals; they will be professionally trained to plan and deliver rigorous instruction based on data, best-practice, and individual student needs. They will have high expectations for their

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[5] Akdeniz, Celal. (2016). Instructional Strategies. 10.1007/978-981-10-2519-8_2.

[6] Increasing muscle strength can improve brain function, study says, by University of Sydney, retrieved from https://medicalxpress.com/news/2016-10-muscle-strength-brain-function.html

[7] Hinton, H. L. (1984). The Iowa child welfare research station and the 1940 debate on intelligence: Carrying on the legacy of a concerned mother. Journal of the History of the Behavioral Sciences, 20, 160 – 176

[8] Moxley, Paquette, Elizabeth A., and Gary J. Burkholder. "A Latent Growth Curve Analysis of Precursor Cognitive Abilities and Academic Achievement." *British Journal of Educational Psychology*, vol. 90, no. 1, Mar. 2020, pp. 167–183. *EBSCOhost*, doi:10.1111/bjep.12270

students, even those who may arrive behind; high expectations from teachers are the driving force to providing scaffold instruction and the additional support needed to facilitate rigorous instruction where all students benefit. Teachers will focus on defusing situations where students are overwhelmed more by the complexity of a task rather than the knowledge and skills needed to accomplish it. We will utilize a weekly early dismissal to execute a strategic data-informed professional development scope and sequence for all teachers. All teachers will have personalized professional growth plans tied to our instructional framework. Our instructional leadership team will conduct targeted observation and feedback cycles tied to our professional development scope and sequence. Every teacher in the building will receive specific and targeted feedback on their instruction as well as coaching at least every two weeks.

Through intentional and sustained metacognitive capacity building efforts, rigorous content including Pre-AP, AP, and dual enrollment courses, will be accessible to our students. Ultimately, 100% of AAHS students will take one or more Pre-AP, AP, and/or dual enrollment courses. By leveraging partnerships with the Aircraft Owners and Pilots Association and the Alabama Community College System, at least 90% of our students will complete a credentialed drone and/or pilot license program. Our teachers will utilize scaffold-instructional practices to expose students to rigorous content. AAHS students will not only demonstrate skill development, but demonstrate standards mastery.

Concept Mapping**.** Students will utilize proven instructional methods like "concept mapping" to unlock key content connections utilizing research-based brain science connected to cognitive development.

Intentional Discussion**.** We utilize intentional discussions about the development of the teenage brain to unlock latent cognitive resilience. When students are better able to understand how learning takes place and its direct correlation to the development of the brain, they will be better able to establish successful metacognitive strategies for decision making and learning. Neuroscientist Sarah-Jayne Blakemore argues that students will be better prepared to meet the rigorous requirements associated with complex math, science, and engineering thus preparing them for success in the aerospace and aviation industry.[9]

Rigorous instruction also provides students with key insights into the science of mindsets. Many students who experience stress or a perceived inability to remain focused during instruction can build growth mindset habits of success to combat challenges in conceptual understandings. Students will engage in pre and post reflective exercises cultivating their abilities to organize their thinking and prioritize logical learning progressions. Understanding how to think about learning increases students' core capacity to engage in more rigorous content.[10] This includes college level courses, advanced science, higher level math, and other specialized training programs. Our students will be better prepared to secure industry recognized credentials and be in position to meet the rigorous demands of a post-secondary education.

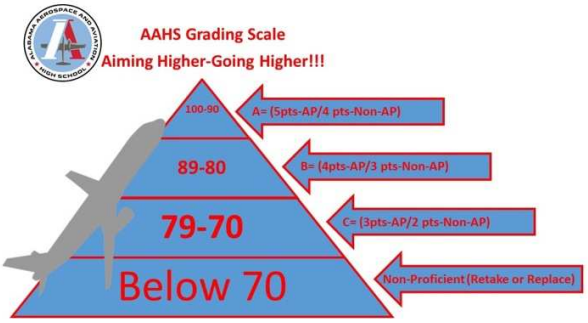
[9] Decoding the Teenage Brain (in 3 Charts), New technologies are shedding light on what really makes adolescents tick—and providing clues on how we might reach them better. https://www.edutopia.org/article/decoding-teenage-brain-3-charts

[10] Willis, Judy and Jay McTighe, *Upgrade Your Teaching,* 2019.

Data-Driven Instruction

AAHS instruction and student achievement will be based on data. Each student will have a personalized "flight plan" where they will know where they are and how they got there at all times. Using formative and summative assessments, students will know whether they are on course or need to adjust through daily exit tickets, weekly "Show What You Know" quizzes, biweekly unit tests, and 6-week interim assessments.

AAHS students will meet weekly with their personal flight crew-comprised of their advisor and teachers-where they will review their informal and formal assessment data, enabling them to track proficiency attainment. AAHS students will complete assignments and assessments that require the application of knowledge and skills thereby authentically gauging levels of proficiency. The Program for International Student Assessment (PISA) sees this as an authentic measure to assess preparedness levels for the challenges of life as young adults.[11] Being proficient is not a choice, but a requirement for AAHS students. An average of 70 or higher must be obtained for course credit awards; our students will be prepared for the challenge.



AAHS believes both academic and non-academic goals should be considered when evaluating culturally responsiveness and the holistic success for students. Below are AAHS top goals for each.

Annual Academic Goals

- AAHS students will achieve an annual increase of 6% in student proficiency on the state test in ELA and Math each year.
- AAHS will outperform the local school district in Math and ELA on the state assessment by at least 3% in student proficiency by the end of year one.
- AAHS students will rank in the top 25% of growth in the state annually and the top 5% by year 3.

Top 2 Annual Non-Academic Goals

- AAHS students will average a 95% daily attendance rate.
- AAHS school culture will receive an 8 out of 10 quarterly according to the positive school culture rubric.

[11] Kelly, Dana, et al. "Performance of U.S. 15-Year-Old Students in Mathematics, Science, and Reading Literacy in an International Context. First Look at PISA 2012. NCES 2014-024." *National Bureau of Economic Research*, Dec. 2013.

Curriculum and Instructional Design

AAHS applies a hybrid approach in creating an ideal learning environment for such a racially and academically diverse student population. Our high rigor, place -based, industry-style program allows AAHS to offer a class model but with independent study applied through student-selected aerospace and aviation majors. In addition, the AAHS 90-minute block periods are designed to include a variety of differentiated instructional methods designed to provide whole-group, team, and personalized experiences where all students feel safe and able to learn, no matter their learning style.

The primary learning environment for foundation building will be classroom-based instruction. However, an AAHS's "classroom" will not be the norm; our classrooms will be outfitted with the latest technology, instructional tools, and innovative furnishings designed for movement and collaboration. Class sizes will reflect an optimal teacher to student ratio where individual academic and social-emotional needs will be detected and addressed; it is important to account for both types of needs in order to enhance the learning process. Addressing personalized needs is very important to AAHS; all other learning environments will address authentic learning interests, foundational gaps, extended practice and/or application, and enrichment. The maximum number of students per classroom environment is based on best practice.

Learning Environment Structure to Size

Learning Environments	Description	Teacher &/or Assistant	Maximum number of Students
Classroom	In an AAHS classroom, there is a mixture of teacher facilitation and student directed learning. Classrooms have one to one technology for all students. The physical space is conducive to small group exploration, hands on learning, and independent practice.	1-teacher	25
Labs	An in-classroom model focused on group exploration. 35 minutes in each 90-minute block is dedicated for small group discussion and tasks. Students drive the learning using peer accountability to complete high-level work.	1-teacher	10
Staff-Student Support	AAHS staff aggressively monitor student learning in the classroom, provide multiple checks for understanding, and use positive staff student relationships to encourage students to produce their best work every day.	1-teacher or assistant	25 students max
Independent Learning	AAHS classrooms grow students' ability to learn independently and produce high quality work with minimal prompting. Students have the ability to practice in AAHS classrooms the work ethic and production quality needed to be leaders in the college classroom and in industry.	Student driven/teacher monitored	25 students max

Industry-based Simulation Rooms	Rooms equipped with industry-specific simulators, machinery, and/or equipment will be used for experiential learning. Students will experience and gather meaning through numerous real-world scenarios. Teachers will control the parameters of this "world" and use them to achieve desired instructional objectives.	1-teacher	5
Resource Classrooms	A separate setting, either a classroom or a smaller designated room, will be used to deliver personalized programs to students, individually or in a small group. Resource rooms are used in a variety of ways ranging from instruction, homework assistance, meetings, or representing students' alternative social space.	1-teacher	6
Dual enrollment	In partnership with 2-year and 4-year colleges, students will have the opportunity to take academic and industry-based courses while receiving college-credit.	Discretion of provider	

AAHS selected the Carnegie Learning Math Solutions for the 9-12 grade math curriculum, the American Reading Company (ARC) for 9-12 English Language Arts curriculum (EdReports links are embedded for CLMS & ARC and are also attached under "Other Attachments"), Houghton Mifflin Harcourt (HMH) for Advanced AAHS Science course, and Houghton Mifflin Harcourt (HMH) for High School Social Studies. The academic focus of Alabama's Aerospace and Aviation High School is to 1) Increase student mastery of content through rigorous curriculum and practice based instruction, 2) aggressively grow all students and build student's academic agency through personalized learning with 1-to-1 technology, and 3) narrow historical gaps between the Math and ELA achievement of African American and Latinx students and their wealthier white counterparts through a high rigor, high support extended-year program. The following curriculum choices were selected for their alignment to AAHS's instructional model and academic goals.

Mathematics Curriculum: Selected for 9th -12th grade Math, Carnegie Learning Math Solutions (CLMS) utilizes an approach which allows AAHS students to grapple with grade level math standards using differentiated strategies and to participate as agents of their own learning. CLMS aligns well with AAHS's instructional model and provides our students with a daily rotation of 30 minutes of independent learning and practice facilitated through CLMS's 1-to-1 coaching software, 30 minutes of collaborative learning in small ability-grouped learning communities based on MAP data, and 20 minutes of live direct instruction delivered by AAHS staff. The 1-to-1 adaptive coaching model as a key feature of the curriculum consistently helped CLMS districts bolster student proficiency on state assessments, and AAHS students will benefit from the individualized support as they each work towards their daily academic goals. The curriculum's formative ongoing assessments provide AAHS math students with regular checks for understanding and their instructors with daily data reports used for making instructional adjustments to accommodate student learning needs. CLMS's blended learning approach assists AAHS students in achieving mastery of grade level standards while progressing at their personal ideal pace.

Research supports AAHS's selection of Carnegie Learning Math Solutions and highlights its impact on learning for high school students demographically similar to AAHS students. Carnegie Learning Math Solutions' blended approach nearly doubled performance on standardized tests relative to typical students, according to a study by the RAND corporation. Likewise, urban, suburban, and rural students from several states scoring at the 50th percentile were able to increase proficiency by 8 percentage points on average. AAHS established a learning model very similar to that of CLMS's most successful districts that included whole-group, small group, and individual learning as primary methods of increasing proficiency rates and growing students.

Literacy Development: AAHS selected the American Reading Company (ARC) for its 9th -12th grade ELA curriculum. For AAHS teachers, ARC provides a "clearer message about reading instruction" aligned to state standards and offers "better supports and resources" for teachers to deliver high quality literacy instruction daily. For students, ARC supports AAHS student literacy development through extensive reading, daily writing, research, and critical analysis. AAHS looks to aggressively grow our students through rigorous literacy instruction and uses ARC to divide ELA lessons into multidisciplinary units of study. The curriculum mirrors AAHS's 90-minute block periods. During the extended ELA block, AAHS students will engage ARC curricular materials in the following ways:

- Read Complex Text (20 minutes)-students engage in whole group reading and intellectual discourse around text and focus standards
- Write to Text (10 minutes)-students engage in writing in a variety of formats translating discussed concepts into written language. Writings may include student/teacher created rubrics.
- Readers' Workshop (40 minutes)-Students self-select high interest level-appropriate books for independent reading while applying the lesson's focus standards
- Writing (20 minutes) -Students engage focus standards through authentic writing tasks targeting research content, tier 3 vocabulary, and academic grammar.

AAHS's 1-to-1 technology model allows each student to take full advantage of ARC's online library and writing templates during independent practice. The blended model of whole class text reading and discussion with more individualized writing and reflection opportunities contributes to AAHS's goal of building students' academic agency. As with CLMS, ARC ensures that AAHS students are regularly assessed as student data is monitored daily by classroom instructors to make momentary intervention decisions.

Research from EdReports informed AAHS's decision for ARC's adoption as the 9th -12th grade ELA curriculum stating that the American Reading Company is one of few companies who meet all requirements for standards alignment and instructional supports for ELA. This curriculum consistently scores 30/32 in "Text Quality" and "Building Knowledge" for 9th-12th grade ELA courses and 33/34 on usability for students and teachers. Usability was in high consideration during the selection process as to not create additional barriers to student learning. AAHS's diverse student population also benefits from ARC's intentionality about creating hospitable learning environments for all students by displaying diversity of race, gender, and ability throughout its curricular texts and its supplemental supports for all ability levels.

Both Carnegie Learning (Math) and ARC (ELA) provide the following:

- interactive dashboards to track student performance (grade, class, and student level)

- computer adaptive lessons, practice, and assessments that support individual student-level pacing and English language learner needs
- instructional resources and platforms to support synchronous and asynchronous learning
- comprehensive reports with explanatory annotations and best-practice strategies
- initial training and on-going professional development, including coaching, for teachers

Science Curriculum: AAHS leadership was guided by the recommendations of the ALSDE in selecting the science and social science curricula. Research on teaching and learning suggests that many students, especially students of color from marginalized communities, too often receive instruction in schools that lack quality instructional resources; this creates an environment where pedagogical decisions are driven by factors such as the classroom management and laborious test preparation. AAHS staff, in response, are equipped with high quality lesson plans and material that are high in rigor, interactive for the learner, grade level appropriate, and aligned to Alabama state standards.

The Houghton Mifflin Harcourt (HMH) science curriculum was selected to assist AAHS students in meeting their academic goals of proficiency and growth. HMH provides engaging presentations, interactive activities, and simulated scientific investigations to bring scientific concepts and principles alive, reinforce students' understanding of biology and science skills, as well as strengthen critical-thinking and problem-solving skills. The HMH curriculum supports our academic efforts at AAHS in building student agency through sustained independent practice that is purposeful and embeds data analysis and inquiry within student activities. Furthermore, it guides teachers in providing rigorous instruction to students daily and using AAHS's data driven practices via an interactive dashboard to aggressively monitor student progress.

The following highlights HMH's offerings aligned to ALSDE high school graduation requirements:

Biology features vocabulary support for students, assessment tools, labs, data analysis, and more. This program has everything needed to bring biology lessons to life.
Modern Chemistry has been trusted by teachers for 100 years and features updates for today's classroom. Problem-solving support and interactive features help students navigate labs and lessons for learning chemistry.
Physics is a comprehensive high school program that features up-to-date content with a supporting Interactive Reader. The text and digital program bring together concepts and problem solving with print and online resources and open-ended labs.
Environmental Science is engagingly designed for students with varied interests and learning abilities and appeals directly to high school students. It uses a digital EcoZine and virtual investigations program that engages learners and builds critical thinking skills for scientific investigation.

To create more robust connections between science instruction and AAHS's diverse student population, research suggests a schoolwide effort in pairing daily science lessons to student interests, prior knowledge, and abilities. Using the HMH curriculum, AAHS teachers have access to numerous teaching strategies aligned to specific topics; this includes extended learning opportunities for students with special needs and gifted abilities. English language learners have access to additional resources and translated text to aid with learning, thus minimizing language as an impediment to academic success at AAHS. AAHS students struggling to close learning gaps will not only have the timely support of AAHS instructors during class but will also have access to our interactive reader tool provided through the HMH curriculum. This feature works as an effective intervention by providing AAHS students all essential reading level content and vocabulary at one to two grades below the text. This further aids the AAHS

team in closing academic gaps, maintaining a focus on exposure to grade level material, and aggressively growing all students. Making real-world connections to content is also important to AAHS. HMH offers access to STEM career exploratory videos and 3-D virtual field trips tied to content. Research suggests that school related factors like rigorous curriculum, student academic engagement, and high expectations are commonly cited as opportunities to learn that are absent from many classrooms serving large populations of culturally and linguistically diverse students. With these resources, student engagement for AAHS students is optimized to promote student achievement.

9-12 Social Studies: AAHS will also use HMH as its Social Studies curriculum provider. AAHS prioritizes a social studies model that meets a college-ready bar of academic rigor, that provides students opportunities for critical group discussion, and that affords students purposeful independent practice for sense making and reflection of historical events. HMH Social Studies materials meet the demands of all three. It provides SS content that affords AAHS students a" solid foundation for excelling in college, career, and civic life", collaborative lessons where students can together "relive" and "re-imagine" past and present events, and "flexibility for students to learn on their own terms through differentiated instruction and interactive tools".

The selected Social Studies curriculum helps AAHS nurture the skills of its students as critical thinkers by utilizing an inquiry-based approach. The selected curriculum provides document-based investigations that require AAHS students to analyze documents and complete cumulative writing performance tasks. Students are prompted to think critically, draw conclusions, and support all conclusions with evidence—all essential college and career readiness skills. Secondary-level Social Studies courses rarely provide adequate hands-on and manipulative activities to the detriment of diverse learners. AAHS's general education students, students with unique learning needs, and English language learners all benefit from the curriculum's use of interactive materials to reinforce key concepts of history and support development in academic writing. Also, AAHS incorporates HMS's interactive learning model as part of the school's culturally responsive teaching strategies which encourages the use of a variety of methods and aids for gradual skill development.

AAHS's data-driven instruction relies on teachers having access to student performance data in real time. The HMH curriculum model uses regular assessments as students are answering questions within the narrative to interpret maps, timelines, and graphs, as well as analyzing literature, primary sources, and perspectives. Secondly, module assessments measure student comprehension using a variety of critical thinking and writing tasks. Lastly, AAHS teachers measure student performance through benchmark and end-of-year assessments provided through HMH with immediate feedback and automatic scoring and reporting.

The following highlight the alignment between HMH Social Studies curricular offerings and the ALSDE high school graduation requirements:

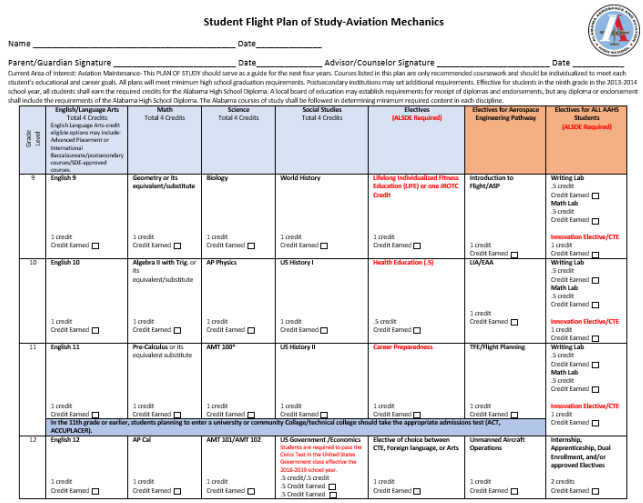
Civics helps foster student civic responsibility through a balanced course that features the principles of government, active citizenship, and responsible economic participation.
American History explores the story of U.S. history, weaving the reflections of people who experienced history firsthand throughout the narrative.
World History provides teachers with a practical and motivational approach to teaching world history and helps students think critically and make global connections.
United States Government is designed to balance the need to cover key, standards-based government topics and motivate students to learn. This course makes our political system meaningful to all students.

Global Geography motivates students to explore current geographic issues to show the relevance of geography to current events. It is organized by physical geography, human geography, and today's issues.

Economics uses a concept-driven and interactive approach to develop economic literacy, utilizing real examples, concept application, and the latest economics news.
Psychology takes into account current psychological theory and current statistics. It offers the tools students need to understand themselves and the world around them with a variety of case studies, group projects, and opportunities for in-depth study.
Sociology leverages current sociological theory and current statistics. The course gives the student the tools they need to discover the meaning behind behavior through a variety of case studies, group projects, and opportunities for in-depth study.

AAHS students and teachers will utilize several industry-based curriculum options to insure relevance and updated standards. Delta Airlines, the Aircraft Owners and Pilots Association, and Cyber Org, AAHS partners, will provide industry-based curriculum to ensure students are properly prepared to meet industry requirements and demands. They have also committed to providing teacher professional development and student experiences. AAHS will offer diverse learning opportunities to address its students' personal needs. This includes Advanced Placement, dual-enrollment, and remediation; students will know AAHS is able to reach them wherever they are. AAHS is excited about the life-changing opportunities its students will have.

Integrating the State's course of study with industry-based curriculum will allow AAHS to provide real-world alignments leading to increased content retention and application; improved academic performance has been linked to students who are able to see connections between core curriculum and life experiences. AAHS students will have a personalized "flight plan" where AHSG required core and elective courses along with industry-based courses are mapped. Students will know what is expected and will have the support of their "flight crew" to track progress and receive specialized help as needed; their flight crew will include a teacher/advisor, counselor, and industry-tied mentor**.**



Student Flight Plan of Study-Aviation Mechanics

Name _____ Date_____

Parent/Guardian Signature _____ Date_____ Advisor/Counselor Signature _____ Date _____

Current Area of Interest: Aviation Maintenance- This PLAN OF STUDY should serve as a guide for the next four years. Courses listed in this plan are only recommended coursework and should be individualized to meet each student's educational and career goals. All plans will meet minimum high school graduation requirements. Postsecondary institutions may set additional requirements. Effective for students in the ninth grade in the 2013-2014 school year, all students shall earn the required credits for the Alabama High School Diploma. A local board of education may establish requirements for receipt of diplomas and endorsements, but any diploma or endorsement shall include the requirements of the Alabama High School Diploma. The Alabama courses of study shall be followed in determining minimum required content in each discipline.

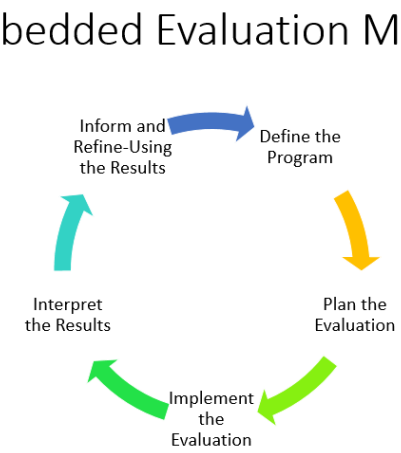
Grade Level	English/Language Arts Total 4 Credits English Language Arts-credit eligible options may include Advanced Placement or International Baccalaureate/postsecondary courses/SDE-approved courses.	Math Total 4 Credits	Science Total 4 Credits	Social Studies Total 4 Credits	Electives (ALSDE Required)	Electives for Aerospace Engineering Pathway	Electives for ALL AAHS Students (ALSDE Required)
9	English 9 1 credit Credit Earned ☐	Geometry or its equivalent/substitute 1 credit Credit Earned ☐	Biology 1 credit Credit Earned ☐	World History 1 credit Credit Earned ☐	Lifelong Individualized Fitness Education (LIFE) or one JROTC Credit 1 credit Credit Earned ☐	Introduction to Flight/ASP 1 credit Credit Earned ☐	Writing Lab .5 credit Credit Earned ☐ Math Lab .5 credit Credit Earned ☐ Innovation Elective/CTE 1 credit Credit Earned ☐
10	English 10 1 credit Credit Earned ☐	Algebra II with Trig. or its equivalent/substitute 1 credit Credit Earned ☐	AP Physics 1 credit Credit Earned ☐	US History I 1 credit Credit Earned ☐	Health Education (.5) .5 credit Credit Earned ☐	LIA/EAA 1 credit Credit Earned ☐	Writing Lab .5 credit Credit Earned ☐ Math Lab .5 credit Credit Earned ☐ Innovation Elective/CTE 1 credit Credit Earned ☐
11	English 11 1 credit Credit Earned ☐	Pre-Calculus or its equivalent substitute 1 credit Credit Earned ☐	AMT 100* 1 credit Credit Earned ☐	US History II 1 credit Credit Earned ☐	Career Preparedness 1 credit Credit Earned ☐	TFI/Flight Planning 1 credit Credit Earned ☐	Writing Lab .5 credit Credit Earned ☐ Math Lab .5 credit Credit Earned ☐ Innovation Elective/CTE 1 credit Credit Earned ☐
	In the 11th grade or earlier, students planning to enter a university or community College/technical college should take the appropriate admissions test (ACT, ACCUPLACER).						
12	English 12 1 credit Credit Earned ☐	AP Cal 1 credit Credit Earned ☐	AMT 101/AMT 102 1 credit Credit Earned ☐	US Government /Economics Students are required to pass the Civics Test in the United States Government class effective the 2018-2019 school year. .5 credit/.5 credit .5 Credit Earned ☐ .5 Credit Earned ☐	Elective of choice between CTE, Foreign language, or Arts 1 credit Credit Earned ☐	Unmanned Aircraft Operations 1 credit Credit Earned ☐	Internship, Apprenticeship, Dual Enrollment, and/or approved Electives 2 credits Credit Earned ☐

AAHS will utilize a 90-minute block scheduling to accommodate instructional strategies, collaborative assignments, research, the use of technology tools, adequate practice, and time-sensitive enrichment/remediation needs. Block scheduling will also allow industry-connected extended experiences including guest presenters and demonstrations. Students will consistently see content come alive.

Evaluation, Review, and Revision of Curriculum

AAHS will use an embedded evaluation plan cycle that regularly evaluates the effectiveness of our curriculum in regards to student learning. Weekly classroom observations from the leadership team and student performance data create quantitative and qualitative measures as we consider our curriculum's

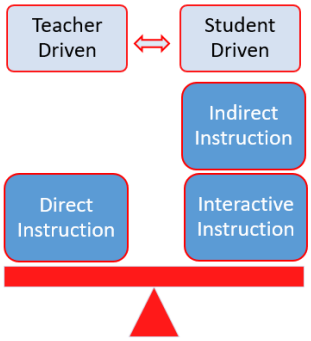
effectiveness. 180 learning hours for AAHS teachers on effective instruction and curriculum implementation ensure that teachers are delivering instruction according to the curriculum. If AAHS fails to see our desired student outcomes and growth, we will consider making a curriculum change. Decisions about possible curricular changes will happen three times a year to ensure that our decision to change or alter curriculum is timely and best supports our students. A prescribed evaluation plan will help AAHS in planning, providing additional resources, and assessing performance at all levels; planned check-ups will also allow AAHS to make adjustments as needed. AAHS will use U.S Department of Education research-based guidelines to build its evaluation plan framework. The figure below illustrates the USDE embedded evaluation process.



Primary Instructional Strategies

AAHS teachers will employ a multitude of tools to facilitate diverse instructional strategies. Using resources and professional training provided by core and industry-based curriculum providers, teachers will provide direct instruction building students' foundational knowledge of core and industry-tied content. Proficiency levels for academic, language, and industry-based objectives will be facilitated through questioning, discussions, guided practice, and independent practice. Teachers will provide opportunities for students to participate in indirect instructional strategies where students take the lead in critical inquiry and problem solving. Students will work through question sets, scenarios, and multi-tiered problems where they must demonstrate their understanding from the foundational to application levels. Finally, students will solidify learning using interactive instructional strategies. Using simulations, labs, team projects, and technology, students will integrate skill sets where they must apply research, critical analysis, and collaboration to complete rigorous core and industry-based coursework. Using a balanced instructional strategy approach leading to increased student involvement will help solidify learning.

Instructional Strategies



Instructional Strategies

AAHS students will come from diverse backgrounds and have diverse learning styles; using diverse instructional approaches is essential to their proficiency attainment. There is strong evidence that a holistic approach where the how, what, and why of teaching are integrated in a meaningful way is needed to engage a diverse student population.[1] To ensure all AAHS student learning styles are attended, teachers will utilize direct, indirect, and interactive instructional strategies. These strategies are needed for teaching to be culturally responsive where inclusion is established, attitudes for learning are developed, meaning is enhanced, and competence is engendered.[2] AAHS teachers will first assess the instructional needs of each student and then align the appropriate strategy with the assessed needs. As essential members of AAHS students' flight crew, the teachers know the content, know their "pilot", and are able to determine appropriate strategies that will help students meet their personal flight plan goals.

Direct Instruction

AAHS students will achieve curricular proficiency while obtaining aerospace/aviation credentials by building foundational knowledge and skills through direct instruction, one of the most effective instructional strategies. They will connect multiple text types and experiences in order to achieve proficiency in both core and industry-related courses. Understanding and applying procedural, technical language is pivotal in the aerospace/aviation field. Direct instructional strategies are particularly effective in helping students understand this language; they supply the initial substance needed to employ additional strategies; this is necessary because of the limited exposure AAHS students may initially have in the aerospace/aviation field. Direct instructional strategies provide the gears necessary to scaffold instruction while gradually shifting and releasing responsibility for completing tasks from the teacher to students.[3] AAHS students will graduate from co-pilot to lead pilot status.

Indirect Instruction

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[1] Ogbu, J. U. (1995). "Understanding Cultural Diversity and Learning." Handbook of Research on Multicultural Education, New York.

[2] Wlodkowski, Raymond & Ginsberg, Margery. (1995). A Framework for Culturally Responsive Teaching. Educational Leadership.

[3] Moore, D., Direct Instruction: Targeted Strategies for Student Success, *National Geographic Learning*, Retrieved from https://ngl.cengage.com/assets/downloads/inside_pro0000000029/am_moore_direct_instr_seb21_0414a.pdf

AAHS students will learn through a continuum of strategies that are more student-centered. Using indirect instructional strategies supported by teachers, students will extend their foundational knowledge and get more involved in the learning process. AAHS teachers will actively seek opportunities to relate teaching content to students' cultural backgrounds. AAHS students will develop contextual meaning through pattern recognitions, critical inquiry, and problem solving. They will build their learning resilience; they gain proficiency by using inductive and deductive indirect instructional strategies to successfully execute rigorous core academic and aerospace/aviation industry-based curriculum.

Interactive Instruction

AAHS students will increase their learning efficiency through interactive instructional strategies. Students are able to learn more through interactive approaches versus traditional approaches.[4] Interactive learning strategies help to motivate and engage students with content. Students are able to establish relevance leading to increased cooperation with the learning process. Technology integration is an effective way to increase interaction.[5] AAHS will be a leader in strategic, meaningful technology use. Computer devices will be supplied at a 1 to 1 ratio. Students will not just receive content through digital platforms, but use technology to conduct research on complex topics, collaborate with teams, complete industry-based projects, and receive personal attention through enrichment and/or remediation software. They will use simulators and the school's physical structure, currently an aviation museum and aircraft hanger, to prepare for industry credential requirements. AAHS students will have advanced interactive capabilities.

Instructional Methods/Teacher Moves[6]

AAHS students will be complex thinkers and real-world problem solvers. Our industry-based education model fluidly incorporates instructional methods that train students to map out step-by-step processes ensuring clear direction, deeper understanding, and increased chances of successful task completion. To make sure students first understand content and how it is woven into rigorous applications, teachers carefully plan to differentiate using multiple scaffold instructional methods for key concepts. They also include varying examples and informal quick assessments in anticipation of student comprehension gaps, misconceptions, and the need for immediate clarification. Through teachers' multi-tiered direct instructional methods, students will build schema around key concepts. Students explore and discover meaning through reflections, discussions, and peer questioning techniques.

AAHS classrooms will be the epicenter of the advanced manufacturing of questions. Students are able to respond to teacher directed questions where they demonstrate their understanding of rigorous content through answers supported by specific evidence. Our classroom culture will be research heavy with students regularly citing evidence from sources to justify approaches and arguments. They learn how to break down complex skills and difficult tasks building the cognitive muscle memory they will need to succeed in college, industry, and/or the career of their choosing.

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[4] Pradono, S. et. al., International Journal of Communication & Information Technology. Retrieved from http://msi.binus.ac.id/commit/ Vol. 7 No. 2 Oktober 2013, pp. 46-48

[5] Matthew, T., (2011) Recognizing Hand Gesture with Microsoft's Kinect, Palo Alto, Department of Electrical Engineering of Stanford University.

[6] Lemov, D (2015) Teach Like a Champion 2.0 – 62 Techniques that put students on the path to college, Jossey-Bass, USA

Teacher Move	Explanation of Move + Benefits	What specifically does it look like in your classrooms?
a) NAME THE STEPS	Champion teachers help their students learn complex skills by breaking them down into steps and often naming those steps. Giving the steps a name helps students recall those steps.	In AAHS classrooms students will deconstruct complex skills through listing out step-by-step processes.
b) BREAK IT DOWN	When encountering new complex content teachers will: ·Provide an example. ·Provide context to help a student who does not understand the content ·Provide the missing (or first) step. ·Eliminate misconceptions	AAHS provides students with rigorous instruction on a daily basis. To help our students internalize new content and master complex tasks, we scaffold rather than give students the answer. We use their prior knowledge and provide scaffolded questions to push them to content mastery.
c) RATIO	The goal is for students to do the majority of the cognitive work.	Classrooms will be 80% student discussion and production with only 20% teacher talk. If students are to display mastery by the end of class, then they need to spend the majority of their time cementing their knowledge and practicing the skill. The ratio in AAHS classrooms allows for students to be active learners as opposed to passive learners.
d) Exit Tickets	Collecting answers to one or a few questions at the end of class in order to gather important information about student understanding.	Exit tickets will be used to measure student understanding and mastery of objectives.
e) Questioning	Asking students strategic questions starting with narrower and more fact-based questions, this jogs students' memories of the facts and details necessary to help them answer broader questions more insightfully later. Furthermore, their success from answering simple questions will give them the confidence to answer more challenging ones.	Specifically, each lesson will begin with a question regardless of the content area. By the end of the lesson students will have a response that they can support with evidence.

Curriculum and Instructional Design

AAHS applies a hybrid approach in creating an ideal learning environment for such a racially and academically diverse student population. Our high rigor, place -based, industry-style program allows AAHS to offer a class model but with independent study applied through student-selected aerospace and aviation majors. In addition, the AAHS 90-minute block periods are designed to include a variety of differentiated instructional methods designed to provide whole-group, team, and personalized experiences where all students feel safe and able to learn, no matter their learning style.

The primary learning environment for foundation building will be classroom-based instruction. However, an AAHS's "classroom" will not be the norm; our classrooms will be outfitted with the latest technology, instructional tools, and innovative furnishings designed for movement and collaboration. Class sizes will reflect an optimal teacher to student ratio where individual academic and social-emotional needs will be detected and addressed; it is important to account for both types of needs in order to enhance the learning process. Addressing personalized needs is very important to AAHS; all other learning environments will address authentic learning interests, foundational gaps, extended practice and/or application, and enrichment. The maximum number of students per classroom environment is based on best practice.

Learning Environment Structure to Size

Learning Environments	Description	Teacher &/or Assistant	Maximum number of Students
Classroom	In an AAHS classroom, there is a mixture of teacher facilitation and student directed learning. Classrooms have one to one technology for all students. The physical space is conducive to small group exploration, hands on learning, and independent practice.	1-teacher	25
Labs	An in-classroom model focused on group exploration. 35 minutes in each 90-minute block is dedicated for small group discussion and tasks. Students drive the learning using peer accountability to complete high-level work.	1-teacher	10
Staff-Student Support	AAHS staff aggressively monitor student learning in the classroom, provide multiple checks for understanding, and use positive staff student relationships to encourage students to produce their best work every day.	1-teacher or assistant	25 students max
Independent Learning	AAHS classrooms grow students' ability to learn independently and produce high quality work with minimal prompting. Students have the ability to practice in AAHS classrooms the work ethic and production quality needed to be leaders in the college classroom and in industry.	Student driven/teacher monitored	25 students max

Industry-based Simulation Rooms	Rooms equipped with industry-specific simulators, machinery, and/or equipment will be used for experiential learning. Students will experience and gather meaning through numerous real-world scenarios. Teachers will control the parameters of this "world" and use them to achieve desired instructional objectives.	1-teacher	5
Resource Classrooms	A separate setting, either a classroom or a smaller designated room, will be used to deliver personalized programs to students, individually or in a small group. Resource rooms are used in a variety of ways ranging from instruction, homework assistance, meetings, or representing students' alternative social space.	1-teacher	6
Dual enrollment	In partnership with 2-year and 4-year colleges, students will have the opportunity to take academic and industry-based courses while receiving college-credit.	Discretion of provider	

AAHS selected the Carnegie Learning Math Solutions for the 9-12 grade math curriculum, the American Reading Company (ARC) for 9-12 English Language Arts curriculum (EdReports links are embedded for CLMS & ARC and are also attached under "Other Attachments"), Houghton Mifflin Harcourt (HMH) for Advanced AAHS Science course, and Houghton Mifflin Harcourt (HMH) for High School Social Studies. The academic focus of Alabama's Aerospace and Aviation High School is to 1) Increase student mastery of content through rigorous curriculum and practice based instruction, 2) aggressively grow all students and build student's academic agency through personalized learning with 1-to-1 technology, and 3) narrow historical gaps between the Math and ELA achievement of African American and Latinx students and their wealthier white counterparts through a high rigor, high support extended-year program. The following curriculum choices were selected for their alignment to AAHS's instructional model and academic goals.

Mathematics Curriculum: Selected for 9th -12th grade Math, Carnegie Learning Math Solutions (CLMS) utilizes an approach which allows AAHS students to grapple with grade level math standards using differentiated strategies and to participate as agents of their own learning. CLMS aligns well with AAHS's instructional model and provides our students with a daily rotation of 30 minutes of independent learning and practice facilitated through CLMS's 1-to-1 coaching software, 30 minutes of collaborative learning in small ability-grouped learning communities based on MAP data, and 20 minutes of live direct instruction delivered by AAHS staff. The 1-to-1 adaptive coaching model as a key feature of the curriculum consistently helped CLMS districts bolster student proficiency on state assessments, and AAHS students will benefit from the individualized support as they each work towards their daily academic goals. The curriculum's formative ongoing assessments provide AAHS math students with regular checks for understanding and their instructors with daily data reports used for making instructional adjustments to accommodate student learning needs. CLMS's blended learning approach assists AAHS students in achieving mastery of grade level standards while progressing at their personal ideal pace.

Research supports AAHS's selection of Carnegie Learning Math Solutions and highlights its impact on learning for high school students demographically similar to AAHS students. Carnegie Learning Math Solutions' blended approach nearly doubled performance on standardized tests relative to typical students, according to a study by the RAND corporation. Likewise, urban, suburban, and rural students from several states scoring at the 50th percentile were able to increase proficiency by 8 percentage points on average. AAHS established a learning model very similar to that of CLMS's most successful districts that included whole-group, small group, and individual learning as primary methods of increasing proficiency rates and growing students.

Literacy Development: AAHS selected the American Reading Company (ARC) for its 9th -12th grade ELA curriculum. For AAHS teachers, ARC provides a "clearer message about reading instruction" aligned to state standards and offers "better supports and resources" for teachers to deliver high quality literacy instruction daily. For students, ARC supports AAHS student literacy development through extensive reading, daily writing, research, and critical analysis. AAHS looks to aggressively grow our students through rigorous literacy instruction and uses ARC to divide ELA lessons into multidisciplinary units of study. The curriculum mirrors AAHS's 90-minute block periods. During the extended ELA block, AAHS students will engage ARC curricular materials in the following ways:

- Read Complex Text (20 minutes)-students engage in whole group reading and intellectual discourse around text and focus standards
- Write to Text (10 minutes)-students engage in writing in a variety of formats translating discussed concepts into written language. Writings may include student/teacher created rubrics.
- Readers' Workshop (40 minutes)-Students self-select high interest level-appropriate books for independent reading while applying the lesson's focus standards
- Writing (20 minutes) -Students engage focus standards through authentic writing tasks targeting research content, tier 3 vocabulary, and academic grammar.

AAHS's 1-to-1 technology model allows each student to take full advantage of ARC's online library and writing templates during independent practice. The blended model of whole class text reading and discussion with more individualized writing and reflection opportunities contributes to AAHS's goal of building students' academic agency. As with CLMS, ARC ensures that AAHS students are regularly assessed as student data is monitored daily by classroom instructors to make momentary intervention decisions.

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Environmental Science is engagingly designed for students with varied interests and learning abilities and appeals directly to high school students. It uses a digital EcoZine and virtual investigations program that engages learners and builds critical thinking skills for scientific investigation.

To create more robust connections between science instruction and AAHS's diverse student population, research suggests a schoolwide effort in pairing daily science lessons to student interests, prior knowledge, and abilities. Using the HMH curriculum, AAHS teachers have access to numerous teaching strategies aligned to specific topics; this includes extended learning opportunities for students with special needs and gifted abilities. English language learners have access to additional resources and translated text to aid with learning, thus minimizing language as an impediment to academic success at AAHS. AAHS students struggling to close learning gaps will not only have the timely support of AAHS instructors during class but will also have access to our interactive reader tool provided through the HMH curriculum. This feature works as an effective intervention by providing AAHS students all essential reading level content and vocabulary at one to two grades below the text. This further aids the AAHS

team in closing academic gaps, maintaining a focus on exposure to grade level material, and aggressively growing all students. Making real-world connections to content is also important to AAHS. HMH offers access to STEM career exploratory videos and 3-D virtual field trips tied to content. Research suggests that school related factors like rigorous curriculum, student academic engagement, and high expectations are commonly cited as opportunities to learn that are absent from many classrooms serving large populations of culturally and linguistically diverse students. With these resources, student engagement for AAHS students is optimized to promote student achievement.

9-12 Social Studies: AAHS will also use HMH as its Social Studies curriculum provider. AAHS prioritizes a social studies model that meets a college-ready bar of academic rigor, that provides students opportunities for critical group discussion, and that affords students purposeful independent practice for sense making and reflection of historical events. HMH Social Studies materials meet the demands of all three. It provides SS content that affords AAHS students a" solid foundation for excelling in college, career, and civic life", collaborative lessons where students can together "relive" and "re-imagine" past and present events, and "flexibility for students to learn on their own terms through differentiated instruction and interactive tools".

The selected Social Studies curriculum helps AAHS nurture the skills of its students as critical thinkers by utilizing an inquiry-based approach. The selected curriculum provides document-based investigations that require AAHS students to analyze documents and complete cumulative writing performance tasks. Students are prompted to think critically, draw conclusions, and support all conclusions with evidence—all essential college and career readiness skills. Secondary-level Social Studies courses rarely provide adequate hands-on and manipulative activities to the detriment of diverse learners. AAHS's general education students, students with unique learning needs, and English language learners all benefit from the curriculum's use of interactive materials to reinforce key concepts of history and support development in academic writing. Also, AAHS incorporates HMS's interactive learning model as part of the school's culturally responsive teaching strategies which encourages the use of a variety of methods and aids for gradual skill development.

AAHS's data-driven instruction relies on teachers having access to student performance data in real time. The HMH curriculum model uses regular assessments as students are answering questions within the narrative to interpret maps, timelines, and graphs, as well as analyzing literature, primary sources, and perspectives. Secondly, module assessments measure student comprehension using a variety of critical thinking and writing tasks. Lastly, AAHS teachers measure student performance through benchmark and end-of-year assessments provided through HMH with immediate feedback and automatic scoring and reporting.

The following highlight the alignment between HMH Social Studies curricular offerings and the ALSDE high school graduation requirements:

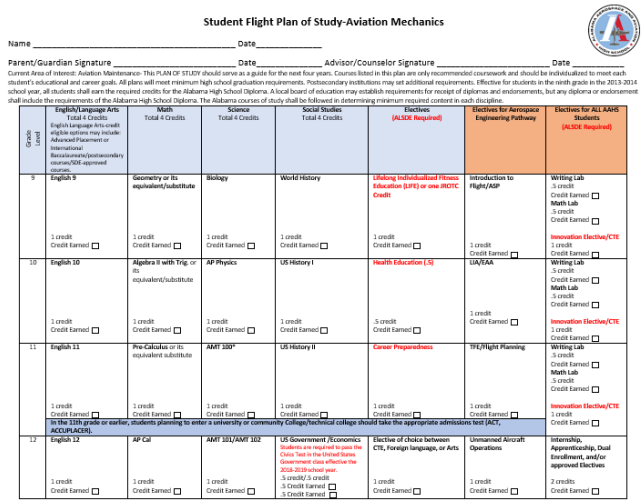
Civics helps foster student civic responsibility through a balanced course that features the principles of government, active citizenship, and responsible economic participation.
American History explores the story of U.S. history, weaving the reflections of people who experienced history firsthand throughout the narrative.
World History provides teachers with a practical and motivational approach to teaching world history and helps students think critically and make global connections.
United States Government is designed to balance the need to cover key, standards-based government topics and motivate students to learn. This course makes our political system meaningful to all students.

Global Geography motivates students to explore current geographic issues to show the relevance of geography to current events. It is organized by physical geography, human geography, and today's issues.

Economics uses a concept-driven and interactive approach to develop economic literacy, utilizing real examples, concept application, and the latest economics news.
Psychology takes into account current psychological theory and current statistics. It offers the tools students need to understand themselves and the world around them with a variety of case studies, group projects, and opportunities for in-depth study.
Sociology leverages current sociological theory and current statistics. The course gives the student the tools they need to discover the meaning behind behavior through a variety of case studies, group projects, and opportunities for in-depth study.

AAHS students and teachers will utilize several industry-based curriculum options to insure relevance and updated standards. Delta Airlines, the Aircraft Owners and Pilots Association, and Cyber Org, AAHS partners, will provide industry-based curriculum to ensure students are properly prepared to meet industry requirements and demands. They have also committed to providing teacher professional development and student experiences. AAHS will offer diverse learning opportunities to address its students' personal needs. This includes Advanced Placement, dual-enrollment, and remediation; students will know AAHS is able to reach them wherever they are. AAHS is excited about the life-changing opportunities its students will have.

Integrating the State's course of study with industry-based curriculum will allow AAHS to provide real-world alignments leading to increased content retention and application; improved academic performance has been linked to students who are able to see connections between core curriculum and life experiences. AAHS students will have a personalized "flight plan" where AHSG required core and elective courses along with industry-based courses are mapped. Students will know what is expected and will have the support of their "flight crew" to track progress and receive specialized help as needed; their flight crew will include a teacher/advisor, counselor, and industry-tied mentor**.**



Student Flight Plan of Study-Aviation Mechanics

Name _____ Date_____

Parent/Guardian Signature _____ Date_____ Advisor/Counselor Signature _____ Date _____

Current Area of Interest: Aviation Maintenance- This PLAN OF STUDY should serve as a guide for the next four years. Courses listed in this plan are only recommended coursework and should be individualized to meet each student's educational and career goals. All plans will meet minimum high school graduation requirements. Postsecondary institutions may set additional requirements. Effective for students in the ninth grade in the 2013-2014 school year, all students shall earn the required credits for the Alabama High School Diploma. A local board of education may establish requirements for receipt of diplomas and endorsements, but any diploma or endorsement shall include the requirements of the Alabama High School Diploma. The Alabama courses of study shall be followed in determining minimum required content in each discipline.

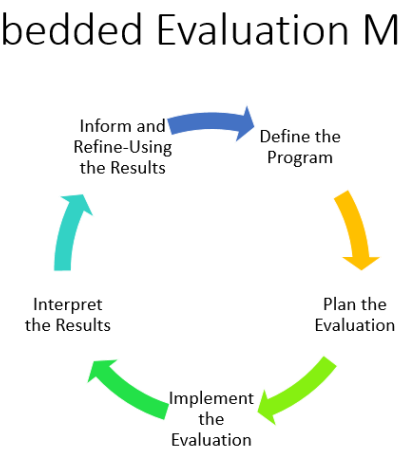
Grade Level	English/Language Arts Total 4 Credits English Language Arts-credit eligible options may include Advanced Placement or International Baccalaureate/postsecondary courses/SDE-approved courses.	Math Total 4 Credits	Science Total 4 Credits	Social Studies Total 4 Credits	Electives (ALSDE Required)	Electives for Aerospace Engineering Pathway	Electives for ALL AAHS Students (ALSDE Required)
9	English 9 1 credit Credit Earned ☐	Geometry or its equivalent/substitute 1 credit Credit Earned ☐	Biology 1 credit Credit Earned ☐	World History 1 credit Credit Earned ☐	Lifelong Individualized Fitness Education (LIFE) or one JROTC Credit 1 credit Credit Earned ☐	Introduction to Flight/ASP 1 credit Credit Earned ☐	Writing Lab .5 credit Credit Earned ☐ Math Lab .5 credit Credit Earned ☐ Innovation Elective/CTE 1 credit Credit Earned ☐
10	English 10 1 credit Credit Earned ☐	Algebra II with Trig. or its equivalent/substitute 1 credit Credit Earned ☐	AP Physics 1 credit Credit Earned ☐	US History I 1 credit Credit Earned ☐	Health Education (.5) .5 credit Credit Earned ☐	LIA/EAA 1 credit Credit Earned ☐	Writing Lab .5 credit Credit Earned ☐ Math Lab .5 credit Credit Earned ☐ Innovation Elective/CTE 1 credit Credit Earned ☐
11	English 11 1 credit Credit Earned ☐	Pre-Calculus or its equivalent substitute 1 credit Credit Earned ☐	AMT 100* 1 credit Credit Earned ☐	US History II 1 credit Credit Earned ☐	Career Preparedness 1 credit Credit Earned ☐	TFI/Flight Planning 1 credit Credit Earned ☐	Writing Lab .5 credit Credit Earned ☐ Math Lab .5 credit Credit Earned ☐ Innovation Elective/CTE 1 credit Credit Earned ☐
	In the 11th grade or earlier, students planning to enter a university or community College/technical college should take the appropriate admissions test (ACT, ACCUPLACER).						
12	English 12 1 credit Credit Earned ☐	AP Cal 1 credit Credit Earned ☐	AMT 101/AMT 102 1 credit Credit Earned ☐	US Government /Economics Students are required to pass the Civics Test in the United States Government class effective the 2018-2019 school year. .5 credit/.5 credit .5 Credit Earned ☐ .5 Credit Earned ☐	Elective of choice between CTE, Foreign language, or Arts 1 credit Credit Earned ☐	Unmanned Aircraft Operations 1 credit Credit Earned ☐	Internship, Apprenticeship, Dual Enrollment, and/or approved Electives 2 credits Credit Earned ☐

AAHS will utilize a 90-minute block scheduling to accommodate instructional strategies, collaborative assignments, research, the use of technology tools, adequate practice, and time-sensitive enrichment/remediation needs. Block scheduling will also allow industry-connected extended experiences including guest presenters and demonstrations. Students will consistently see content come alive.

Evaluation, Review, and Revision of Curriculum

AAHS will use an embedded evaluation plan cycle that regularly evaluates the effectiveness of our curriculum in regards to student learning. Weekly classroom observations from the leadership team and student performance data create quantitative and qualitative measures as we consider our curriculum's

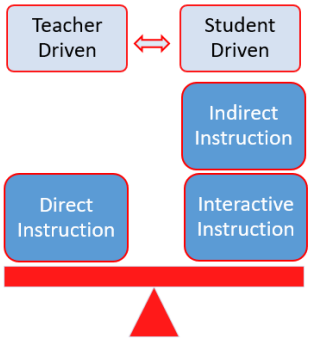
effectiveness. 180 learning hours for AAHS teachers on effective instruction and curriculum implementation ensure that teachers are delivering instruction according to the curriculum. If AAHS fails to see our desired student outcomes and growth, we will consider making a curriculum change. Decisions about possible curricular changes will happen three times a year to ensure that our decision to change or alter curriculum is timely and best supports our students. A prescribed evaluation plan will help AAHS in planning, providing additional resources, and assessing performance at all levels; planned check-ups will also allow AAHS to make adjustments as needed. AAHS will use U.S Department of Education research-based guidelines to build its evaluation plan framework. The figure below illustrates the USDE embedded evaluation process.



Primary Instructional Strategies

AAHS teachers will employ a multitude of tools to facilitate diverse instructional strategies. Using resources and professional training provided by core and industry-based curriculum providers, teachers will provide direct instruction building students' foundational knowledge of core and industry-tied content. Proficiency levels for academic, language, and industry-based objectives will be facilitated through questioning, discussions, guided practice, and independent practice. Teachers will provide opportunities for students to participate in indirect instructional strategies where students take the lead in critical inquiry and problem solving. Students will work through question sets, scenarios, and multi-tiered problems where they must demonstrate their understanding from the foundational to application levels. Finally, students will solidify learning using interactive instructional strategies. Using simulations, labs, team projects, and technology, students will integrate skill sets where they must apply research, critical analysis, and collaboration to complete rigorous core and industry-based coursework. Using a balanced instructional strategy approach leading to increased student involvement will help solidify learning.

Instructional Strategies



Instructional Strategies

AAHS students will come from diverse backgrounds and have diverse learning styles; using diverse instructional approaches is essential to their proficiency attainment. There is strong evidence that a holistic approach where the how, what, and why of teaching are integrated in a meaningful way is needed to engage a diverse student population.[1] To ensure all AAHS student learning styles are attended, teachers will utilize direct, indirect, and interactive instructional strategies. These strategies are needed for teaching to be culturally responsive where inclusion is established, attitudes for learning are developed, meaning is enhanced, and competence is engendered.[2] AAHS teachers will first assess the instructional needs of each student and then align the appropriate strategy with the assessed needs. As essential members of AAHS students' flight crew, the teachers know the content, know their "pilot", and are able to determine appropriate strategies that will help students meet their personal flight plan goals.

Direct Instruction

AAHS students will achieve curricular proficiency while obtaining aerospace/aviation credentials by building foundational knowledge and skills through direct instruction, one of the most effective instructional strategies. They will connect multiple text types and experiences in order to achieve proficiency in both core and industry-related courses. Understanding and applying procedural, technical language is pivotal in the aerospace/aviation field. Direct instructional strategies are particularly effective in helping students understand this language; they supply the initial substance needed to employ additional strategies; this is necessary because of the limited exposure AAHS students may initially have in the aerospace/aviation field. Direct instructional strategies provide the gears necessary to scaffold instruction while gradually shifting and releasing responsibility for completing tasks from the teacher to students.[3] AAHS students will graduate from co-pilot to lead pilot status.

Indirect Instruction

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[1] Ogbu, J. U. (1995). "Understanding Cultural Diversity and Learning." Handbook of Research on Multicultural Education, New York.

[2] Wlodkowski, Raymond & Ginsberg, Margery. (1995). A Framework for Culturally Responsive Teaching. Educational Leadership.

[3] Moore, D., Direct Instruction: Targeted Strategies for Student Success, *National Geographic Learning*, Retrieved from https://ngl.cengage.com/assets/downloads/inside_pro0000000029/am_moore_direct_instr_seb21_0414a.pdf

AAHS students will learn through a continuum of strategies that are more student-centered. Using indirect instructional strategies supported by teachers, students will extend their foundational knowledge and get more involved in the learning process. AAHS teachers will actively seek opportunities to relate teaching content to students' cultural backgrounds. AAHS students will develop contextual meaning through pattern recognitions, critical inquiry, and problem solving. They will build their learning resilience; they gain proficiency by using inductive and deductive indirect instructional strategies to successfully execute rigorous core academic and aerospace/aviation industry-based curriculum.

Interactive Instruction

AAHS students will increase their learning efficiency through interactive instructional strategies. Students are able to learn more through interactive approaches versus traditional approaches.[4] Interactive learning strategies help to motivate and engage students with content. Students are able to establish relevance leading to increased cooperation with the learning process. Technology integration is an effective way to increase interaction.[5] AAHS will be a leader in strategic, meaningful technology use. Computer devices will be supplied at a 1 to 1 ratio. Students will not just receive content through digital platforms, but use technology to conduct research on complex topics, collaborate with teams, complete industry-based projects, and receive personal attention through enrichment and/or remediation software. They will use simulators and the school's physical structure, currently an aviation museum and aircraft hanger, to prepare for industry credential requirements. AAHS students will have advanced interactive capabilities.

Instructional Methods/Teacher Moves[6]

AAHS students will be complex thinkers and real-world problem solvers. Our industry-based education model fluidly incorporates instructional methods that train students to map out step-by-step processes ensuring clear direction, deeper understanding, and increased chances of successful task completion. To make sure students first understand content and how it is woven into rigorous applications, teachers carefully plan to differentiate using multiple scaffold instructional methods for key concepts. They also include varying examples and informal quick assessments in anticipation of student comprehension gaps, misconceptions, and the need for immediate clarification. Through teachers' multi-tiered direct instructional methods, students will build schema around key concepts. Students explore and discover meaning through reflections, discussions, and peer questioning techniques.

AAHS classrooms will be the epicenter of the advanced manufacturing of questions. Students are able to respond to teacher directed questions where they demonstrate their understanding of rigorous content through answers supported by specific evidence. Our classroom culture will be research heavy with students regularly citing evidence from sources to justify approaches and arguments. They learn how to break down complex skills and difficult tasks building the cognitive muscle memory they will need to succeed in college, industry, and/or the career of their choosing.

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[4] Pradono, S. et. al., International Journal of Communication & Information Technology. Retrieved from http://msi.binus.ac.id/commit/ Vol. 7 No. 2 Oktober 2013, pp. 46-48

[5] Matthew, T., (2011) Recognizing Hand Gesture with Microsoft's Kinect, Palo Alto, Department of Electrical Engineering of Stanford University.

[6] Lemov, D (2015) Teach Like a Champion 2.0 – 62 Techniques that put students on the path to college, Jossey-Bass, USA

Teacher Move	Explanation of Move + Benefits	What specifically does it look like in your classrooms?
a) NAME THE STEPS	Champion teachers help their students learn complex skills by breaking them down into steps and often naming those steps. Giving the steps a name helps students recall those steps.	In AAHS classrooms students will deconstruct complex skills through listing out step-by-step processes.
b) BREAK IT DOWN	When encountering new complex content teachers will: ·Provide an example. ·Provide context to help a student who does not understand the content ·Provide the missing (or first) step. ·Eliminate misconceptions	AAHS provides students with rigorous instruction on a daily basis. To help our students internalize new content and master complex tasks, we scaffold rather than give students the answer. We use their prior knowledge and provide scaffolded questions to push them to content mastery.
c) RATIO	The goal is for students to do the majority of the cognitive work.	Classrooms will be 80% student discussion and production with only 20% teacher talk. If students are to display mastery by the end of class, then they need to spend the majority of their time cementing their knowledge and practicing the skill. The ratio in AAHS classrooms allows for students to be active learners as opposed to passive learners.
d) Exit Tickets	Collecting answers to one or a few questions at the end of class in order to gather important information about student understanding.	Exit tickets will be used to measure student understanding and mastery of objectives.
e) Questioning	Asking students strategic questions starting with narrower and more fact-based questions, this jogs students' memories of the facts and details necessary to help them answer broader questions more insightfully later. Furthermore, their success from answering simple questions will give them the confidence to answer more challenging ones.	Specifically, each lesson will begin with a question regardless of the content area. By the end of the lesson students will have a response that they can support with evidence.

AAHS
9th Grade English Scope and Sequence

1st Quarter	
Reading Informational Text 1.2	• Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. • Analyze how words and phrases shape meaning and tone in texts. • Determine or clarify the meaning of unknown and multiple- meaning words and phrases based on grade level reading and content, choosing flexibly from a range of strategies and tools. • Determine an author's particular point of view and analyze how rhetoric advances the point of view.
Reading Literature 1.3	• Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences and conclusions based on an author's explicit assumptions and beliefs about a subject. • Analyze how complex characters develop over the course of a text, interact with other characters, and advance the plot or develop the theme. • Determine the point of view of the text and analyze the impact the point of view has on the meaning of the text. • Analyze how an author's choices concerning how to structure a text, order events within it and manipulate time create an effect. • Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment. • Analyze how an author draws on and transforms themes, topics, character types, and/or other text elements from source material in a specific work. • Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. • Analyze how words and phrases shape meaning and tone in texts. • Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 9-10 reading and content, choosing flexibly from a range of strategies and tools.
Writing 1.4	• Distinguish the claim(s) from alternate or opposing claims; develop claim(s) fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. • Create organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence; Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims; provide a concluding statement or section that follows from and supports the argument presented.

	● Develop and analyze the topic with relevant, well-chosen, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic; include graphics and multimedia when useful to aiding comprehension. ● Create organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence; Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims; provide a concluding statement or section that follows from and supports the argument presented. ● Create organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence; Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims; provide a concluding statement or section that follows from and supports the argument presented. ● Distinguish the claim(s) from alternate or opposing claims; develop claim(s) fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. ● Create organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence; Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims; provide a concluding statement or section that follows from and supports the argument presented. ● Develop and analyze the topic with relevant, well-chosen, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic; include graphics and multimedia when useful to aiding comprehension. ● Create organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence; Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims; provide a concluding statement or section that follows from and supports the argument presented. ● Create organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence; Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims; provide a concluding statement or section that follows from and supports the argument presented.

	• Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression. • Read and comprehend literary fiction on grade level, reading independently and proficiently. • Write informative/ explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately. • Develop and analyze the topic with relevant, well-chosen, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic; include graphics and multimedia when useful to aiding comprehension. • Demonstrate a grade appropriate command of the conventions of standard English grammar and spelling. • Write arguments to support claims in an analysis of substantive topics. • Write with an awareness of the stylistic aspects of composition. • Use precise language and domain-specific vocabulary to manage the complexity of the topic. • Establish and maintain a formal style and objective tone while attending to the norms of the discipline in which they are writing. • Write narratives to develop real or imagined experiences or events. • Use narrative techniques such as dialogue, description, reflection, multiple plot lines, and pacing, to develop experiences, events, and/or characters; use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, settings, and/or characters. • Create a smooth progression of experiences or events using a variety of techniques to sequence events so that they build on one another to create a coherent whole; provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative • Write with an awareness of the stylistic aspects of writing. • Use parallel structure. Use various types of phrases and clauses to convey meaning and add variety and interest. • Draw evidence from literary or informational texts to support analysis, reflection, and research, applying grade level reading standards for literature and literary non-fiction • Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. • Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes and audiences.
Speaking & Listening	Initiate and participate effectively in a range of collaborative discussions on grades level topics, texts, and issues, building on others' ideas and expressing their own clearly and

1.5	persuasively. • Demonstrate command of the conventions of standard English when speaking based on grade 9-10 level and content.
2nd Quarter	
Reading Informational Text 1.2	• Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. • Determine or clarify the meaning of unknown and multiple- meaning words and phrases based on grade level reading and content, choosing flexibly from a range of strategies and tools. • Read and comprehend literary non-fiction and informational text on grade level, reading independently and proficiently.
Reading Literature 1.3	• Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences and conclusions based on an author's explicit assumptions and beliefs about a subject. • Analyze how complex characters develop over the course of a text, interact with other characters, and advance the plot or develop the theme. • Determine the point of view of the text and analyze the impact the point of view has on the meaning of the text. • Analyze how an author's choices concerning how to structure a text, order events within it and manipulate time create an effect. • Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment. • Analyze how an author draws on and transforms themes, topics, character types, and/or other text elements from source material in a specific work. • Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 9-10 reading and content, choosing flexibly from a range of strategies and tools.
Writing 1.4	• Write with a sharp distinct focus identifying topic, task, and audience. • Organize ideas, concepts, and information to make important connections and distinctions; use appropriate and varied transitions to link the major sections of the text; include formatting when useful to aiding comprehension; provide a concluding statement or section. • Write with an awareness of the stylistic aspects of composition. • Use precise language and domain-specific vocabulary to manage the complexity of the topic. • Establish and maintain a formal style and objective tone while attending to the norms of the discipline in which they are writing. • Create organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence; Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims; provide a concluding statement or section that follows from and supports the argument presented. • Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression. • Write informative/ explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately.

	• Develop and analyze the topic with relevant, well-chosen, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic; include graphics and multimedia when useful to aiding comprehension. • Demonstrate a grade appropriate command of the conventions of standard English grammar and spelling. • Write arguments to support claims in an analysis of substantive topics. • Write with an awareness of the stylistic aspects of composition. • Use precise language and domain-specific vocabulary to manage the complexity of the topic. • Establish and maintain a formal style and objective tone while attending to the norms of the discipline in which they are writing observed, or resolved over the course of the narrative • Write with an awareness of the stylistic aspects of writing. • Use parallel structure. Use various types of phrases and clauses to convey meaning and add variety and interest. • Draw evidence from literary or informational texts to support analysis, reflection, and research, applying grade level reading standards for literature and literary non-fiction. • Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. • Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes and audiences.
Speaking & Listening 1.5	• Initiate and participate effectively in a range of collaborative discussions on grades level topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. • Demonstrate command of the conventions of standard English when speaking based on grade 9-10 level and content.
3rd Quarter	
Reading Informational Text 1.2	• Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences and conclusions based on an author's explicit assumptions and beliefs about a subject. • Apply appropriate strategies to analyze, interpret, and evaluate how an author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them. • Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text. • Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and

	career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. ● Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. ● Determine or clarify the meaning of unknown and multiple- meaning words and phrases based on grade level reading and content, choosing flexibly from a range of strategies and tools. ● Determine an author's particular point of view and analyze how rhetoric advances the point of view. ● Read and comprehend literary non-fiction and informational text on grade level, reading independently and proficiently.
Reading Literature 1.3	● Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 9-10 reading and content, choosing flexibly from a range of strategies and tools.

Writing 1.4	• Write with a sharp distinct focus identifying topic, task, and audience. • Organize ideas, concepts, and information to make important connections and distinctions; use appropriate and varied transitions to link the major sections of the text; include formatting when useful to aiding comprehension; provide a concluding statement or section. • Write with an awareness of the stylistic aspects of composition. • Use precise language and domain-specific vocabulary to manage the complexity of the topic. • Establish and maintain a formal style and objective tone while attending to the norms of the discipline in which they are writing. • Write informative/ explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately. • Develop and analyze the topic with relevant, well-chosen, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic; include graphics and multimedia when useful to aiding comprehension. • Create organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence; Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims; provide a concluding statement or section that follows from and supports the argument presented. • Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression. • Write informative/ explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately. • Develop and analyze the topic with relevant, well-chosen, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic; include graphics and multimedia when useful to aiding comprehension. • Demonstrate a grade appropriate command of the conventions of standard English grammar and spelling. • Write arguments to support claims in an analysis of substantive topics. • Write with an awareness of the stylistic aspects of composition. • Use precise language and domain-specific vocabulary to manage the complexity of the topic. • Establish and maintain a formal style and objective tone while attending to the norms of the discipline in which they are writing. • Write with an awareness of the stylistic aspects of writing. • Use parallel structure. Use various types of phrases and clauses to convey meaning and add variety and interest.

	• Draw evidence from literary or informational texts to support analysis, reflection, and research, applying grade level reading standards for literature and literary non-fiction. • Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. • Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes and audiences.
Speaking & Listening 1.5	• Initiate and participate effectively in a range of collaborative discussions on grades level topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. • Demonstrate command of the conventions of standard English when speaking based on grade 9-10 level and content.
4th Quarter	
Reading Informational Text 1.2	• Apply appropriate strategies to analyze, interpret, and evaluate how an author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them. • Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text. • Delineate and evaluate the argument and specific claims in a text, assessing the validity of reasoning and relevance of evidence. • Analyze seminal U.S. documents of historical and literary significance, including how they address related themes and concepts. • Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. • Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences and conclusions based on an author's explicit assumptions and beliefs about a subject. • Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account. • Delineate and evaluate the argument and specific claims in a text, assessing the validity of reasoning and relevance of evidence. • Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

	• Determine an author's particular point of view and analyze how rhetoric advances the point of view. • Determine or clarify the meaning of unknown and multiple- meaning words and phrases based on grade level reading and content, choosing flexibly from a range of strategies and tools. • Read and comprehend literary non-fiction and informational text on grade level, reading independently and proficiently.
Reading Literature 1.3	• Analyze how words and phrases shape meaning and tone in texts. • Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 9-10 reading and content, choosing flexibly from a range of strategies and tools.
Writing 1.4	• Write with a sharp distinct focus identifying topic, task, and audience. • Introduce the precise claim. • Distinguish the claim(s) from alternate or opposing claims; develop claim(s) fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. • Create organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence; Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims; provide a concluding statement or section that follows from and supports the argument presented. • Write with a sharp distinct focus identifying topic, task, and audience.: Introduce the precise claim. • Distinguish the claim(s) from alternate or opposing claims; develop claim(s) fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. • Create organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence; Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims; provide a concluding statement or section that follows from and supports the argument presented*Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically. • Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. • Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in

	answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation. ● Write informative/ explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately. ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression. ● Write informative/ explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately. ● Develop and analyze the topic with relevant, well-chosen, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic; include graphics and multimedia when useful to aiding comprehension. ● Demonstrate a grade appropriate command of the conventions of standard English grammar and spelling. ● Write arguments to support claims in an analysis of substantive topics. ● Write with an awareness of the stylistic aspects of composition. ● Use precise language and domain-specific vocabulary to manage the complexity of the topic. ● Establish and maintain a formal style and objective tone while attending to the norms of the discipline in which they are writing. ● Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple points of view, and introducing a narrator and/or characters. Write with an awareness of the stylistic aspects of writing. ● Use parallel structure. Use various types of phrases and clauses to convey meaning and add variety and interest. ● Draw evidence from literary or informational texts to support analysis, reflection, and research, applying grade level reading standards for literature and literary non-fiction. ● Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. ● Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes and audiences.
Speaking & Listening 1.5	● Integrate multiple sources of information presented in diverse media or formats (e.g. visually, quantitatively, orally) evaluating the credibility and accuracy of each source. ● Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning; ensure that the presentation is appropriate to purpose, audience, and task.

	● Make strategic use of digital media in presentations to add interest and enhance understanding of findings, reasoning, and evidence. ● Initiate and participate effectively in a range of collaborative discussions on grades level topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. ● Evaluate a speaker's perspective, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence. ● Adapt speech to a variety of contexts and tasks. ● Demonstrate command of the conventions of standard English when speaking based on grade 9-10 level and content.

2016 REVISED ALABAMA COURSE OF STUDY

ENGLISH LANGUAGE ARTS

ENGLISH LANGUAGE LITERACY FOR COLLEGE AND CAREER READINESS

Thomas R. Bice, State Superintendent of Education · Alabama State Department of Education

Grades 9-12
Overview

High school students continue to develop physically, emotionally, and intellectually; and most make efforts to express their individuality and independence. Never-the-less, they need guidance in these endeavors and continued emotional and intellectual support to prepare for college and careers. While language skills are advanced beyond the middle grades, students require continued assistance in analyzing and interpreting advanced informational and literary text and continued development in the use of conventions of Standard English.

In designing instruction to help all students achieve success, careful consideration should be given to addressing the individual learning needs of students. This can be accomplished by including a variety of instructional strategies such as projects, demonstrations, and collaborative learning groups; by conducting formal and informal assessments to provide continual feedback regarding student progress; and by utilizing all available technology for both teacher and student use. These strategies are especially important during the high school years for preparing students to experience the independence and demands of higher education and careers.

To become college and career ready, students must grapple with works of exceptional craft and thought whose range extends across genres, cultures, and centuries. In addition to the analysis of literature at advanced reading levels, students analyze and interpret historical documents aligned to content in history or social studies classes—documents such as the Magna Carta, the Declaration of Independence, Washington's Farewell Address, and the Gettysburg Address. Shakespearean plays are studied in at least three of the last four years of high school, sometimes involving a comparison with language and literature from other countries and eras. The refinement and extension of reading skills include analyzing how characters in fiction develop over the course of time and advance the plot or theme and how authors of informational texts develop claims and use rhetoric to advance a point of view. Other reading skills include the examination of authors' craft such as the effect of specific word choices and the use of satire and irony. Standards for informational text require that students evaluate multiple sources of information presented in different media or formats.

Writing and editing skills that will be needed in college and careers are refined as students develop claims and counterclaims, use precise language, and create a coherent whole with an appropriate tone. A command of formal English is demonstrated in both students' writing and speaking. They must come to appreciate that language is as much a matter of craft as of rules and be able to choose words, syntax, and punctuation to express themselves and achieve particular functions and rhetorical effects. Students must integrate multiple sources of information in order to make informed decisions and solve problems. This requires that they evaluate the credibility and accuracy of each source and note discrepancies among data. They must have the flexibility, concentration, and fluency to produce high-quality, first-draft text under a tight deadline as well as the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it.

Language standards in Grades 9-12 that are followed by an asterisk are those that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking. The complete list of standards followed by an asterisk in all grades can be found in Appendix D.

Grade 9

Students will:

Reading Standards for Literature

Key Ideas and Details

1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. [RL.9-10.1]

2. Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. [RL.9-10.2]

3. Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme. [RL.9-10.3]

Craft and Structure

4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone). [RL.9-10.4]

5. Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise. [RL.9-10.5]

6. Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature. [RL.9-10.6]

Integration of Knowledge and Ideas

7. Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*). [RL.9-10.7]

8. Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare). [RL.9-10.9]

Range of Reading and Level of Text Complexity

9. By the end of Grade 9, read and comprehend literature, including stories, dramas, and poems, in the Grades 9-10 text complexity band proficiently, with scaffolding as needed at the high end of the range. [RL.9-10.10]

Reading Standards for Informational Text

Key Ideas and Details

10. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. [RI.9-10.1]

11. Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. [RI.9-10.2]

12. Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them. [RI.9-10.3]

Craft and Structure

13. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper). [RI.9-10.4]

14. Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter). [RI.9-10.5]

15. Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose. [RI.9-10.6]

Integration of Knowledge and Ideas

16. Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account. [RI.9-10.7]

17. Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning. [RI.9-10.8]

18. Analyze seminal European documents of historical significance (e.g., Magna Carta; English Bill of Rights; The Social Contract, or Principles of Political Right), including how they address related themes and concepts included in United States' documents of historical and literary significance. [RI.9-10.9] 

Range of Reading and Level of Text Complexity

19. By the end of Grade 9, read and comprehend literary nonfiction in the Grades 9-10 text complexity band proficiently, with scaffolding as needed at the high end of the range. [RI.9-10.10]

Writing Standards

Text Types and Purposes

20. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. [W.9-10.1]
    a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence. [W.9-10.1a]
    b. Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. [W.9-10.1b]
    c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. [W.9-10.1c]
    d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. [W.9-10.1d]
    e. Provide a concluding statement or section that follows from and supports the argument presented. [W.9-10.1e]

21. Write informative or explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. [W.9-10.2]
    a. Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. [W.9-10.2a]
    b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. [W.9-10.2b]
    c. Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. [W.9-10.2c]
    d. Use precise language and domain-specific vocabulary to manage the complexity of the topic. [W.9-10.2d]
    e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. [W.9-10.2e]
    f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic). [W.9-10.2f]

22. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. [W.9-10.3]
    a. Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator, characters, or both; create a smooth progression of experiences or events. [W.9-10.3a]
    b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters. [W.9-10.3b]
    c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole. [W.9-10.3c]
    d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters. [W.9-10.3d]

e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative. [W.9-10.3e]

Production and Distribution of Writing

23. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 20-22 above.) [W.9-10.4]

24. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of the first three standards in the Language strand in Grades K-9.) [W.9-10.5]

25. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically. [W.9-10.6]

Research to Build and Present Knowledge

26. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. [W.9-10.7]

27. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation. [W.9-10.8]

28. Draw evidence from literary or informational texts to support analysis, reflection, and research. [W.9-10.9]
    a. Apply *Grade 9 Reading standards* to literature (e.g., "Analyze how an author draws on and transforms source material in a specific work [e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare]"). [W.9-10.9a]
    b. Apply *Grade 9 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning"). [W.9-10.9b]

Range of Writing

29. Write routinely over extended time frames, including time for research, reflection, and revision, and shorter time frames such as a single sitting or a day or two for a range of tasks, purposes, and audiences. [W.9-10.10]

Speaking and Listening Standards

Comprehension and Collaboration

30. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *Grade 9 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively. [SL.9-10.1]
    a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. [SL.9-10.1a]
    b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. [SL.9-10.1b]
    c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. [SL.9-10.1c]
    d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented. [SL.9-10.1d]

31. Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally), evaluating the credibility and accuracy of each source. [SL.9-10.2]

32. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence. [SL.9-10.3]

Presentation of Knowledge and Ideas

33. Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task. [SL.9-10.4]

34. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. [SL.9-10.5]

35. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See Grade 9 Language standards 36 and 38 for specific expectations.) [SL.9-10.6]

Language Standards

Skills and understandings that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking are marked with an asterisk (*).

Conventions of Standard English

The following italicized standards from Grades 3-8 should have continued attention with increased rigor.

For standard 36:

Grade	Standard Number	Content
3	37.f	*Ensure subject-verb and pronoun-antecedent agreement.* [L.3.1f]*
5	38.d	*Recognize and correct inappropriate shifts in verb tense.* [L.5.1d]*
6	37.d	*Recognize and correct inappropriate shifts in pronoun number and person.* [L.6.1c]*
6	37.e	*Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).*[L.6.1d]*
6	39.a	*Vary sentence patterns for meaning, reader or listener interest, and style.*[L.6.3a]*
7	36.d	*Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.* [L.7.1c]*

For standard 37:

Grade	Standard Number	Content
4	38.g	*Correctly use frequently confused words (e.g., to, too, two; there, their).* [L.4.1g]*
4	40.b	*Choose punctuation for effect.* [L.4.3b]*
5	39.a	*Use punctuation to separate items in a series.* [L.5.2a]*
6	38.a	*Use punctuation (commas, parentheses, dashes) to set off nonrestrictive or parenthetical elements.* [L.6.2A]*

36. Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking. [L.9-10.1]
    a. Apply rules of subject-verb agreement when the subject has compound parts joined by *or* with the second element as singular or plural.
    b. Apply rules of subject-verb agreement with the subjunctive mood.
    c. Use parallel structure.* [L.9-10.1a]
    d. Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations. [L.9-10.1b]

37. Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing. [L.9-10.2]
    a. Use commas correctly with non-essential appositives.
    b. Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses. [L.9-10.2a]
    c. Use a colon to introduce a list or quotation. [L.9-10.2b]
    d. Spell correctly. [L.9-10.2c]

Knowledge of Language

The following italicized standards from Grades 3-8 should have continued attention with increased rigor.

For standard 38:

Grade	Standard Number	Content
3	39.a	*Choose words and phrases for effect.* [L.3.3a]*
4	38.f	*Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.* [L.4.1f]*
4	40.a	*Choose words and phrases to convey ideas precisely.*[L.4.3a]*
6	39.b	*Maintain consistency in style and tone.* [L.6.3b]*
7	38.a	*Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.* [L.7.3a]*
8	36.e	*Recognize and correct inappropriate shifts in verb voice and mood.*[L.8.1a]*

38. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening. [L.9-10.3]
    a. Write and edit work so that it conforms to the guidelines in a style manual (e.g., Modern Language Association's *MLA Handbook*, Turabian's *A Manual for Writers*) appropriate for the discipline and writing type. [L.9-10.3a]

Vocabulary Acquisition and Use

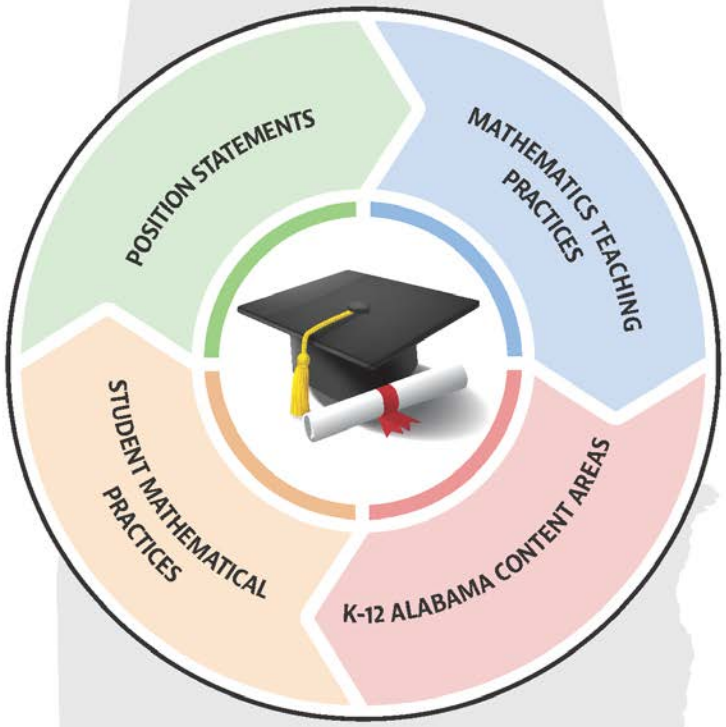
39. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *Grade 9 reading and content*, choosing flexibly from a range of strategies. [L.9-10.4]
    a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. [L.9-10.4a]
    b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *analyze, analysis, analytical; advocate, advocacy*). [L.9-10.4b]
    c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. [L.9-10.4c]
    d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary). [L.9-10.4d]

40. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. [L.9-10.5]
    a. Interpret figures of speech (e.g., euphemism, oxymoron) in context and analyze their role in the text. [L.9-10.5a]
    b. Analyze nuances in the meaning of words with similar denotations. [L.9-10.5b]

41. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. [L.9-10.6]

ALABAMA COURSE OF STUDY

MATHEMATICS



Eric G. Mackey, State Superintendent of Education
Alabama State Department of Education

Geometry with Data Analysis
Overview

Geometry with Data Analysis is a newly-designed course which builds on the students' experiences in the middle grades. It is the first of three required courses in high school mathematics, providing a common Grade 9 experience for all students entering high-school-level mathematics.

If students need additional support while taking *Geometry with Data Analysis*, schools are encouraged to offer a concurrent "lab course" to meet their specific needs. The lab course might review prior knowledge for upcoming lessons, reinforce content from previous lessons, or preview upcoming content to ensure that students can fully participate in the required class. Since the lab course does not cover additional mathematical standards, students can receive only an elective credit for each lab course, not a mathematics credit. See further details on the lab courses in the High School Overview. Note that school systems will not offer *Geometry with Data Analysis* as "A" and "B" courses in which the content is spread over two courses.

Geometry with Data Analysis builds essential concepts necessary for students to meet their postsecondary goals (whether they pursue additional study or enter the workforce), to function as effective citizens, and to recognize the wonder, joy, and beauty of mathematics (NCTM, 2018). It is important because it develops mathematical knowledge and skills through visual representations prior to the more abstract development of algebra. Beginning high school mathematics with *Geometry with Data Analysis* in Grade 9 offers students the opportunity to build their reasoning and sense-making skills, see the applicability of mathematics, and prepare more effectively for further studies in algebra. The course also focuses on data analysis, which provides students with tools to describe, show, and summarize data in the world around them.

In *Geometry with Data Analysis*, students incorporate knowledge and skills from several mathematics content areas, leading to a deeper understanding of fundamental relationships within the discipline and building a solid foundation for further study. In the content area of Geometry and Measurement, students build on and deepen prior understanding of transformations, congruence, similarity, and coordinate geometry concepts. Informal explorations of transformations provide a foundation for more formal considerations of congruence and similarity, including development of criteria for triangle congruence and similarity. An emphasis on reasoning and proof throughout the content area promotes exploration, conjecture testing, and informal and formal justification. Students extend their middle school work with conjecturing and creating informal arguments to more formal proofs in this course.

In the content area of Algebra and Functions, students perform algebraic calculations with specific application to geometry that build on foundations of algebra from Grades 7 and 8. In the Data Analysis, Statistics, and Probability content area, students build from earlier experiences in analyzing data and creating linear models to focus on univariate quantitative data on the real number line (shape, center, and variability) and bivariate quantitative data on a coordinate plane (creating linear models).

NOTE: Although not all content areas in the grade level have been included in the overview, all standards should be included in instruction.

A focus on mathematical modeling and real-world statistical problem-solving is included across the course; see Appendix E for more information on the modeling cycles for mathematics and statistics. It is essential for students to use technology and other mathematical tools to explore geometric shapes and their properties and to represent and analyze data.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both within the classroom and in life. **The Student Mathematical Practices are standards to be incorporated across all grades.**

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

The standards indicating what students should know or be able to do at the end of the course are listed in the right columns of the content standard tables. The essential concepts are listed in the left columns. In some cases, focus areas are indicated. Statements in **bold print** indicate the scope of the standard and align the standard to related content taught in other courses. The full scope of every standard should be addressed during instruction.

Geometry with Data Analysis Content Standards

Each content standard completes the stem *"Students will…"*

Number and Quantity	
Together, irrational numbers and rational numbers complete the real number system, representing all points on the number line, while there exist numbers beyond the real numbers called complex numbers.	1. Extend understanding of irrational and rational numbers by rewriting expressions involving radicals, including addition, subtraction, multiplication, and division, in order to recognize geometric patterns.

Quantitative reasoning includes, and mathematical modeling requires, attention to units of measurement.	2. Use units as a way to understand problems and to guide the solution of multi-step problems. a. Choose and interpret units consistently in formulas. b. Choose and interpret the scale and the origin in graphs and data displays. c. Define appropriate quantities for the purpose of descriptive modeling. d. Choose a level of accuracy appropriate to limitations of measurements when reporting quantities.

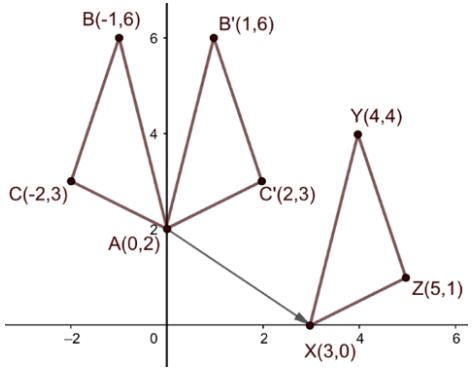
Algebra and Functions	
Focus 1: Algebra	
The structure of an equation or inequality (including, but not limited to, one-variable linear and quadratic equations, inequalities, and systems of linear equations in two variables) can be purposefully analyzed (with and without technology) to determine an efficient strategy to find a solution, if one exists, and then to justify the solution.	3. Find the coordinates of the vertices of a polygon determined by a set of lines, given their equations, by setting their function rules equal and solving, or by using their graphs.
Expressions, equations, and inequalities can be used to analyze and make predictions, both within mathematics and as mathematics is applied in different contexts – in particular, contexts that arise in relation to linear, quadratic, and exponential situations.	4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *Example*: *Rearrange the formula for the area of a trapezoid to highlight one of the bases.*
Focus 2: Connecting Algebra to Functions	
Graphs can be used to obtain exact or approximate solutions of equations, inequalities, and systems of equations and inequalities—including systems of linear equations in two variables and systems of linear and quadratic equations (given or obtained by using technology).	5. Verify that the graph of a linear equation in two variables is the set of all its solutions plotted in the coordinate plane, which forms a line. 6. Derive the equation of a circle of given center and radius using the Pythagorean Theorem. a. Given the endpoints of the diameter of a circle, use the midpoint formula to find its center and then use the Pythagorean Theorem to find its equation. b. Derive the distance formula from the Pythagorean Theorem.

Data Analysis, Statistics, and Probability	
Focus 1: Quantitative Literacy	
Mathematical and statistical reasoning about data can be used to evaluate conclusions and assess risks.	7. Use mathematical and statistical reasoning with quantitative data, both univariate data (set of values) and bivariate data (set of pairs of values) that suggest a linear association, in order to draw conclusions and assess risk. *Example*: *Estimate the typical age at which a lung cancer patient is diagnosed, and estimate how the typical age differs depending on the number of cigarettes smoked per day.*
Focus 2: Visualizing and Summarizing Data	
Data arise from a context and come in two types: quantitative (continuous or discrete) and categorical. Technology can be used to "clean" and organize data, including very large data sets, into a useful and manageable structure – a first step in any analysis of data	8. Use technology to organize data, including very large data sets, into a useful and manageable structure.
Distributions of quantitative data (continuous or discrete) in one variable should be described in the context of the data with respect to what is typical (the shape, with appropriate measures of center and variability, including standard deviation) and what is not (outliers), and these characteristics can be used to compare two or more subgroups with respect to a variable.	9. Represent the distribution of univariate quantitative data with plots on the real number line, choosing a format (dot plot, histogram, or box plot) most appropriate to the data set, and represent the distribution of bivariate quantitative data with a scatter plot. **Extend from simple cases by hand to more complex cases involving large data sets using technology.** 10. Use statistics appropriate to the shape of the data distribution to compare and contrast two or more data sets, utilizing the mean and median for center and the interquartile range and standard deviation for variability. a. Explain how standard deviation develops from mean absolute deviation. b. Calculate the standard deviation for a data set, using technology where appropriate. 11. Interpret differences in shape, center, and spread in the context of data sets, accounting for possible effects of extreme data points (outliers) on mean and standard deviation.

Scatter plots, including plots over time, can reveal patterns, trends, clusters, and gaps that are useful in analyzing the association between two contextual variables.	12. Represent data of two quantitative variables on a scatter plot, and describe how the variables are related. a. Find a linear function for a scatter plot that suggests a linear association and informally assess its fit by plotting and analyzing residuals, including the squares of the residuals, in order to improve its fit. b. Use technology to find the least-squares line of best fit for two quantitative variables.
Analyzing the association between two quantitative variables should involve statistical procedures, such as examining (with technology) the sum of squared deviations in fitting a linear model, analyzing residuals for patterns, generating a least-squares regression line and finding a correlation coefficient, and differentiating between correlation and causation.	13. Compute (using technology) and interpret the correlation coefficient of a linear relationship. 14. Distinguish between correlation and causation.
Data analysis techniques can be used to develop models of contextual situations and to generate and evaluate possible solutions to real problems involving those contexts.	15. Evaluate possible solutions to real-life problems by developing linear models of contextual situations and using them to predict unknown values. a. Use the linear model to solve problems in the context of the given data. b. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the given data.

Geometry and Measurement	
Focus 1: Measurement	
Areas and volumes of figures can be computed by determining how the figure might be obtained from simpler figures by dissection and recombination.	16. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

	17. Model and solve problems using surface area and volume of solids, including composite solids and solids with portions removed. a. Give an informal argument for the formulas for the surface area and volume of a sphere, cylinder, pyramid, and cone using dissection arguments, Cavalieri's Principle, and informal limit arguments. b. Apply geometric concepts to find missing dimensions to solve surface area or volume problems.
Constructing approximations of measurements with different tools, including technology, can support an understanding of measurement.	18. Given the coordinates of the vertices of a polygon, compute its perimeter and area using a variety of methods, including the distance formula and dynamic geometry software, and evaluate the accuracy of the results.
When an object is the image of a known object under a similarity transformation, a length, area, or volume on the image can be computed by using proportional relationships.	19. Derive and apply the relationships between the lengths, perimeters, areas, and volumes of similar figures in relation to their scale factor. 20. Derive and apply the formula for the length of an arc and the formula for the area of a sector.
Focus 2: Transformations	
Applying geometric transformations to figures provides opportunities for describing the attributes of the figures preserved by the transformation and for describing symmetries by examining when a figure can be mapped onto itself.	21. Represent transformations and compositions of transformations in the plane (coordinate and otherwise) using tools such as tracing paper and geometry software. a. Describe transformations and compositions of transformations as functions that take points in the plane as inputs and give other points as outputs, using informal and formal notation. b. Compare transformations which preserve distance and angle measure to those that do not. 22. Explore rotations, reflections, and translations using graph paper, tracing paper, and geometry software. a. Given a geometric figure and a rotation, reflection, or translation, draw the image of the transformed figure using graph paper, tracing paper, or geometry software. b. Specify a sequence of rotations, reflections, or translations that will carry a given figure onto another. c. Draw figures with different types of symmetries and describe their attributes.

	23. Develop definitions of rotation, reflection, and translation in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
Showing that two figures are congruent involves showing that there is a rigid motion (translation, rotation, reflection, or glide reflection) or, equivalently, a sequence of rigid motions that maps one figure to the other.	24. Define congruence of two figures in terms of rigid motions (a sequence of translations, rotations, and reflections); show that two figures are congruent by finding a sequence of rigid motions that maps one figure to the other. *Example: $\triangle ABC$ is congruent to $\triangle XYZ$ since a reflection followed by a translation maps $\triangle ABC$ onto $\triangle XYZ$.*  25. Verify criteria for showing triangles are congruent using a sequence of rigid motions that map one triangle to another. a. Verify that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent. b. Verify that two triangles are congruent if (but not only if) the following groups of corresponding parts are congruent: angle-side-angle (ASA), side-angle-side (SAS), side-side-side (SSS), and angle-angle-side (AAS). *Example: Given two triangles with two pairs of congruent corresponding sides and a pair of congruent included angles, show that there must be a sequence of rigid motions will map one onto the other.*

Showing that two figures are similar involves finding a similarity transformation (dilation or composite of a dilation with a rigid motion) or, equivalently, a sequence of similarity transformations that maps one figure onto the other.	26. Verify experimentally the properties of dilations given by a center and a scale factor. a. Verify that a dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. b. Verify that the dilation of a line segment is longer or shorter in the ratio given by the scale factor. 27. Given two figures, determine whether they are similar by identifying a similarity transformation (sequence of rigid motions and dilations) that maps one figure to the other. 28. Verify criteria for showing triangles are similar using a similarity transformation (sequence of rigid motions and dilations) that maps one triangle to another. a. Verify that two triangles are similar if and only if corresponding pairs of sides are proportional and corresponding pairs of angles are congruent. b. Verify that two triangles are similar if (but not only if) two pairs of corresponding angles are congruent (AA), the corresponding sides are proportional (SSS), or two pairs of corresponding sides are proportional and the pair of included angles is congruent (SAS). *Example: Given two triangles with two pairs of congruent corresponding sides and a pair of congruent included angles, show there must be a set of rigid motions that maps one onto the other.*
Focus 3: Geometric Arguments, Reasoning, and Proof	
Using technology to construct and explore figures with constraints provides an opportunity to explore the independence and dependence of assumptions and conjectures.	29. Find patterns and relationships in figures including lines, triangles, quadrilaterals, and circles, using technology and other tools. a. Construct figures, using technology and other tools, in order to make and test conjectures about their properties. b. Identify different sets of properties necessary to define and construct figures.
Proof is the means by which we demonstrate whether a statement is true or false mathematically, and proofs can be communicated in a variety of ways (e.g., two-column, paragraph).	30. Develop and use precise definitions of figures such as angle, circle, perpendicular lines, parallel lines, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

	31. Justify whether conjectures are true or false in order to prove theorems and then apply those theorems in solving problems, communicating proofs in a variety of ways, including flow chart, two-column, and paragraph formats. a. Investigate, prove, and apply theorems about lines and angles, including but not limited to: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; the points on the perpendicular bisector of a line segment are those equidistant from the segment's endpoints. b. Investigate, prove, and apply theorems about triangles, including but not limited to: the sum of the measures of the interior angles of a triangle is 180˚; the base angles of isosceles triangles are congruent; the segment joining the midpoints of two sides of a triangle is parallel to the third side and half the length; a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem using triangle similarity. c. Investigate, prove, and apply theorems about parallelograms and other quadrilaterals, including but not limited to both necessary and sufficient conditions for parallelograms and other quadrilaterals, as well as relationships among kinds of quadrilaterals. *Example*: *Prove that rectangles are parallelograms with congruent diagonals.*
Proofs of theorems can sometimes be made with transformations, coordinates, or algebra; all approaches can be useful, and in some cases one may provide a more accessible or understandable argument than another.	32. Use coordinates to prove simple geometric theorems algebraically. 33. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems. *Example*: *Find the equation of a line parallel or perpendicular to a given line that passes through a given point.*

Focus 4: Solving Applied Problems and Modeling in Geometry	
Recognizing congruence, similarity, symmetry, measurement opportunities, and other geometric ideas, including right triangle trigonometry, in real-world contexts provides a means of building understanding of these concepts and is a powerful tool for solving problems related to the physical world in which we live.	34. Use congruence and similarity criteria for triangles to solve problems in real-world contexts. 35. Discover and apply relationships in similar right triangles. a. Derive and apply the constant ratios of the sides in special right triangles (45˚-45˚-90˚ and 30˚-60˚-90˚). b. Use similarity to explore and define basic trigonometric ratios, including sine ratio, cosine ratio, and tangent ratio. c. Explain and use the relationship between the sine and cosine of complementary angles. d. Demonstrate the converse of the Pythagorean Theorem. e. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems, including finding areas of regular polygons. 36. Use geometric shapes, their measures, and their properties to model objects and use those models to solve problems. 37. Investigate and apply relationships among inscribed angles, radii, and chords, including but not limited to: the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.
Experiencing the mathematical modeling cycle in problems involving geometric concepts, from the simplification of the real problem through the solving of the simplified problem, the interpretation of its solution, and the checking of the solution's feasibility, introduces geometric techniques, tools, and points of view that are valuable to problem-solving.	38. Use the mathematical modeling cycle involving geometric methods to solve design problems. *Examples: Design an object or structure to satisfy physical constraints or minimize cost; work with typographic grid systems based on ratios; apply concepts of density based on area and volume.*

Alabama Curriculum Guide to the Standards: Science Grades K-12

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BIOLOGY

Biology is a required, inquiry-based course focused on providing all high school students with foundational life science content about the patterns, processes, and interactions among living organisms. The emphasis is on increased sophistication and rigor of a limited number of core ideas rather than on memorizing a breadth of factual content. Students use prior and new knowledge to build conceptual understandings based on evidence from their own and others' investigations. They use their own learning and experiences to support claims and engage in argument from evidence. The standards provide a depth of conceptual understanding to adequately prepare them for college, career, and citizenship with an appropriate level of scientific literacy. Resources specific to the local area as well as external resources, including evidenced-based literature found within scientific journals, should be used to extend and increase the complexity of the core ideas.

Content standards within this course are organized according to the disciplinary core ideas for the Life Science domain. The first core idea, From Molecules to Organisms: Structures and Processes, concentrates on the structure of cells and how their functions are necessary for supporting life, growth, behavior, and reproduction. The second core idea, Ecosystems: Interactions, Energy, and Dynamics, investigates the positive and negative interactions between living organisms and other biotic and abiotic factors. The third core idea, Heredity: Inheritance and Variation of Traits, centers on the formation of proteins that affect the trait expression, also known as the central dogma of molecular biology; the passing of distinguishing genetic information throughout generations; and how environmental factors and genetic errors can cause gene mutations. The fourth core idea, Unity and Diversity, examines the variation of traits within a population over a long period of time that results in diversity among organisms. Integrated within the disciplinary core ideas of Biology are the Engineering, Technology, and Applications of Science (ETS) core ideas, which are denoted with an asterisk (*). The ETS core ideas require students to use tools and materials to solve simple problems and to use representations to convey design solutions to a problem and determine which is most appropriate.

Students will:

From Molecules to Organisms: Structures and Processes

1. Use models to compare and contrast how the structural characteristics of carbohydrates, nucleic acids, proteins, and lipids define their function in organisms.

- ♦ **Objective B.1.1:** **Define carbohydrates, nucleic acids, lipids, proteins, and macromolecules.**
- **Objective B.1.2:** **Create a model to compare the structural characteristics of the macromolecules.**
- ♦ **Objective B.1.3:** **Identify structures and functions of macromolecules found in living things.**
- ♦ **Objective B.1.4:** **Identify patterns in macromolecules.**

2. Obtain, evaluate, and communicate information to describe the function and diversity of organelles and structures in various types of cells (e.g., muscle cells having a large amount of mitochondria, plasmids in bacteria, chloroplasts in plant cells).

- **Objective B.2.1: Define organelles, mitochondria, plasmids, chloroplast, cell wall, plasma membrane, centrioles, Smooth and Rough ER, eukaryotic cells and prokaryotic cells.**
- **Objective B.2.2: Create a model of a plant and animal cell.**
- **Objective B.2.3: Explain relationships of organelles and their structure in various types of cells using a chart or diagram.**
- **Objective B.2.4: Compare and contrast functions and structures of the organelles in plant and animal cells.**
- **Objective B.2.5: Draw and label plant and animal cell.**

3. Formulate an evidence-based explanation regarding how the composition of deoxyribonucleic acid (DNA) determines the structural organization of proteins.
   a. Obtain and evaluate experiments of major scientists and communicate their contributions to the development of the structure of DNA and to the development of the central dogma of molecular biology.
   b. Obtain, evaluate, and communicate information that explains how advancements in genetic technology (e.g., Human Genome Project, **Enc**yclopedia **o**f **D**NA **E**lements [ENCODE] project, 1000 Genomes Project) have contributed to the understanding as to how a genetic change at the DNA level may affect proteins and, in turn, influence the appearance of traits.
   c. Obtain information to identify errors that occur during DNA replication (e.g., deletion, insertion, translocation, substitution, inversion, frame-shift, point mutations).

- **Objective B.3.1: Define deoxyribonucleic acids, ribonucleic acids, DNA replication, deletion, insertion, translocation, point shift and frame shift mutation.**
- **Objective B.3.2: Analyze the errors and patterns that occur during DNA replication.**
- **Objective B.3.3: Construct a model of DNA.**
- **Objective B.3.4: Identify the complementary nitrogen base pairs.**
- **Objective B.3.5: Explain the relationship between DNA, genes, and chromosomes.**
- **Objective B.3.6: Describe the roles of DNA and RNA in protein synthesis.**
- **Objective B.3.7: Compare and contrast RNA and DNA.**

4. Develop and use models to explain the role of the cell cycle during growth and maintenance in multicellular organisms (e.g., normal growth and/or uncontrolled growth resulting in tumors).

- **Objective B.4.1: Define mitosis, interface, meiosis, and mutations.**
- **Objective B.4.2: Analyze uncontrolled growth of cells resulting in tumors/cancers.**
- **Objective B.4.3: Construct models of mitosis and meiosis.**
- **Objective B.4.4: Explain the steps in mitosis and meiosis.**
- **Objective B.4.5: Diagram the cell cycle.**

5. Plan and carry out investigations to explain feedback mechanisms (e.g., sweating and shivering) and cellular processes (e.g., active and passive transport) that maintain homeostasis.
    a. Plan and carry out investigations to explain how the unique properties of water (e.g., polarity, cohesion, adhesion) are vital to maintaining homeostasis in organisms.

♦	**Objective B.5.1:**	**Define active transport, passive transport, osmosis, diffusion, homeostasis, exocytosis, endocytosis, hypotonic, hypertonic, and isotonic solutions.**
	Objective B.5.2:	**Conduct an experiment to show a cell's reaction in hypotonic, hypertonic, and isotonic solutions.**
	Objective B.5.3:	**Illustrate an activity to demonstrate homeostasis**.
♦	**Objective B.5.4:**	**Compare and contrast active transport and passive ransport.**
♦	**Objective B.5.5:**	**Identify examples of active transport and passive transport.**

6. Analyze and interpret data from investigations to explain the role of products and reactants of photosynthesis and cellular respiration in the cycling of matter and the flow of energy.
    a. Plan and carry out investigations to explain the interactions among pigments, absorption of light, and reflection of light.

♦	**Objective B.6.1:**	**Define photosynthesis, cellular respiration, reactants, products, pigments, and chlorophyll.**
	Objective B.6.2:	**Explain how pigments, light reflection, and light absorption effect photosynthesis in plants.**
	Objective B.6.3:	**Interpret information from the photosynthesis formula.**
	Objective B.6.4:	**Write the formulas for photosynthesis and cellular respiration.**
♦	**Objective B.6.5:**	**Identify reactants and products of photosynthesis and cellular respiration.**

Ecosystems: Interactions, Energy, and Dynamics

7. Develop and use models to illustrate examples of ecological hierarchy levels, including biosphere, biome, ecosystem, community, population, and organism.

♦	**Objective B.7.1:**	**Define biosphere, biomes, ecosystem, community, population, and organisms.**
	Objective B.7.2:	**Defend the effectiveness of a design solution that maintains biodiversity.**
♦	**Objective B.7.3:**	**Construct models that represent ecosystems and biomes.**
♦	**Objective B.7.4:**	**Identify examples of abiotic and biotic factors.**

8. Develop and use models to describe the cycling of matter (e.g., carbon, nitrogen, water) and flow of energy (e.g., food chains, food webs, biomass pyramids, ten percent law) between abiotic and biotic factors in ecosystems.

♦	**Objective B.8.1:**	**Define food chain, food web, biomass, trophic pyramids, abiotic and biotic. factors Symbiotic relationships, mutualism, predation, competition, commensalism, and parasitism.**
	Objective B.8.2:	**Develop a food chain and a food web.**
	Objective B.8.3:	**Illustrate how the ten percent law applies to the food chain.**

- **Objective B.8.4: Illustrate how matter and energy flows through the carbon, nitrogen, and water cycle.**
- **Objective B.8.5: Illustrate the cycling of matter between abiotic and biotic parts of the ecosystem.**
- **Objective B.8.6: Explain the flow of energy and the conservation of matter in an ecosystem.**
- **Objective B.8.7: Label a food chain and a food web.**

9. Use mathematical comparisons and visual representations to support or refute explanations of factors that affect population growth (e.g., exponential, linear, logistic).

- **Objective B.9.1: Define population growth, exponential growth, death rate, growth rate, and birth rate.**
- **Objective B.9.2: Determine possible causes of birth and death rates in an ecosystem.**
- **Objective B.9.3: Demonstrate how changes to physical and biological components of an ecosystem can lead to shifts in populations.**
- **Objective B.9.4: Model exponential and linear growth in an ecosystem.**
- **Objective B.9.5: Chart a population's growth, birth, and death rates.**

10. Construct an explanation and design a real-world solution to address changing conditions and ecological succession caused by density-dependent and/or density-independent factors.*

- **Objective B.10.1: Define ecological succession, primary and secondary succession, density dependent and density independent factors.**
- **Objective B.10.2: Model an ecosystem that shows primary and secondary succession.**
- **Objective B.10.3: Interpret data to provide evidence regarding how resources availability impacts individual organisms as well as populations of organisms in an ecosystem.**
- **Objective B.10.4: Determine if a change to an ecosystem is caused by a density-dependent or a density-independent factor.**

Heredity: Inheritance and Variation of Traits

11. Analyze and interpret data collected from probability calculations to explain the variation of expressed traits within a population.
    a. Use mathematics and computation to predict phenotypic and genotypic ratios and percentages by constructing Punnett squares, including using both homozygous and heterozygous allele pairs.
    b. Develop and use models to demonstrate codominance, incomplete dominance, and Mendel's laws of segregation and independent assortment.
    c. Analyze and interpret data (e.g., pedigree charts, family and population studies) regarding Mendelian and complex genetic disorders (e.g., sickle-cell anemia, cystic fibrosis, type 2 diabetes) to determine patterns of genetic inheritance and disease risks from both genetic and environmental factors.

- **Objective B.11.1: Define probability, monohybrid crossing, phenotype, genotype, Punnett Square, homozygous, heterozygous, allele, codominance, incomplete dominance, Law of Segregation, independent assortment, and genetic disorders.**

Objective B.11.2: Predict genetic disorders by using pedigrees and studying family history.
Objective B.11.3: Calculate genotypic and phenotypic percentages and ratios using a Punnett Square.
Objective B.11.4: Evaluate the causes of different genetic disorders.
♦ **Objective B.11.5: Illustrate Mendel's law of segregation and independent assortment.**
♦ **Objective B.11.6: Interpret inheritance patterns shown in charts and graphs.**

12. Develop and use a model to analyze the structure of chromosomes and how new genetic combinations occur through the process of meiosis.
    a. Analyze data to draw conclusions about genetic disorders caused by errors in meiosis (e.g., Down syndrome, Turner syndrome).

♦ **Objective B.12.1: Define chromosomes, DNA, genetic recombination, sexual reproduction, haploid and diploid, and meiosis.**
Objective B.12.2: Research genetic disorders caused by errors in meiosis.
Objective B.12.3: Model chromosome movement during meiosis.
♦ **Objective B.12.4: Discuss information on genetic disorders.**
♦ **Objective B.12.5: Illustrate the steps in meiosis.**

Unity and Diversity

13. Obtain, evaluate, and communicate information to explain how organisms are classified by physical characteristics, organized into levels of taxonomy, and identified by binomial nomenclature (e.g., taxonomic classification, dichotomous keys).
    a. Engage in argument to justify the grouping of viruses in a category separate from living things.

♦ **Objective B.13.1: Define taxonomy, levels of taxonomy (kingdom/species), binomial nomenclature, and classification.**
Objective B.13.2: Identify organisms using a dichotomous key.
Objective B.13.3: Analyze a dichotomous key.
Objective B.13.4: Identify organisms using binomial nomenclature.
♦ **Objective B.13.5: Compare and contrast viruses to living organisms.**
♦ **Objective B.13.6: Sequence taxa from most inclusive to least inclusive.**

14. Analyze and interpret data to evaluate adaptations resulting from natural and artificial selection that may cause changes in populations over time (e.g., antibiotic-resistant bacteria, beak types, peppered moths, pest-resistant crops).

♦ **Objective B.14.1: Define natural selection, artificial selection, adaptations, and evolution.**
Objective B.14.2: Describe adaptations of organisms formed through the process of evolution.
Objective B.14.3: Hypothesize population outcomes from natural and artificial selections.
♦ **Objective B.14.4: Identify dominant characteristics of a population.**

15. Engage in argument from evidence (e.g., mathematical models such as distribution graphs) to explain how the diversity of organisms is affected by overpopulation of species, variation due to genetic mutations, and competition for limited resources.

- **Objective B.15.1: Define Diversity, genetic mutations, and limited resources.**
- **Objective B.15.2: Interpret data to predict how environmental conditions and genetic factors influence the growth of organisms.**
- **Objective B.15.3: Differentiate between genetic mutations and competitions for limited resources, resulting in population trends.**
- **Objective B.15.4: Identify trends in populations from different biomes.**

16. Analyze scientific evidence (e.g., DNA, fossil records, cladograms, biogeography) to support hypotheses of common ancestry and biological evolution.

- **Objective B.16.1: Define scientific evidence, cladogram, biological evolution, phylogeny, and fan diagram.**
- **Objective B.16.2: Analyze cladograms.**
- **Objective B.16.3: Categorize scientific evidence supporting hypothesis of common ancestry.**
- **Objective B.16.4: Research scientific evidence on biological evolution of species.**
- **Objective B.16.5: Describe the anatomical similarities and differences between modern organisms and fossil organisms.**

CURRICULUM GUIDE
to the Alabama Course of Study

Social Studies
GRADES K-12

Joseph B. Morton, State Superintendent of Education • Alabama Department of Education

February 2006

NINTH GRADE

World History: 1500 to the Present

Students will:

E	G	H	PS
		✓	

1. Describe developments in Italy and Northern Europe during the Renaissance period with respect to humanism, arts and literature, intellectual development, increased trade, and advances in technology.

- **Objective 9.1.1:** Define humanism.
- **Objective 9.1.2:** Describe the contributions of the Renaissance with respect to humanism, arts and literature, intellectual development, increased trade, and advances in technology.
  - Examples: invention of the printing press, works of Michelangelo and Leonardo da Vinci, Christopher Columbus's route to Asia

E	G	H	PS
✓	✓	✓	✓

2. Describe the role of mercantilism and imperialism in European exploration and colonization in the sixteenth century, including the Columbian Exchange.

- **Objective 9.2.1:** Describe the effects of mercantilism and imperialism on exploration and colonization in the sixteenth century.
  - Examples: imports, exports, supply and demand, employment opportunities, raw materials, finished products
- **Objective 9.2.2:** Describe the impact of the Columbian Exchange on Native Americans.
  - Example: exchange of foods and diseases

Additional content to be taught:

- Describing the impact of the Commercial Revolution on European society
- Identifying major ocean currents, wind patterns, landforms, and climates affecting European exploration
  - Example: marking ocean currents and wind patterns on a map

E	G	H	PS
		✓	

3. Explain causes of the Reformation and its impact, including tensions between religious and secular authorities, reformers and doctrines, the Counter-Reformation, the English Reformation, and wars of religion.

- **Objective 9.3.1:** Define Reformation, counter-Reformation, English Reformation, and religious and secular authorities.
- **Objective 9.3.2:** Compare viewpoints of religious and secular authorities..
  - Examples: Roman Catholic Church and Protestant Reformation, Martin Luther and the Ninety-five Theses, John Calvin and Calvinism

E	G	H	PS
✓	✓	✓	

4. Explain the relationship between physical geography and cultural development in India, Africa, Japan, and China in the early Global Age, including trade and travel, natural resources, and movement and isolation of peoples and ideas.

- **Objective 9.4.1:** Relate cultural development to physical geography in India, Africa, Japan, and China.
  Examples: religious beliefs, races, languages

Additional content to be taught:

- Depicting the general location of, size of, and distance between regions in the early Global Age
  Example: drawing sketch maps

E	G	H	PS
		✓	✓

5. Describe the rise of absolutism and constitutionalism and their impact on European nations.

- **Objective 9.5.1:** Define absolutism according to Thomas Hobbes and constitutionalism according to John Locke.
- **Objective 9.5.2:** Identify the Petition of Rights and the English Bill of Rights.
  Example: comparing the English Bill of Rights with the United States Bill of Rights

Additional content to be taught:

- Contrasting philosophies of Thomas Hobbes and John Locke and the belief in the divine right of kings
- Comparing absolutism as it developed in France, Russia, and Prussia, including the reigns of Louis XIV, Peter the Great, and Frederick the Great
- Identifying major provisions of the Petition of Rights and the English Bill of Rights

E	G	H	PS
		✓	

6. Identify significant ideas and achievements of scientists and philosophers of the Scientific Revolution and the Age of Enlightenment.

Examples: Scientific Revolution—astronomical theories of Copernicus and Galileo, Newton's law of gravity;
Age of Enlightenment—philosophies of Montesquieu, Voltaire, and Rousseau

- **Objective 9.6.1:** Describe the Scientific Revolution and the Age of Enlightenment.

Objective 9.6.2: Identify significant ideas and achievements of scientists during the Scientific Revolution.

Objective 9.6.3: Identify significant ideas of philosophers during the Age of Enlightenment.

E	G	H	PS
	✓	✓	✓

7. Describe the impact of the French Revolution on Europe, including political evolution, social evolution, and diffusion of nationalism and liberalism.

- **Objective 9.7.1:** Describe events leading to the French Revolution.

Additional content to be taught:

- Identifying causes of the French Revolution
- Describing the influence of the American Revolution upon the French Revolution
- Identifying objectives of different groups participating in the French Revolution
- Describing the role of Napoleon as an empire builder

E	G	H	PS
	✓	✓	✓

8. Compare revolutions in Latin America and the Caribbean, including Haiti, Colombia, Venezuela, Argentina, Chile, and Mexico.

- **Objective 9.8.1:** Explain significant factors leading to revolutions in Latin America and the Caribbean.

Additional content to be taught:

- Identifying the location of countries in Latin America

E	G	H	PS
✓		✓	✓

9. Describe the impact of technological inventions, conditions of labor, and the economic theories of capitalism, liberalism, socialism, and Marxism during the Industrial Revolution on the economics, society, and politics of Europe.

Objective 9.9.1: Define capitalism, liberalism, socialism, and Marxism.

- **Objective 9.9.2:** Identify reasons why the Industrial Revolution began in England and spread to other parts of Europe.

Additional content to be taught:

- Identifying important inventors in Europe during the Industrial Revolution
- Comparing the Industrial Revolution in England with later revolutions in Europe

E	G	H	PS
	✓	✓	✓

10. Describe the influence of urbanization during the nineteenth century on the Western World.

Examples: interaction with the environment, provisions for public health, increased opportunities for upward mobility, changes in social stratification, development of Romanticism and Realism, development of Impressionism and Cubism

- **Objective 9.10.1:** Identify leaders and major effects of nineteenth-century social reform movements on the Western World.
  Examples: leaders—Susan B. Anthony, Elizabeth Cady Stanton, Abraham Lincoln, Frederick Douglass; effects—Thirteenth, Fourteenth, Fifteenth, and Nineteenth Amendments; Emancipation Proclamation

Additional content to be taught:

- Describing the search for political democracy and social justice in the Western World
  Examples: European Revolution of 1848, slavery and emancipation in the United States, emancipation of serfs in Russia, universal manhood suffrage, women's suffrage

E	G	H	PS
✓		✓	✓

11. Describe the impact of European nationalism and Western imperialism as forces of global transformation, including the unification of Italy and Germany, the rise of Japan's power in East Asia, economic roots of imperialism, imperialist ideology, colonialism and national rivalries, and United States imperialism.

- **Objective 9.11.1:** Define nationalism and imperialism.
- **Objective 9.11.2:** Describe factors that caused European nationalism and Western imperialism to become forces of global transformation.

Additional content to be taught:

- Describing resistance to European imperialism in Africa, Japan, and China

E	G	H	PS
	✓	✓	✓

12. Explain causes and consequences of World War I, including imperialism, militarism, nationalism, and the alliance system.

- **Objective 9.12.1:** Define militarism, Communism, alliance system, and the Central and Allied Powers.
  Objective 9.12.2: Describe the Fourteen Points and the Treaty of Versailles of 1919, including their role in the establishment of the League of Nations.
- **Objective 9.12.3:** Explain the involvement of the United States in World War I.
  Examples: sinking of the *Lusitania*, submarine warfare, the Zimmerman Note

Additional content to be taught:

- Describing the rise of Communism in Russia during World War I
  Examples: return of Vladimir Lenin, rise of Bolsheviks
- Describing military technology used during World War I
- Identifying problems created by the Treaty of Versailles of 1919
  Examples: Germany's reparations and war guilt, international controversy over the League of Nations
- Identifying alliances during World War I and boundary changes after World War I

E	G	H	PS
✓		✓	✓

13. Explain challenges of the post-World War I period.

Examples: 1920s cultural disillusionment, colonial rebellion and turmoil in Ireland and India, attempts to achieve political stability in Europe

- **Objective 9.13.1:** Describe post-World War I American culture.
  Examples: decline of farm incomes, poverty, unorganized labor force
- **Objective 9.13.2:** Explain the causes and effects of the Great Depression.
  Examples: causes—stock market crash, collapse of farm economy, collapse of savings and loan banks; effects—inflation, poverty

Additional content to be taught:

- Identifying causes of the Great Depression
- Characterizing the global impact of the Great Depression

E	G	H	PS
	✓	✓	✓

14. Describe causes and consequences of World War II.

Examples: causes—unanswered aggression, Axis goal of world conquest;
consequences—changes in political boundaries; Allied goals; lasting issues such as the Holocaust, Atomic Age, and Nuremberg Trials

- **Objective 9.14.1:** Identify the Axis and the Allied powers.
- **Objective 9.14.2:** Identify major events of World War II, including the Battles of Stalingrad, Midway, and Normandy; the Battle of the Bulge; D-Day; and the North Africa Campaign.
- **Objective 9.14.3:** Trace the major events leading to America's involvement in World War II.
- **Objective 9.14.4:** Describe the impact of the Holocaust on the populations of Europe.

Objective 9.14.5: Describe scientific advances and technological developments that resulted from World War II.

Examples: atomic energy and Hiroshima and Nagasaki

Additional content to be taught:

- Explaining the rise of militarist and totalitarian states in Italy, Germany, the Soviet Union, and Japan
- Identifying turning points of World War II in the European and Pacific Theaters
- Depicting geographic locations of world events between 1939 and 1945
- Identifying on a map changes in national borders as a result of World War II

E	G	H	PS
		✓	✓

15. Describe post-World War II realignment and reconstruction in Europe, Asia, and Latin America, including the end of colonial empires.

Examples: reconstruction of Japan; nationalism in India, Pakistan, Indonesia, and Africa; Chinese Communist Revolution; creation of Jewish state of Israel; Cuban Revolution; Central American conflicts

♦ **Objective 9.15.1:** Explain major consequences of World War II on Europe, Asia, and Latin America.

Additional content to be taught:

- Explaining origins of the Cold War
  Examples: Yalta and Potsdam Conferences, "Iron Curtain," Truman Doctrine, Marshall Plan, United Nations, North Atlantic Treaty Organization (NATO), Warsaw Pact
- Tracing the progression of the Cold War
  Examples: nuclear weapons, European power struggles, Korean War, Berlin Wall, Cuban Missile Crisis, Vietnam War

E	G	H	PS
✓	✓	✓	✓

16. Describe the role of nationalism, militarism, and civil war in today's world, including the use of terrorism and modern weapons at the close of the twentieth and the beginning of the twenty-first centuries.

♦ **Objective 9.16.1:** Discuss terrorism and its impact on today's society.

Additional content to be taught:

- Describing the collapse of the Soviet Empire and Russia's struggle for democracy, free markets, and economic recovery and the roles of Mikhail Gorbachev, Ronald Reagan, and Boris Yeltsin
  Examples: economic failures, demands for national and human rights, resistance from Eastern Europe, reunification of Germany
- Describing effects of internal conflict, nationalism, and enmity in South Africa, Northern Ireland, Chile, the Middle East, Somalia and Rwanda, Cambodia, and the Balkans
- Characterizing the War on Terrorism, including the significance of the Iran Hostage Crisis; the Gulf Wars; September 11, 2001, terrorist attacks; and the Israeli-Palestinian conflict
- Depicting geographic locations of major world events from 1945 to the present

E	G	H	PS
✓		✓	✓

17. Describe emerging democracies from the late twentieth century to the present.

♦ **Objective 9.17.1:** Describe democratic ideals from the late twentieth century to the present.
Examples: civil liberties, human rights, separation of powers

Additional content to be taught:

- Discussing problems and opportunities involving science, technology, and the environment in the late twentieth century
  Examples: genetic engineering, space exploration
- Identifying problems involving civil liberties and human rights from 1945 to the present and ways they have been addressed
- Relating economic changes to social changes in countries adopting democratic forms of government

AOPA 9th Grade Aviation STEM Curriculum Standard Alignment

Overview: The ninth-grade course will provide the foundation for advanced exploration in the areas of flying, aerospace engineering, and unmanned aircraft systems. Students will learn about engineering practices, problem solving, and the innovations and technological developments that have made today's aviation and aerospace industries possible. Students will also learn about the wide variety of exciting and rewarding careers available to them. The ninth-grade course will inspire students to consider aviation and aerospace careers while laying the foundation for continued study in grades 10 through 12 and beyond.

Launching Into Aviation, Semester 1

Unit 1 Aviation 101

Description:

Students will explore the different types of aviation at work in the modern world. They'll learn the uses and benefits of various forms of aviation, including commercial, military, private, and drone flying, as well as space exploration. Students will also learn about different types of aircraft, from drones and rockets to airliners and general aviation airplanes. This unit will give students a taste of the exciting and varied career possibilities in these fields.

Next Generation Science Standards

Three-dimensional Learning

HS-ETS1-1 - Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

- Science and Engineering Practices
  - Asking Questions and Defining Problems
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.A: Defining and Delimiting Engineering Problems
- Crosscutting Concepts
  - Systems and System Models
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-2 - Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.C: Optimizing the Design Solution

HS-ETS1-3 - Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Influence of Science, Engineering, and Technology on Society and the Natural World

Unit 2 Taking Flight—Early Aviation Innovations

Description:

Students will follow the path of aviation from its primitive beginnings to the dawn of powered flight. They will consider how observing birds influenced the earliest human attempts at flight before moving on to explore the first successful flight technologies, including lighter-than-air aircraft and gliders. The unit will culminate with an understanding of the technologies, innovative engineering, and design processes developed by the Wright Brothers. They'll also examine how the Wright Brothers' approach to problem solving is helping today's engineers address new challenges as they strive to break boundaries in aviation and aerospace.

Next Generation Science Standards

Three-dimensional Learning

HS-ETS1-1 - Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

- Science and Engineering Practices
  - Asking Questions and Defining Problems
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.A: Defining and Delimiting Engineering Problems
- Crosscutting Concepts
  - Systems and System Models
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-2 - Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.C: Optimizing the Design Solution

HS-ETS1-3 - Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-4 - Use a computer simulation to model the impact of proposed solutions to a complex real world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. –

- Science and Engineering Practices
  - Using Mathematics and Computational Thinking
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Systems and System Models

HS-LS 1-2 - Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

- Science and Engineering Practices
  - Developing and Using Models
- Disciplinary Core Ideas
  - LS1.A: Structure and Function
- Crosscutting Concepts
  - Systems and System Models

HS-PS2-2 - Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system. (NOTE: This standard is not explicitly used as math is not required to complete the exercise).

- Science and Engineering Practices
  - Using Mathematics and Computational Thinking
- Disciplinary Core Ideas
  - PS2.A: Forces and Motion
  - PS2.B: Types of Interactions
- Crosscutting Concepts
  - Systems and System Models

Common Core State Standards Mathematics

HSG.MG.A.1 - Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
HSN-Q.A.2 - Define appropriate quantities for the purpose of descriptive modeling.
HSN-Q.A.3 - Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Unit 3 From Theory to Practical Reality - Rapid Developments in Powered Flight

Description:

Tracing the dramatic growth in aviation from its first practical applications through its use as an essential military tool, students will learn about the innovations that changed the way aircraft were made and flown. Topics will include the technological developments that led to the first commercial airline service, a transcontinental airmail system, and ultimately the fighters, long-range bombers, and transport aircraft of World War II. Students will learn how engineers, designers, and pilots solved the problems presented by aircraft that could fly further, faster, and higher than ever before.

Next Generation Science Standards

Three-dimensional Learning

HS-ESS3-2 - Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

- Science and Engineering Practices
  - Engaging in Argument from Evidence
- Disciplinary Core Ideas
  - ESS3.A: Natural Resources
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-1 - Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

- Science and Engineering Practices
  - Asking Questions and Defining Problems
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.A: Defining and Delimiting Engineering Problems
- Crosscutting Concepts
  - Systems and System Models
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-2 - Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.C: Optimizing the Design Solution

HS-ETS1-3 - Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-4 - Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

- Science and Engineering Practices
  - Using Mathematics and Computational Thinking
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Systems and System Models

Unit 4 To the Stars - Making Jet and Space Travel Possible

Description:

Students will learn about the innovations that led to the jet age and consider how the expansion of military technology into the commercial sector led to widespread social changes. They will learn about the space race and the intense political competition that led scientists and engineers to overcome seemingly insurmountable obstacles to take machines and people into space, to the moon, and beyond. They'll look at the problem-solving processes and innovative leaps took space exploration from the unimaginable to the common in a single generation.

Next Generation Science Standards

Three-dimensional Learning

HS-ETS1-1 - Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

- Science and Engineering Practices

- Asking Questions and Defining Problems
- Constructing Explanations and Designing Solutions

- Disciplinary Core Ideas
  - ETS1.A: Defining and Delimiting Engineering Problems
- Crosscutting Concepts
  - Systems and System Models
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-2 - Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.C: Optimizing the Design Solution

HS-ETS1-3 - Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-4 - Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

- Science and Engineering Practices
  - Using Mathematics and Computational Thinking
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Systems and System Models

Common Core State Standards Mathematics

HSA-REI.B.3 - Solve equations and inequalities in one variable.

HSG.MG.A.1 - Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).

HSN-Q.A.1 - Reason quantitatively and use units to solve problems.

Unit 5 Creating the Future - What's New and Next in Aviation and Aerospace

Description:

Modern aircraft navigation, fly-by-wire, “glass” cockpits, and composite structural materials are among the key innovations that students will explore as they consider how aviation continues to advance. Students will also look at how space exploration has changed as commercial enterprises have moved into that arena. The unit and the semester will culminate in a project in which students use their new understanding of aviation technology to design, build, and defend a museum exhibit based on the topics discussed during the semester.

Next Generation Science Standards

Three-dimensional Learning

HS-ETS1-1 - Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

- Science and Engineering Practices
  - Asking Questions and Defining Problems
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.A: Defining and Delimiting Engineering Problems
- Crosscutting Concepts
  - Systems and System Models
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-2 - Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.C: Optimizing the Design Solution

HS-ETS1-3 - Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-4 - Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

- Science and Engineering Practices
    - Using Mathematics and Computational Thinking
- Disciplinary Core Ideas
    - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
    - Systems and System Models

Common Core State Standards Mathematics

HSA-REI.B.3 - Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

HSN.Q.A.2 - Define appropriate quantities for the purpose of descriptive modeling.

Standards for Mathematical Practice

CCSS.MATH.CONTENT.HSN.Q.A.1 - Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas.

CCSS.MATH.CONTENT.HSN.Q.A.3 - Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

CCSS.MATH.PRACTICE.MP4 - Model with mathematics

AOPA 9th Grade Aviation STEM Curriculum Standard Alignment

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Exploring Aviation & Aerospace, Semester 2

Unit 6 Aviation Safety and Oversight
Description: Exploring the regulatory and safety organizations and infrastructure that are essential to today's aviation environment, students will define safety and examine concepts such as perceived and accepted risk before developing their own safety management systems. They'll go on to investigate the role of regulation and oversight in creating and maintaining safety and efficiency within the aviation system and gain an understanding of the mission and responsibilities of the FAA. Later, students will consider the role of the National Transportation Safety Board and take an in-depth look at the accident investigation process as they take on the roles of various NTSB "Go Team" members in a simulated accident investigation. Finally, students will examine the government's role in delivering weather information and the importance of weather reporting to aviation safety.
Next Generation Science Standards
Three-dimensional Learning

HS-ETS1-1 - Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

- Science and Engineering Practices
  - Asking Questions and Defining Problems
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.A: Defining and Delimiting Engineering Problems
- Crosscutting Concepts
  - Systems and System Models
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-2 - Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.C: Optimizing the Design Solution

HS-ETS1-3 - Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-4 - Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

- Science and Engineering Practices
  - Using Mathematics and Computational Thinking
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Systems and System Models

Common Core State Standards Mathematics

HSS-ID.B.5 - Summarize, represent, and interpret data on two categorical and quantitative variables.

HSN-Q.A.2-3 - Reason quantitatively and use units to solve problems.

Unit 7 Exploring Careers in Aviation and Aerospace

Description:

Students will learn about a variety of aviation and aerospace careers, as well as the education, training, and certification requirements needed for each. Students will begin by exploring flying careers, including airline, cargo and drone operations, military aviation, and flight instructing. Students will go on to explore aerospace engineering careers, including specialties such as propulsion and navigation. Finally, students will look at the unique skills needed to be a successful air traffic controller and participate in a simulation that demonstrates just how challenging the job can be. They'll complete the unit by exploring different types of aviation mechanic jobs.

Next Generation Science Standards

Three-dimensional Learning

HS-ETS1-2 - Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.C: Optimizing the Design Solution

HS-ETS1-3 - Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-4 - Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

- Science and Engineering Practices
  - Using Mathematics and Computational Thinking
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Systems and System Models

Unit 8 Aviation Innovation and Problem-Solving

Description:

This unit offers students a look into the future of aviation and aerospace as they discover the challenges the industries face and the innovative technologies that will address those challenges. Students will begin this unit by looking at key environmental impacts of aviation—emissions and noise—and the emerging technologies designed to help reduce both. Next, they'll explore both the necessity and the complexities of modernizing our aviation system, increasing capacity, and bringing new types of flying machines into the mix of air traffic now traversing our skies. They'll go on to explore supersonic flight, discovering its history in commercial air travel and new efforts to make it viable as a means of transportation. They'll also look at how technology has increasingly automated flight and how fully autonomous aircraft may change the future of aviation. They'll go on to explore the unique advantages and challenges associated with developing electric aircraft before considering the possibilities associated with colonizing space, including the types of jobs that might be essential to a successful colony.

Next Generation Science Standards

Three-dimensional Learning

HS-ETS1-1 - Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

- Science and Engineering Practices
  - Asking Questions and Defining Problems
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.A: Defining and Delimiting Engineering Problems
- Crosscutting Concepts
  - Systems and System Models
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-2 - Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.C: Optimizing the Design Solution

HS-ETS1-3 - Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions

- Disciplinary Core Ideas
    - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
    - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-4 - Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

- Science and Engineering Practices
    - Using Mathematics and Computational Thinking
- Disciplinary Core Ideas
    - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
    - Systems and System Models

Common Core State Standards Mathematics

HSG.MG.A.1 - Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).

Unit 9 Innovation Challenge

Description:

In this unit, students will put their understanding of the engineering design process to the test as they design a "space condo." Students will work in teams to design a dwelling to protect residents from the harsh conditions on Mars, particularly the extremely low atmospheric pressure. Students will rigorously apply the engineering design process as they identify problems, brainstorm solutions, create a design, build and test a prototype, evaluate the results, refine their design, and share what they've learned. With limits on the types of materials and designs that may be used, students will have to exercise their creativity and work collaboratively at each stage of the project.

Next Generation Science Standards

Three-dimensional Learning

HS-ETS1-1 - Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

- Science and Engineering Practices
    - Asking Questions and Defining Problems
    - Constructing Explanations and Designing Solutions

- Disciplinary Core Ideas
  - ETS1.A: Defining and Delimiting Engineering Problems
- Crosscutting Concepts
  - Systems and System Models
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-2 - Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.C: Optimizing the Design Solution

HS-ETS1-3 - Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Influence of Science, Engineering, and Technology on Society and the Natural World

Common Core State Standards Mathematics

HSG.MG.A.1 - Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).

Unit 10 Thinking About a Career in Aviation

Description:

Students will begin planning for a career in aviation and aerospace by writing a personal mission statement to help guide their future decisions. They'll go on to consider a range of training and educational options for different careers before selecting one potential career to explore further. Next, students will work on practical skills for presenting themselves to potential employers. Students will go on to evaluate the professional, technical, and communications skills they may already have and plan a path for developing additional skills in each of these areas. The unit will culminate with students building a career portfolio that they can use to support job and scholarship applications and grow throughout the remainder of their high school careers.

Next Generation Science Standards

Three-dimensional Learning

HS-ETS1-1 - Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

- Science and Engineering Practices
  - Asking Questions and Defining Problems
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.A: Defining and Delimiting Engineering Problems
- Crosscutting Concepts
  - Systems and System Models
  - Influence of Science, Engineering, and Technology on Society and the Natural World

HS-ETS1-2 - Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.C: Optimizing the Design Solution

HS-ETS1-3 - Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

- Science and Engineering Practices
  - Constructing Explanations and Designing Solutions
- Disciplinary Core Ideas
  - ETS1.B: Developing Possible Solutions
- Crosscutting Concepts
  - Influence of Science, Engineering, and Technology on Society and the Natural World

Student Performance Standards

Excellence is expected at AAHS. Performance standards define and communicate these expectations. The following are school-wide student performance standards that will be connected to the Alabama State specific learning standards contained as an attachment.

English Language Arts

- Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.
- Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses.
- Use a colon to introduce a list or quotation.
- Spell correctly.
- Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.
- Resolve issues of complex or contested usage, consulting references
- Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
  Observe hyphenation conventions.
- Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
- Write and edit work so that it conforms to the guidelines in a style manual (e.g., *MLA Handbook*, Turabian's *Manual for Writers*) appropriate for the discipline and writing type.
- Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
- Vary syntax for effect, consulting references for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.
- Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 9-12 reading and content*, choosing flexibly from a range of strategies.
- Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
- Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *analyze, analysis, analytical; advocate, advocacy*).
- Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology.

- Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
- Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
- Interpret figures of speech (e.g., euphemism, oxymoron) in context and analyze their role in the text.
- Analyze nuances in the meaning of words with similar denotations.
- Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.
- Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain
- Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.
- Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.
- Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).
- Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed)..
- Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.
- Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment
  Analyze how an author draws on and transforms source material in a specific work .
- Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.
- Analyze a case in which grasping a point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).
- Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).
- Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.
- Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)
- Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.

- Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.
- Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.
- Analyze seminal U.S. documents of historical and literary significance
- Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence.
- Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.
- Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
- Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- Provide a concluding statement or section that follows from and supports the argument presented.
- Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
- Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
- Use precise language and domain-specific vocabulary to manage the complexity of the topic.
- Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
- Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.
- Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.
- Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.
- Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.

- Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.
- Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.
- Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)
- Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
- Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
- Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
- Draw evidence from literary or informational texts to support analysis, reflection, and research.
- Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.
- Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
- Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
- Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.
- Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
- Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
- Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
- Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
- Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

- Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
- Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

Math

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Social Science

- Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.
- Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.
- Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.
- Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.
- Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.
- Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.
- Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.
- Assess the extent to which the reasoning and evidence in a text support the author's claims.
- Compare and contrast treatments of the same topic in several primary and secondary sources.
- Read and comprehend history/social studies texts with extended complexity independently and proficiently.

Science

- Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
- Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
- Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
- Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9-10 texts and topics*.

- Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., *force, friction, reaction force, energy*).
- Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
- Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
- Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
- Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

AAHS proposed learning standards will be based on the Alabama Courses of Study and industry-based standards. The ALSDE Courses of Study for English, Math, Science, and Social Studies can be found as attachments; the courses of study contain the proposed learning standards. The 9th grade *Introduction to Aviation* Course of Study is also housed as an attachment. AAHS's goal is for its students to graduate not only with a diploma, but with an industry credential.

AAHS students will go beyond state academic standards. They will also be required to meet aerospace and/or aviation industry standards, leading to obtaining an industry credential. AAHS students will start by completing an introduction course where they will learn about aerospace and aviation track options. Track options will include:

- Aviation Mechanic
- Aviation Pilot/Drone Pilot
- Aerospace/Aviation Engineer
- Aerospace/Aviation Computer Science (Cyber Security)

Students will meet with their "flight crew" near the end of their 9th grade year to determine their best track fit and to finalize their "flight plan" for the 10th-12th grade. Flight plans will meet both AHSG and industry credential requirements. Students will meet with their flight crew weekly for progress checks and flight plan adjustments, as needed. See "Other Attachments" for the introduction course standards and a sample *Flight Plan.*

Promotion Criterion: Grades 9 through 12

9th grade promotion

To be promoted from 9th to 10th grade, students must pass at least four of their core subject courses during both semesters and must have successfully completed a minimum of 6 units of credit, including the industry-based elective "Intro to Flight" course. Students must also have completed at least 10 clock hours of simulation time per their respective flight-plan.

10th grade promotion

To be promoted from 10th to 11th grade, students must pass at least four of their core subject courses during both semesters and must have successfully completed a minimum of 12 units of 29 credit; this includes at least 1 of 2 industry-based electives. Students must also have completed at least 20 clock

hours of simulation, job shadowing, apprenticeship, and/or internship time per their respective flight-plan.

11th grade promotion

To be promoted from 11th to 12th grade, students must have successfully completed a minimum of 18 units of credit; this includes 2 industry-based electives. Students must also have completed at least 30 clock hours of simulation, job shadowing, apprenticeship, and/or internship time per their respective flight-plan.

HIGH SCHOOL

ATTACHMENT 4/5

Alabama Complete Standards for Grades 9-12

Alabama Course of Study
English Language Arts

For information regarding the
Alabama Course of Study: English Language Arts
and other materials, contact:

Alabama State Department of Education
Instructional Services Section
3345 Gordon Persons Building
Montgomery, Alabama

P.O. Box 302101
Montgomery, AL 36130-2101

(334) 694-4768

STATE SUPERINTENDENT OF EDUCATION'S MESSAGE

Dear Educator:

The 2021 *Alabama Course of Study: English Language Arts* presents a sound framework designed to prepare students for the English Language Arts demands in both college studies and careers. Within this document is a set of challenging content standards for students at each grade level. Alabama State Department of Education (ALSDE) assessments are based on these standards, and *Alabama Achieves: A Strategic Plan for a New Decade* defines the accountability measures enacted to ensure student growth.

Student success depends on local system leadership, school leadership, and effective classroom instruction. Important local decisions include **how** students will accomplish these standards, **in what sequence** teachers will address them, and **how much time** will be allotted for instruction of each standard. These decisions are as significant as the Course of Study's indications of **what** students need to know and be able to do. I encourage each system to use these standards, ALSDE Instructional Supports, and Performance-Level Descriptors to craft local curriculum guides that determine how students will achieve these standards and perhaps go beyond them.

These standards are based on a foundation provided by the *Revised 2016 Alabama Course of Study: English Language Arts,* the National Assessment of Educational Progress (NAEP), the National Council of Teachers of English (NCTE), *Alabama Achieves: A Strategic Plan for a New Decade, Alabama Literacy Act Implementation Guide*, the *Alabama Dyslexia Resource Guide,* and English Language Arts standards in other states. Content standards are designed not only to meet English Language Arts classroom expectations, but also to enhance student performance in other content areas.

Eric G. Mackey
State Superintendent of Education

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Alabama Course of Study:
English Language Arts

Table of Contents

PREFACE

The 2021 *Alabama Course of Study: English Language Art*s provides the framework for the K-12 study of English Language Arts in Alabama's public schools. Content standards in this document are minimum and required (*Code of Alabama*, 1975, §16-35-4), fundamental and specific, but not exhaustive. The course of study provides the foundation on which local education agencies can build a robust learning sequence. The standards encourage a broad view of literacy that promotes knowledge-building across categories and subjects, making integration of content and collaboration among educators much easier to achieve.

The standards in the 2021 *Alabama Course of Study: English Language Arts* are a departure from the previous standards. The 2021 standards provide a comprehensive foundation for Kindergarten through Grade 3 literacy, in accordance with the Alabama Literacy Act. The standards set high expectations for student learning in all grades by requiring more attention to foundational reading, explicitly teaching comprehension skills for all text genres, and encouraging the development of advanced reading through increasing levels of complexity in literary and informational texts. When adopting local curriculum, school systems may create additional content standards to reflect local philosophies. School systems should add implementation guidelines, resources, and activities which are beyond the scope of this document.

The 2020-2021 Alabama English Language Arts Course of Study Committee and Task Force conducted extensive research during the development of this Course of Study, analyzing the *Revised 2016 Alabama Course of Study: English Language Arts* and standards from other states while considering and incorporating guidance from the latest NAEP Reading and Writing Frameworks. Requirements of the Alabama Literacy Act are fully incorporated. Recommendations from the National Council of Teachers of English and articles in professional journals informed the writing of the standards. The Committee and Task Force solicited and responded to public input from interested individuals, ELA experts, and advocacy organizations throughout the state, then incorporated many of their suggestions into the standards. Special Education teachers and administrators, who were selected as members of the Committee and Task Force, collaborated in crafting standards at every grade level. Together the group developed what members believe to be the best Kindergarten through Grade 12 English Language Arts Course of Study for Alabama's students.

ACKNOWLEDGMENTS

This document was developed by the 2020-2021 English Language Arts Committee and Task Force, composed of Grades K-12 and college educators appointed by the Alabama State Board of Education and business and professional persons appointed by the Governor (*Code of Alabama*, 1975, §16-35-1). The Committee and Task Force began work in February of 2020 and submitted the document to the Alabama State Board of Education for adoption at its March 2021 meeting.

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Alabama Course of Study: English Language Arts

GENERAL INTRODUCTION

The *Alabama Course of Study: English Language Arts* defines what modern learners should know and be able to accomplish after each grade level or course and upon graduation from high school so that they become literate citizens who can enjoy the benefits and meet the responsibilities of citizenship.

This document was created by an English Language Arts Course of Study Committee and Task Force consisting of educators from Kindergarten through college, reading specialists, public school administrators, and business and community leaders. For the first time, a task force of special education teachers and administrators met with the other members of the course of study committee to offer advice, perspective, and professional expertise as the group examined the supports which are needed for students with special needs.

Mastering the content embodied in the *Alabama Course of Study: English Language Arts* standards empowers students to understand and influence the world around them and prepares them to leverage professional opportunities. The standards guide learners to communicate effectively, develop appreciation for literature, understand diversity in literature and society, and utilize digital resources to function productively in an ever-evolving global community. The standards specify the skills and understandings needed for postsecondary and workforce applications in multiple disciplines.

Standards in the 2021 *Alabama Course of Study: English Language Arts* are categorized into Literacy Foundations, Expression, and Reception, which are adapted from the *Reading Framework for the 2019 National Assessment of Educational Progress (NAEP)* and the essential learning established in the Alabama Literacy Act. The Alabama Literacy Act outlines "steps to improve the reading proficiency of public school kindergarten to third grade students and ensures that those students are able to read at or above grade level by the end of the third grade" (Alabama Literacy Act, #2019-523). The act provides the means for learners to develop a strong foundation in literacy and be fully prepared for secondary, postsecondary, and workplace learning.

The standards fully support early literacy foundations by defining literacy, fostering an appreciation for literature, encompassing diversity of literature, incorporating digital literacy, and integrating literacy into all content areas. Assessing literacy and providing professional learning for elementary educators, as required in the Alabama Literacy Act, are important supports for the implementation of standards. This intense focus on reading and writing enhances the acquisition and development of knowledge in all subject areas, thus creating well-rounded readers who are fluent with varied types and complexities of texts. The standards encourage a broad view of

literacy that promotes knowledge-building across categories and subjects, making integration of content and collaboration among educators much easier to achieve.

All standards contained in this document are:

- written in a clear, understandable, and consistent format to be relatable and applicable to learners' lives;
- organized in ways that are appropriate for their particular grade band;
- designed to include rigorous, focused, and critical content and application of knowledge through high-order skills;
- grounded on sound, evidence-based research; and
- designed to ensure that all students are prepared to succeed in our global economy and society.

Standards are written at various levels utilizing criteria from Marzano's Instructional Framework, the revised Bloom's Taxonomy, and Norman Webb's Depth of Knowledge (DOK). The standards set high expectations for student learning by requiring substantial attention to foundational reading, mandating comprehension of all kinds of text, and encouraging the development of advanced reading proficiency through increasingly complex texts.

Writers of the standards took into consideration the science of reading, which is a body of research on how the brain learns to read that has emerged from multiple disciplines, such as cognitive psychology, neuroscience, and linguistics. These findings provided guidance on the structuring of standards that explicitly define content to support students as they learn to become proficient readers.

The *Alabama Course of Study: English Language Arts* includes a set of essential, recurring standards for each grade band, designated as Recurring Standards for English Language Arts. The Recurring Standards represent content that is so integral to English Language Arts that it is emphasized in multiple grade levels. By prescribing that this content be included in more than one grade, the Course of Study affords students an opportunity for deep, rich learning that is scaffolded to meet diverse learning needs. Because content increases in rigor throughout the Course of Study, the recurring standards change from one grade band to the next, reflecting the increasing scope and complexity of the scaffolded content.

Effective implementation of the 2021 *Alabama Course of Study: English Language Arts* requires local education agencies to research and adopt local curriculum addressing the minimum required content found in this document. Local systems may add standards, but no standards may be omitted. Systems should add implementation guides, resources, and activities which are beyond the scope of this document. Please refer to the section entitled *Synopsis of Laws, Regulations, and Resolutions Relating to English Language Arts* for additional guidance on selecting curricular materials.

Professional learning is required to ensure that teachers have the opportunity to become familiar with the emphases and standards of the 2021 *Alabama Course of Study: English Language Arts*. Familiarity with the document will help with the selection of curricular materials and with planning for effective instruction.

Alabama Course of Study: English Language Arts

CONCEPTUAL FRAMEWORK

Alabama Course of Study: English Language Arts

CONCEPTUAL FRAMEWORK

The conceptual framework graphic on the previous page illustrates the goal of the 2021 *Alabama Course of Study: English Language Arts,* which is to ensure that all students achieve English language literacy. This goal can be accomplished when local education agencies use the logical and comprehensive standards in this Course of Study to select curriculum materials and create the implementation guides needed to deliver effective instruction. Implementation of the Course of Study will encourage students to be lifelong, critical thinkers who can judge the validity of what they hear or read and express ideas effectively.

The three concentric circles depict the numerous literacies required of today's high school graduates. These circles highlight both the components and the foundations of literacy. The dark red Literacy Foundations band around the center indicates the importance of strong foundations needed for all areas of literacy. Literacy Foundations in this Course of Study (Oral Language, Concepts of Print, Phonological Awareness/Phonemic Awareness, Phonics, Fluency, Vocabulary, Comprehension, and Writing) are closely aligned with current research on the science of reading. The yellow and orange semi-circles represent the two major components of literacy needed for effective communication -- reception (the process of receiving information) and expression (the process of producing information).

The outer circle breaks down these major categories to depict the methods of receiving and producing information -- listening, reading, speaking, and writing, the four basic components of communication and the facets of English Language Arts listed in the Code of Alabama. Communication is at the heart of literacy; the reception and expression of thoughts and concepts, coupled with their integral mental and physical processes, enable the formation and exchange of ideas. All students, regardless of their abilities, can participate in this exchange.

Reading and listening, shown in the graphic in shades of blue, are paired with reception. Reading incorporates literacy foundations and skills for interpreting and analyzing written materials. Listening is not merely hearing others share ideas; it involves the active listening and responding which are necessary for collaboration and comprehension in various academic and non-academic contexts.

Writing and speaking, in shades of green, are aligned with expression. Writing begins at a foundational level, with the mechanical skills of letter formation and handwriting, and includes skills necessary to spell (encode) words, and then evolves into composing texts in multiple genres and formats, conducting research, and documenting sources. Speaking includes the verbal and non-verbal communication of information and ideas to a variety of audiences in different situations for many different purposes.

The center portion of the graphic represents the heart of the mission of the 2021 *Alabama Course of Study: English Language Arts*. The images of the books and tablet convey the idea that English language literacy is achieved through multiple media. The mortarboard on the map represents the goal of English language literacy for all Alabama graduates.

The skills and knowledge represented in the conceptual framework of the *Alabama Course of Study: English Language Arts* will prepare students to function as highly skilled communicators, critical thinkers, and effective problem-solvers. They will be able to meet the academic demands of elementary, middle, and high school and be prepared for further study and the workplace. Alabama students can achieve the goal of English language literacy.

SYNOPSIS OF LAWS, REGULATIONS, AND RESOLUTIONS RELATING TO ENGLISH LANGUAGE ARTS

Program Foundation

The *Alabama Course of Study: English Language Arts* provides the legal foundation for the minimum content of a locally adopted English Language Arts curriculum, as specified in the Code of Alabama, **§ 16-6B-2(f), Core curriculum.**

Using the Course of Study, school superintendents direct the selection, development, and implementation of curriculum for schools in their systems. Local boards of education approve this curriculum and make it available to each teacher and interested citizen. The state textbook adoption process for English Language Arts will begin after the Alabama State Board of Education adopts the 2021 *Alabama Course of Study: English Language Arts*. Upon completion of the state textbook adoption process, local school districts have the opportunity to select resources to support instruction based on this course of study and the curriculum mandated by local boards.

Program Implementation

English Language Arts instruction is required in all grades, Kindergarten through Grade 12. A minimum of four credits in English Language Arts is required for high school graduation.

Legal Foundations

Dyslexia

ADMINISTRATIVE CODE SUPP. (NO. 98-4)

This is a measure to ensure that Alabama's students with dyslexia are provided with early identification and dyslexia-specific intervention through general education in Alabama schools as part of the Problem Solving Team process. The code ensures that Alabama is equipped to appropriately serve students with dyslexia. Amendment to Alabama Admin Code Regulation 290-3-1-.20 (Problem Solving Teams).

English Learners (ELs)

In Alabama an English Learner (EL) is an individual —

(A) who is aged 3 through 21;

(B) who is enrolled or preparing to enroll in an elementary school or secondary school;

(C) (i) who was not born in the United States, or whose native language is a language other than English;

(ii) (I) who is a Native American or Alaska Native, or a native resident of the outlying areas; and

(II) who comes from an environment where a language other than English has had a significant impact on the individual's level of English language proficiency; or

(iii) who is migratory, whose native language is a language other than English, and who comes from an environment where a language other than English is dominant; and

(D) whose difficulties in speaking, reading, writing, or understanding the English language may be sufficient to deny the individual—

(i) the ability to meet the challenging state academic standards;

(ii) the ability to successfully achieve in classrooms where the language of instruction is English; or

(iii) the opportunity to participate fully in society.

Students whose first language is not English, designated as English Learners (ELs), are expected to "meet the (same) challenging State academic standards expected of all students" [ESEA section 1113(C)(i)(II)(cc)]. According to the U.S. Department of Education and the U.S. Department of Justice (2015), "EL students are entitled to appropriate language assistance services to become proficient in English." Each EL student is therefore entitled to instructional supports, scaffolds, and services that support him or her to meet grade-level standards and to participate meaningfully in the English Language Arts classroom while they acquire English.

Lexi's Law Act #2016-352

Lexi's Law requires cursive handwriting to be taught by the end of third grade in all state schools. Lexi's Law prescribes a standardized method for teaching cursive handwriting and provides classroom instruction plans outlining when and how cursive handwriting is to be taught.

The Alabama Literacy Act #2019-523

The Alabama Legislature passed the Alabama Literacy Act [HB388], which became a law on June 10, 2019. This legislation, based on the best current research, provides comprehensive information and guidance for educators and requires concentrated, systematic efforts to improve the reading skills of all public school students so that every student is reading at or above grade-level by the end of Grade 3. The Alabama Literacy Act outlines steps to improve the reading proficiency of each student in Kindergarten through Grade 3 and ties

the student's progression from one grade to the next, in part, to his/her proficiency in reading. The legislation defines specific foundational skills to be taught and mastered in Alabama public schools.

Problem Solving Teams (PST).

By August 15, 2011, all public schools in Alabama were required to implement the PST model.

(a) Definitions. (1.) Problem Solving Teams (PST) is a model to guide general education intervention services for all students who have academic and/or behavioral difficulties. The PST is central to the school's successful implementation of the Response to Instruction (RtI) framework. (2.) Response to Instruction (RtI) refers to an instructional framework that promotes a well-integrated system connecting general, gifted, supplemental, and special education services in providing high-quality, standards-based instruction and intervention that is matched to students' academic, social-emotional, and behavioral needs. RtI combines core instruction, assessment, and intervention within a multi-tiered system to increase student achievement and reduce behavior problems.

(b) Decisions regarding the number of PSTs needed by a school should be determined at the school level; however, a minimum of one PST per school is required to review data-based documentation regarding students' progress regularly, advise teachers on specific interventions matched to student needs, and communicate with parents regarding interventions being provided.

(c) The Problem Solving Teams will analyze the screening and progress-monitoring data to assist teachers in planning and implementing appropriate instruction and evidence-based interventions for all students with academic and/or behavioral difficulties, including those students who exhibit the characteristics of dyslexia.

(d) The documentation requirements for a referral to special education are found in the Alabama Administrative Code, Chapter 290-8-9.01(2) and (4) (Child Identification) and Chapter 290-8- 9.03(10)(b)1, (10)(c)2.(ii), (10)(d)2.(I)(II)(ii) and (10)(d)4.

POSITION STATEMENTS

The 2021 *Alabama Course of Study: English Language Arts* defines the minimum content in terms of what students should know or be able to do at the end of each course or grade. For these standards to be met, educators at district and school levels must engage with the standards and apply them to their own situations.

Certain fundamental understandings are integral to this process of engagement and application. The committee formulated position statements to elaborate upon the standards and the expectations under which local education agencies should work as they select and/or write curriculum and other materials to implement the Course of Study.

Defining Literacy

Literacy encompasses the ability to identify, understand, interpret, create, communicate, and process information using printed and written materials in various contexts. The English Language Arts Course of Study approaches literacy in the context of two major categories, reception and expression.

Reception refers to the ability to understand both spoken and written words through listening and reading. Reading instruction includes all components needed for students to read fluently and comprehend readily. In order to comprehend what they read and hear, students must master skills in the following foundational areas: phonological awareness, phonemic awareness, phonics, fluency, vocabulary, oral language, and comprehension.

Expression, the production of language either in spoken or written form, is accomplished through speaking and writing. Proficiency in expression includes both the use of correctly crafted sentences and the effective, expressive communication of ideas. To communicate successfully through written expression, students must master skills in the following foundational areas: phonological awareness, phonemic awareness, phonics, handwriting, encoding (spelling), and correct sentence formulation/organization, including punctuation, while also continuing to develop oral language, vocabulary, and topic knowledge.

As students master the English Language Arts standards, they should also learn to conduct research using technology to access a variety of resources. Digital literacy instruction teaches students to locate and use information responsibly to become better readers, writers, and thinkers.

The purpose of English Language Arts instruction is to develop English language literacy in all students, including the ability to listen, speak, read, and write fluently; to think critically; to solve problems independently; and to use digital resources responsibly. The ultimate goal of literacy instruction is to prepare students to utilize higher-order thinking skills, process information proficiently, and communicate effectively so they can meet opportunities and challenges, respond to the world around them, and impact the lives of others in beneficial and productive ways.

Appreciation of Literature

While creating fluent, accurate readers is vital, engendering a love for reading and an appreciation of literature is also an important goal. In Kindergarten through Grade 3, substantial amounts of classroom reading instruction should be devoted to teaching students to read. Explicit instruction in phonological awareness and phonics in the primary grades will provide the foundation for strong literacy skills. In later grades, when students are capable of reading the words, teachers can begin to focus on comprehension strategies such as summarizing, predicting, questioning, identifying main ideas, making inferences, identifying the author's purpose, and distinguishing fact from opinion. Direct instruction in evidence-based reading strategies does not distract from reading enjoyment; rather, it increases the pleasure that may be gained from reading literature.

Students who are able to decode words and comprehend what they read should be encouraged to experience a variety of authentic texts and to select some of their own reading materials. In addition, opportunities should be provided for sufficient quantity and quality of reading to bring students into regular contact with new words, sentence structures, and paragraph and story structures, which will expand their reading abilities. To help students cultivate their love for reading and an appreciation of literature, teachers should allow readers to select some materials of particular interest to them. Such opportunities will build reading fluency and comprehension. Of course, self-selected reading materials are not intended to replace the challenging materials assigned for direct instruction.

Diversity of Literacy

English Language Arts instruction must include learning experiences which encompass critical, research, language, vocabulary, and digital literacies to provide a diverse foundation for reception and expression. Using different types of texts in digital and print formats promotes the diversity needed for a complete reading and writing experience.

Texts that are inclusive of varied perspectives, backgrounds, and cultural influences should be available and used in the classroom. Diversity encompasses selecting disparate genres and various authors from an array of cultural, gender, and racial/ethnic backgrounds. Text selections should include varied character representations, topics or themes, settings, and situations that allow students to explore

and discover views and experiences which are different from their own. The use of diverse texts encourages students to examine their current ideas, promotes empathy for others, and nurtures a richer understanding of the world.

Additionally, the formats of texts should represent all modern communication avenues and tools, which may vary greatly from traditional ways of communicating. The twenty-first-century student needs to be ready to function in a world of constantly evolving pathways for communication. To enable students to increase their ability to understand, evaluate, and foster a global society, English Language Arts teachers should use technology in support of learning and digital information in tandem with instruction to shape a diverse learning experience.

Digital Literacy

Students in the twenty-first century need to develop comprehensive skills to communicate effectively using digital technologies. Digital literacy can be defined as the ability to locate, understand, use, and compose information on different media platforms using various elements (images, sound, movement, words) shared through digital technologies. Digital literacy is not limited to the ability to use a computer or some other digital device; rather, it means students become critical users of technology who utilize the tools and modes of digital communication to reach audiences for the purpose and message of their own communication.

Instruction in English Language Arts should aim to support the standards in the *Alabama Course of Study: Digital Literacy and Computer Science* and to produce digitally literate citizens by incorporating digital literacy skills in all areas. Students should be equipped to read and critique digital texts, find credible digital sources for their research, analyze and evaluate digital and multimedia texts, and compose and create texts in various formats, using all modes of communication. Digitally literate students are well prepared to join the workforce, with the knowledge, skills, and flexibility to perform daily, job-related tasks using a variety of current and emerging technologies. In addition, digital literacy opens paths for exploration and enjoyment in the digital world.

Literacy Integration in All Content Areas

Reading in content areas is reading to acquire information in order to build conceptual knowledge, formulate and test hypotheses, explain how a solution was derived, and understand contexts and perspectives. As students explore texts in various subjects, they refine their skills in reading, writing, listening, and speaking.

Integrating academic literacy instruction into content area instruction increases the likelihood that students will make inferences, identify main ideas, learn vocabulary, link ideas across texts, and construct meaning from content-area texts. This is especially important for primary students as they build knowledge of the world around them. Primary-grades teachers should spend time reading

aloud, facilitating discussions, and building students' background knowledge and vocabulary across all genres and content areas until the students themselves are fully capable of reading to learn in the content areas.

Content from other subject areas should be integrated into English Language Arts instruction via collaboration among teachers from different areas. Integrating subject-area content leads to deeper understanding of concepts as students utilize the skills and practices of English Language Arts to investigate, consider, and utilize knowledge from other areas. Thematic and cross-curricular teaching encourage wider perspectives and broader understandings. The challenges of collaboration are richly compensated by the rewards experienced by students and teachers alike.

Assessment of Literacy

Assessment is an ongoing process of identifying students' strengths and weaknesses in order to design instruction to meet their individual needs. Teachers should use both formative and summative assessments in the English Language Arts classroom. Formative assessment is the evaluation of learning through ongoing observation of students' notes, questions, participation, assignment drafts, or journal entries. Teachers use formative assessments to modify their instructional strategies to help students achieve the desired learning outcomes. Summative assessments come at the end of an instructional unit to evaluate student learning in relation to a standard or benchmark.

Whenever possible, teachers should assess student learning using authentic or performance-based activities that actively engage students. These authentic, performance-based assessments should be included in every facet of a language arts curriculum. Assessment of group work should focus on skills which are vital to real-world and workplace tasks such as problem-solving, interpersonal skills, and communicating through digital technologies.

Differentiated Literacy Instruction

Providing differentiated instruction for all students is essential to their academic growth. Alabama's populations of English Learners, students in need of intensive intervention, and students with exceptional learning needs continue to increase. Alabama schools must implement effective practices to meet the diverse needs of students in all of these groups.

In order to differentiate instruction appropriately, teachers must assess students using formative, summative, formal, and informal assessments, including benchmark and diagnostic assessments when appropriate. The data collected for each student will drive the design of classroom instruction, including identification of various areas where students require additional instruction.

Students with Exceptional Learning Needs

Students who receive special education services will benefit greatly from differentiated instruction in English Language Arts because foundational reading, fluency, and comprehension are essential for academic growth across all content areas. Collaboration between general education and special education teachers is essential in determining and meeting individual students' needs. Teachers of these exceptional students must work together in implementing appropriate accommodations outlined in their Individualized Education Programs to ensure that students have equitable access to literacy across all content areas. Collaboration among teachers who instruct students with special needs ensures a positive working relationship among teachers, students, and families and provides seamless content instruction designed to meet the students' unique learning needs.

English Learners

In recent years, Alabama has seen a significant increase in families and children whose first language is not English. These students, designated as English Learners (ELs), are in Alabama schools simultaneously acquiring academic English and mastering content standards. Their ability to learn content will be enhanced by appropriate differentiated instruction and accommodations in the classroom**.**

English Learners face the double challenge of learning grade-level content in all areas while learning to speak, read, and write in English. Instructional supports and scaffolds for these students should enhance their language acquisition and reading development by promoting phonological/ phonemic awareness activities and develop their vocabularies by teaching them the structure of the English language through grammar and morphology instruction. Educators should consider factors such as age-appropriate academic development, English and home language proficiency, culture, and background knowledge when designing instruction that will develop lifelong readers, writers, and speakers of English.

English Learners bring with them many resources that enhance their education. Many English Learners have first-language and literacy knowledge and skills that boost their acquisition of language and literacy in a second language. In addition, they may bring talents, cultural practices, and perspectives that can enrich our schools and society. Teachers must draw from this enormous reservoir of talent while providing additional time and appropriate instructional supports for students who need them.

Professional Literacy Teachers

Professional educators should be lifelong learners dedicated to improving their craft for the benefit of their students. Educators must hold themselves and their colleagues accountable for seeking and engaging in professional growth to improve their practice. Training in literacy instruction must be at the forefront of professional learning in all grade levels. Furthermore, the Alabama Literacy Act requires that teachers in Kindergarten through Grade 3 receive training in the science of reading. Because the science of reading is

integrated into the course of study, teachers must embrace professional learning to become thoroughly familiar with its terminology and principles so they can understand the intent of the standards and implement them fully.

Two vital elements of professional growth are interaction with other professionals in the local community and active participation in state and national English Language Arts organizations. In addition, teachers must also fulfill the professional responsibility of promoting proficiency in English Language Arts as a meaningful endeavor which is applicable to everyday life.

DIRECTIONS FOR INTERPRETING CONTENT STANDARDS

The illustrations below are guides for interpreting the Grades K-12 minimum required content outlining what students should know and be able to do at the end of a grade or course. Standards are grouped by grade band: K-1, 2-3, 4-5, 6-8, and 9-12. Grades within each group share content areas and subareas, focus areas of reception and expression, and categories of reading, writing, speaking, and listening. Grades within each band will also share recurring standards. Secondary grades add literacy types: critical, research, language, vocabulary, and digital literacies.

Recurring Standards for English Language Arts are an important part of each grade level. For each grade band, a list of Recurring Standards for English Language Arts has been created to focus on integral content which must be taught in each grade within the band. These standards are to be embedded in daily instruction. Because content increases in rigor throughout the Course of Study, the recurring standards change from one grade band to the next, reflecting the increasing scope and complexity of the scaffolded content. The recurring standards for Grades K-3 are shown in the chart below.

RECURRING STANDARDS FOR K-3

Students will:

R1. Utilize active listening skills during discussion and conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.

R2. Use knowledge of phoneme-grapheme correspondences and word analysis skills to decode and encode words accurately.

R3. Expand background knowledge and build vocabulary through discussion, reading, and writing.

R4. Use digital and electronic tools appropriately, safely, and ethically for research and writing, both individually and collaboratively.

R5. Utilize a writing process to plan, draft, revise, edit, and publish writings in various genres.

CONTENT STANDARDS FOR EACH GRADE

Content Areas and **Subareas** are used to group standards that are closely related. In the Grades K-1 example below, "Literacy Foundations" is the content area, and "Oral Language" is the subarea. Grades K-1 focus primarily on Literacy Foundations.

Beginning in Grade 2, standards are further grouped into **Categories** (Speaking, Writing, Listening, and Reading), the four basic components of communication. **Some content areas in Grades 2-5 will not have a standard in every category.** In such cases, the category remains blank with the row shaded to indicate that the omission was intentional.

Focus Areas (Expression and Reception) are indicated for standards in Grades 4-12. In Grades 6-12, standards are no longer organized under content areas. Instead, terminology intentionally shifts from content areas to types of literacy (Critical, Digital, Language, Research, and Vocabulary) to reflect the progression of complexity from elementary to secondary content. Each literacy type is followed by an explanation of its overarching concept, as shown in the Language Literacy example below. In these grades, there is a standard in every category.

Content Standards contain the minimum required content and define what students should know or be able to do at the conclusion of a grade or course. Some have **sub-standards**, indicated with a, b, c..., which are extensions of the content standards and are also required. When "including" appears in standards, it should be construed as "including but not limited to." The items listed after "including" must be taught; other items not listed may also be included in instruction.

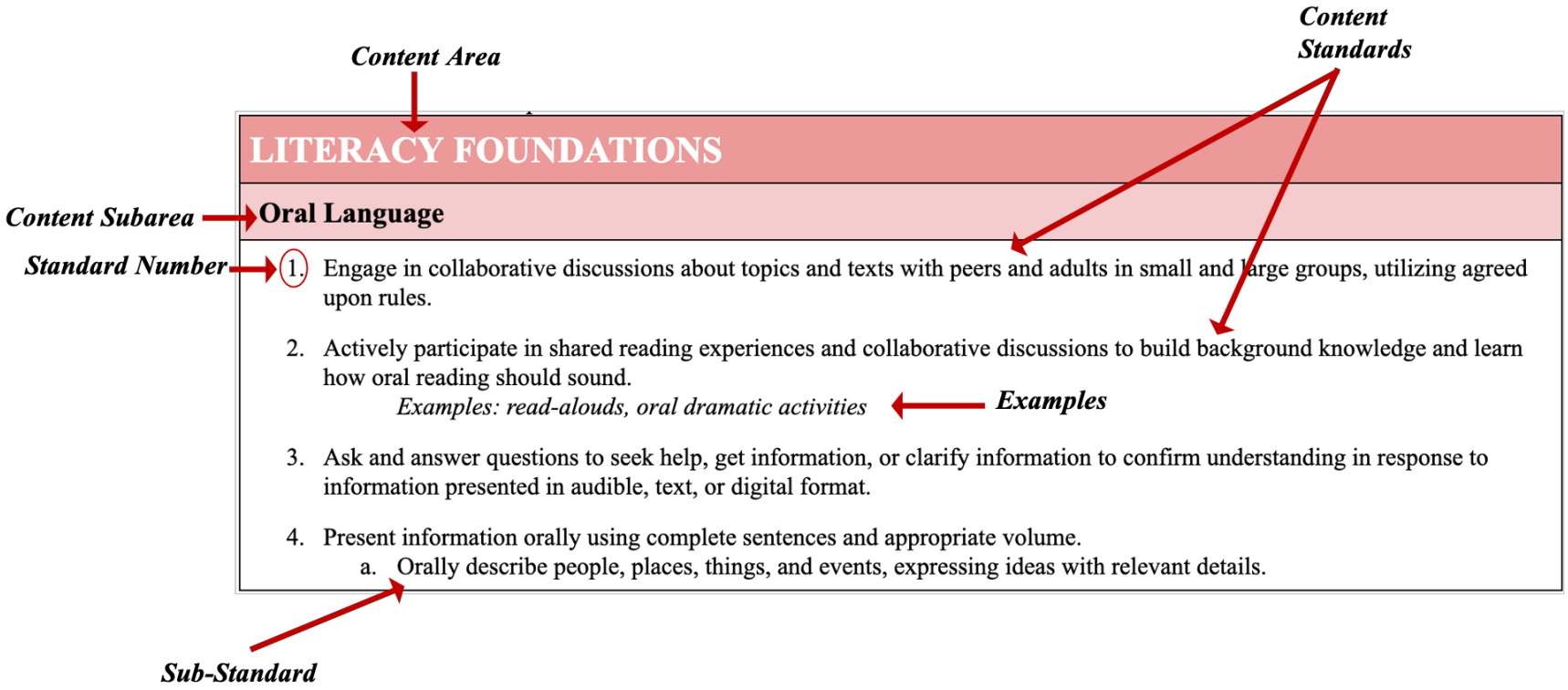
Some standards are followed by italicized **examples**, which represent options that might prove useful in instruction of the standard. Examples are not intended to be exhaustive lists, and the suggestions listed are not required to be taught. Occasionally, **notes** are included to explain the emphasis or significance of certain standards.

Local education agencies may add standards to meet local needs and incorporate local resources. Each content standard completes the stem *"Students will..."*

The course of study does not dictate curriculum, teaching methods, or sequence; the order in which standards are listed within a course or grade is not intended to convey the order for instruction. Even though one topic may be listed before another, the first topic does not have to be taught before the second. A teacher may choose to teach the second topic before the first, to teach both at the same time to highlight connection, or to select a different topic that leads to students reaching the standards for both topics. Each local education agency should create its own curriculum and pacing guide based on the course of study.

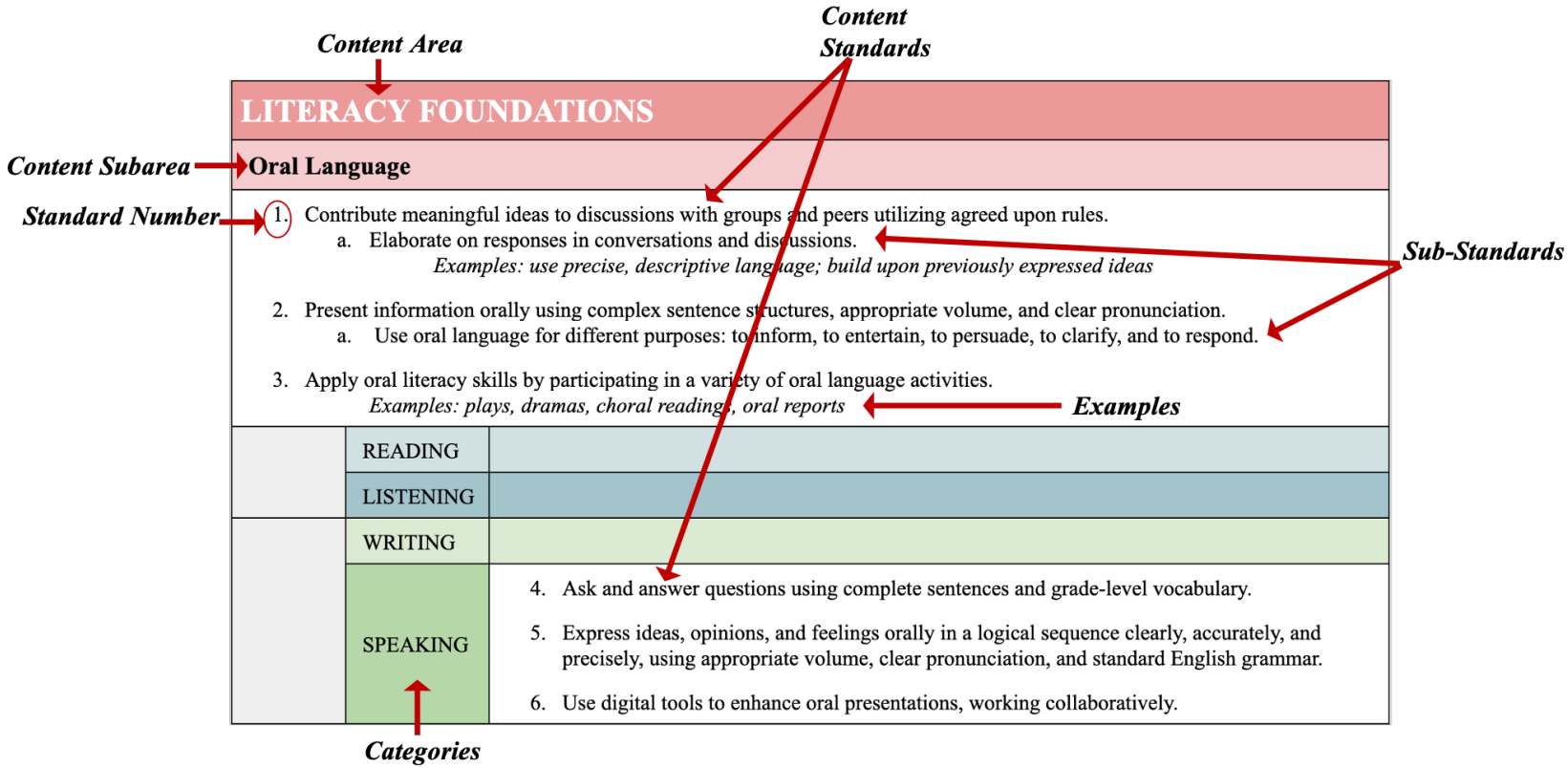
GRADES K-1

Kindergarten and Grade 1 focus primarily on Literacy Foundations. In the chart shown, "Literacy Foundations" is the content area, and "Oral Language" is the subarea. Standards, sub-standards, and examples are also indicated.



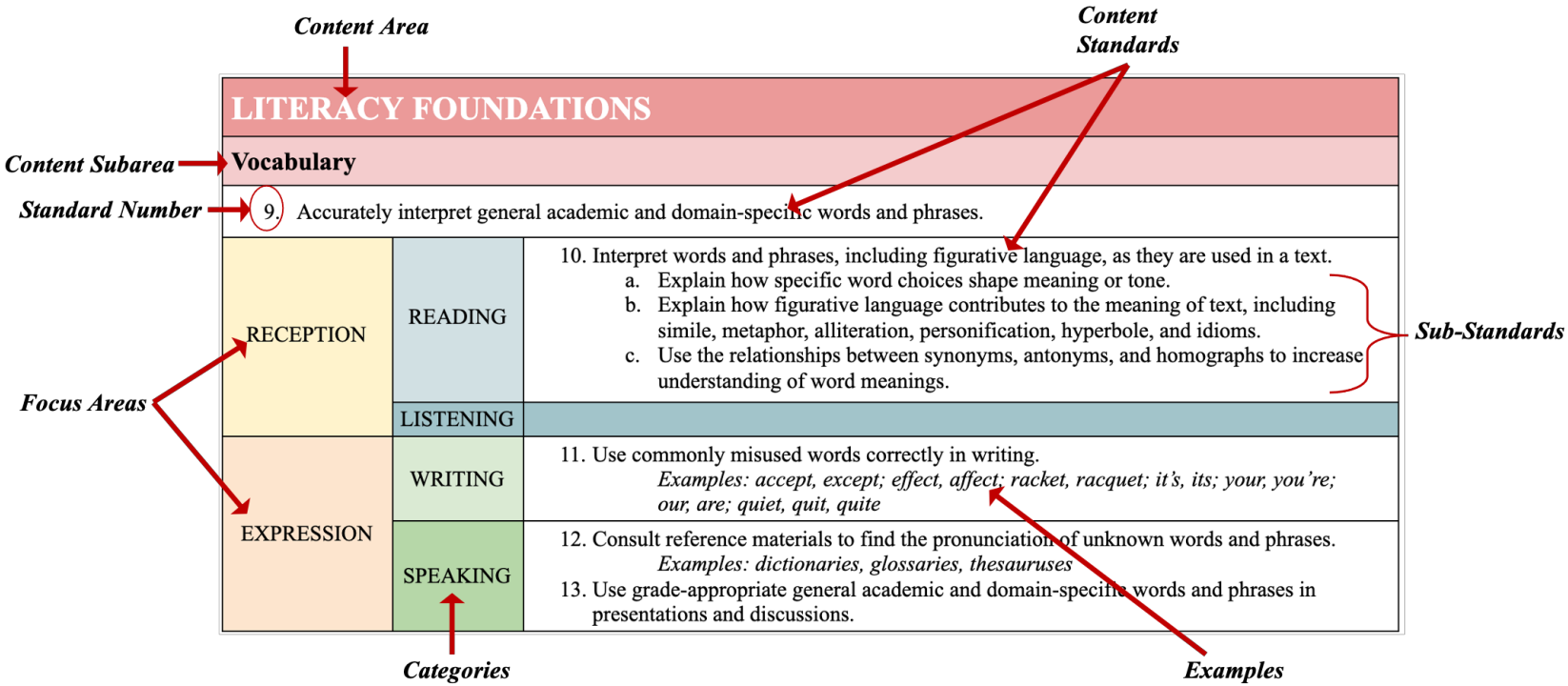
GRADES 2-3

Beginning in Grade 2, standards are grouped into **Categories** (Speaking, Writing, Listening, and Reading). Not every content area will have a standard in every category. In such cases, the category remains blank with the row shaded to indicate that the omission was intentional. The gray column at left is included as an indicator of the organizational structure, which becomes more intricate in Grades 4-5. The Grades 2-3 format of standards, sub-standards, and examples remains the same as the K-1 format.



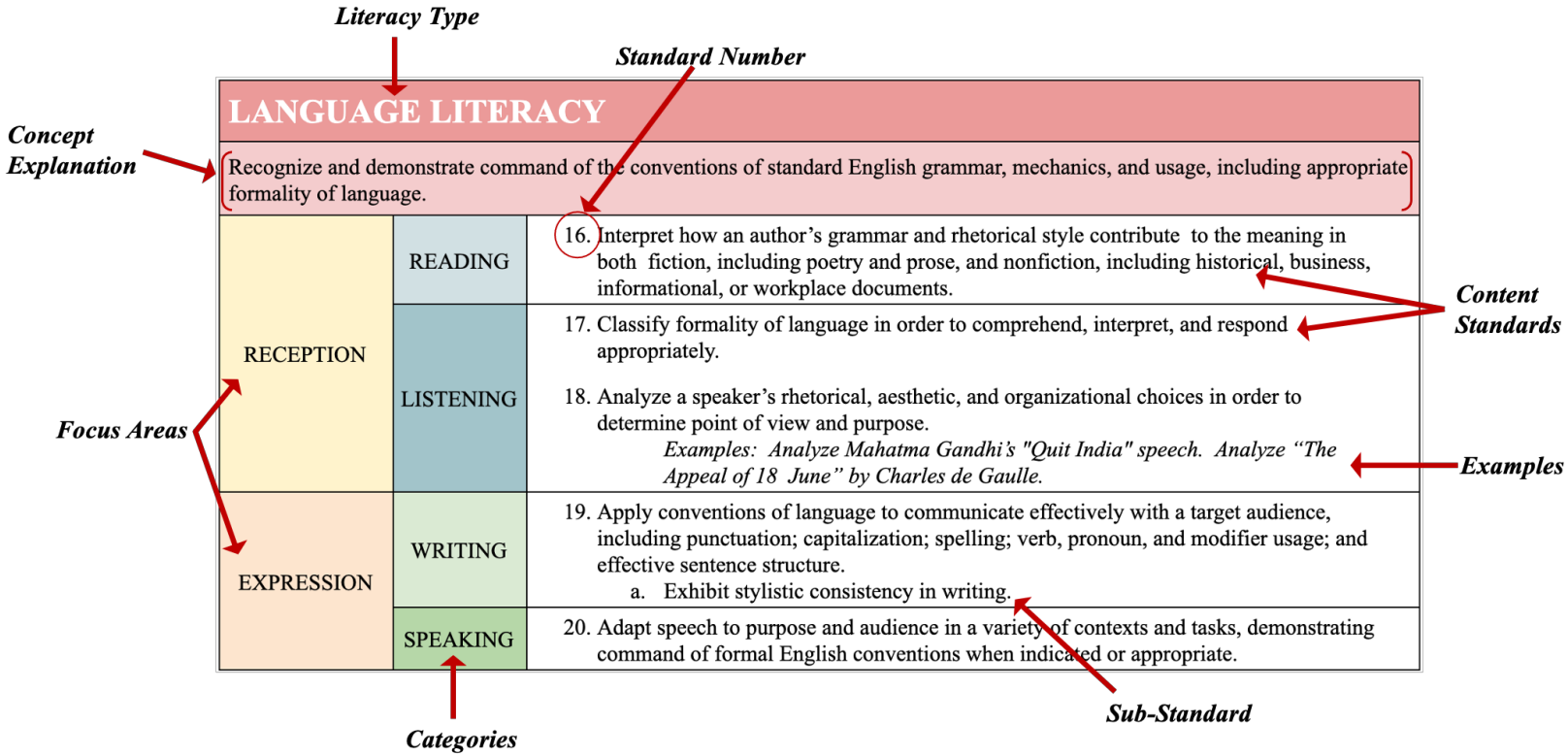
GRADES 4-5

Focus Areas (Expression and Reception) are indicated beginning in Grades 4. Other features of the standards (content area, subareas, sub-standards, and examples) remain the same. As before, categories without standards are shaded.



GRADES 6-12

In Grades 6-12, standards are no longer organized under content areas. Instead, terminology intentionally shifts from content areas to types of literacy (Critical, Digital, Language, Research, and Vocabulary) to reflect the progression of complexity from elementary to secondary content. Each literacy type is followed by an explanation of its overarching concept, as shown in the table below. These overarching concepts are the same in Grades 6-12. The format of focus areas, categories, standards, sub-standards, and examples remains the same. In these grades, there is a standard in every category.



GRADES K-3 OVERVIEW

In Kindergarten through Grade 3, the standards focus on essential foundational skills needed to support literacy development. Standards are written in a way that promotes direct, explicit, systematic, sequential, and cumulative instruction with extensive practice in these essential foundational skills: oral language, concepts of print, phonological and phonemic awareness, phonics (decoding), fluency, vocabulary, comprehension, and writing (including encoding). Reading standards, which incorporate reading and responding to multiple types of texts in various ways, start in Kindergarten and continue throughout the grades. Grades K-3 standards encompass all components of grade-appropriate proficient reading, from decoding words to adding literacy knowledge, building and accessing background knowledge, understanding language structures, and using verbal reasoning.

Standards for Grades K-3 are explicit, rigorous, and comprehensive, providing structures to scaffold reading and writing development from simple to more complex skills within and across the grade levels. This level of specificity is essential for students to learn the phonemic awareness and phonics skills they need to become successful readers and writers. Standards emphasize the practice of writing in many forms, which promotes growth in language arts. The writing process begins with the speech-to-print connection at the phoneme level and grade-appropriate assignments in Kindergarten, then progresses through increasingly more comprehensive and challenging assignments in subsequent grades. Students learn to express their thoughts effectively in a variety of formats and situations and to assess and improve their own written work.

The development of the K-3 standards was guided by the science of reading, which is the body of research that has emerged from multiple disciplines (including cognitive psychology, neuroscience, and linguistics) to discover how the brain learns to read and write and why some students experience difficulty doing so. The Simple View of Reading (Gough and Tunmer) and the Simple View of Writing (Berninger et al.), Scarborough's Reading Rope, and Ehri's Phases of Word Reading Development are only a few examples of the models that guided the development of the Grades K-3 standards. All standards align with and fully support all requirements of the Alabama Literacy Act and are written in a way that will help classroom teachers, special education teachers, and EL teachers identify students' lowest level deficit skill(s) and differentiate instruction to meet students' individual needs.

While prescribing the minimum standards for Grades K-3 English Language Arts, the standards in this document also represent content that promotes high expectations and defines high levels of literacy acquisition for all students in Alabama. The standards outline what a student should know and be able to do at the end of each grade level. Categories will change from one grade level to the next as readers become more proficient in mastering foundational skills throughout each grade level.

An effective instructional program will capitalize on the interrelated nature of the standards and connect content in ways that allow standards to be taught simultaneously. For example, aligning phonemic awareness, decoding, fluency, and encoding standards according to skills being taught allows students to focus on specific patterns and progressions as they practice identifying phonemes, decoding, encoding, and working on fluency.

For each grade band, a list of Recurring Standards for English Language Arts has been created to focus on integral content which must be taught in each grade within the band. These standards are to be embedded in daily instruction. Because content increases in rigor throughout the Course of Study, the recurring standards change from one grade band to the next, reflecting the increasing scope and complexity of the scaffolded content.

When "including" appears in content standards, it should be construed as "including but not limited to." The items listed after "including" must be taught; other items not listed may also be included in instruction.

Examples represent options that might prove useful in instruction of the standard. They are not intended to be exhaustive lists and the suggestions listed do not have to be taught.

KINDERGARTEN

The Kindergarten standards are written in a way that promotes direct, explicit, systematic, and cumulative instruction with extensive practice in Literacy Foundation skills: oral language, concepts of print, phonological and phonemic awareness, phonics (decoding), fluency, vocabulary, comprehension, and writing (including encoding). These standards incorporate reading and responding to multiple types of texts in various ways, decoding and encoding words, adding literacy knowledge, building and accessing background knowledge, understanding language structures, and using verbal reasoning. They are closely aligned with both the Simple View of Reading (Gough and Tunmer) and the Simple View of Writing (Berninger et al.). The level of specificity in these standards is essential for early learners to develop the needed phonemic awareness and phonics skills to become successful readers and writers.

The K-3 Recurring Standards for English Language Arts, shown in the chart below, are an important part of every grade level. Through these standards, students learn and practice active listening, utilize word-analysis skills, build background knowledge and vocabulary skills, learn and practice essential digital skills, and utilize a process to create and modify written work. The recurring standards are to be incorporated throughout the grade level.

RECURRING STANDARDS FOR K-3

Students will:

R1. Utilize active listening skills during discussion and conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.

R2. Use knowledge of phoneme-grapheme correspondences and word analysis skills to decode and encode words accurately.

R3. Expand background knowledge and build vocabulary through discussion, reading, and writing.

R4. Use digital and electronic tools appropriately, safely, and ethically for research and writing, both individually and collaboratively.

R5. Utilize the writing process to plan, draft, revise, edit, and publish writings in various genres.

KINDERGARTEN CONTENT STANDARDS

Each content standard completes the stem "*Students will…"*

LITERACY FOUNDATIONS

Oral Language

1. Actively listen and speak using agreed-upon rules for discussion, with guidance and support.
    a. Use speech that is understandable with only grade-appropriate errors.
    b. Use word endings to indicate plurals, possessives, and verb tenses in speech.
        Examples: dogs, brother's shirt, jumped
    c. Use age-appropriate irregular plurals in conversation.
        Examples: foot/feet, tooth/teeth, mouse/mice
    d. Listen to others and take turns speaking, carrying on a conversation through multiple exchanges.

2. Actively engage in teacher-led reading experiences and collaborative discussions with peers to build background knowledge needed to be successful as they learn to read and, later, read to learn.

3. Actively participate in teacher-led choral and shared reading experiences.
    Examples: reciting nursery rhymes, songs, poems, stories

4. With guidance and support, ask and answer questions to seek help, get information, or clarify information presented orally, through text, or other media.
    Example: Use interrogatives who, what, where, when, why, *and* how *to ask questions.*

5. With guidance and support, present information orally, using complete sentences in correct word order.
    a. Speak audibly and express thoughts, feelings, and ideas clearly.
    b. Describe people, places, things, and events with relevant details in a story with three to five events.

6. Uses spatial and temporal concepts correctly.
   Examples: top/bottom, up/down, under/over, above/below, left/right, upside down/inside out, beginning/middle/end, first/next/last
   Note: This is important as children learn to match print to speech in order to read, and speech to print in order to write.

7. Restate and follow one- and two-step directions.

Concepts of Print

8. Demonstrate understanding of the organization and basic features of printed materials.
   a. Recognize and demonstrate that print conveys meaning.
      Examples: Share a favorite book with peers. Share a list of birthday gifts received.
   b. With prompting and support, explain the roles of the author and illustrator of a text.
   c. Track print, moving left to right and top to bottom on the printed page, returning to the beginning of the next line.
   d. Identify the beginning and end of a sentence by locating the capital letter and end punctuation.
   e. Point to words using one-to-one correspondence, noting that words are separated by spaces.
   f. Distinguish letters from words within sentences.
   g. Compare and contrast letters based upon similarities and differences, including name, shape, sound, and approach strokes for writing.

Phonological Awareness/Phonemic Awareness

9. Demonstrate early phonological awareness to basic phonemic awareness skills in spoken words.
   a. Count the number of words in a spoken sentence.
   b. Recognize alliterative spoken words.
   c. Recognize and produce pairs of rhyming words and distinguish them from non-rhyming pairs using pictures and/or spoken words.
   d. Count, blend, and segment syllables in spoken words, including compound words.
   e. Blend and segment onsets and rimes of single-syllable spoken words.
   f. Identify the initial, final, and medial sounds of spoken words.

Standard 9 continued...

g. Blend and segment phonemes in single-syllable spoken words made up of three to four phonemes.
h. Distinguish between commonly confused cognate consonant sounds, using knowledge of voiced and unvoiced sounds and manner of articulation.

Examples: /t/ and /d/, /p/ and /b/, /ch/ and /j/, /s/ and /z/, /f/ and /v/, /k/ and /g/, /sh/ and /zh/, /th/ (voiced and unvoiced)

Note: Standard 9 is important as a foundational phonemic awareness skill for all learners.

Phonics

10. Apply knowledge of phoneme-grapheme correspondences and word-analysis skills to decode and encode (spell) words accurately in both isolation and in decodable, grade-appropriate text.
    a. Produce the most frequent sound(s) for each consonant, including *x* and *q*, which have two phonemes (sounds).

    Examples: x= /ks/ and q=/kw/

    b. Identify the vowel in a closed syllable and produce the short vowel sound for the five major vowels when decoding closed syllables.
    c. Decode consonant-vowel-consonant (CVC) words in isolation and in decodable text.
    d. Identify the vowel in an open syllable and produce the long vowel sound for the five major vowels when decoding open syllables.
    e. With prompting and support, identify the vowel-consonant-e syllable pattern and produce the long vowel sounds for the five major vowels in vowel-consonant-e syllables.
    f. With prompting and support, decode words with suffix -*s*, using knowledge of unvoiced /s/ and voiced /z/ sounds for letter s.

    Examples: pups, cats, pigs, dogs

    Note: Unvoiced /s/ follows unvoiced sounds such as /p/ and /t/ and voiced /z/ follows voiced sounds such as /g/.

    g. With prompting and support, produce the most frequent sound for digraphs *ck*, *sh, th, ch*, *wh, ng,* and combination *qu*, making the connection that a two-letter grapheme can represent one phoneme (sound).
    h. Distinguish between similarly spelled words by identifying the phonemes and graphemes that differ.

    Example: mat/sat, pan/pat, tip/top

Standard 10 continued...

i. Decode grade-appropriate high frequency words that are spelled using predictable, decodable phoneme-grapheme correspondences.

Examples: am, at, get, like, make, that, this, me, she, be

Note: The main emphasis of a high-frequency word lesson should be on regular correspondences and patterns, noting the high-frequency words with exceptions or oddities and what they are, using specific strategies to help them remember the irregular part of the word. Example: LETRS© heart word strategy

Fluency

11. Recognize and name all upper and lower case letters in non-sequential order with accuracy and automaticity.

12. Arrange and name letters of the alphabet in sequential order from *a* to *z*, with accuracy and automaticity.

Example: Use the alphabet arc to arrange the letters in alphabetical order, then touch and name the letters.

*Note**:** This will help students with alphabetical order requirements in future grades and also facilitate learning of positional words like before/after, initial/final, reversals, and letter naming in general.*

13. With prompting and support, recognize and name digraphs *ck*, *sh, th, ch*, *wh, ng,* and combination *qu.*

14. Apply previously-taught phoneme-grapheme correspondences to decodable words with accuracy and automaticity, in and out of context.

15. Orally read and reread grade-appropriate decodable texts smoothly, accurately, and expressively, at an appropriate rate to support comprehension.

16. Recognize and read grade-appropriate high frequency words with accuracy and automaticity.

Note: As noted in the phonics standards, high-frequency words should be taught with the main emphasis of the lesson being on regular correspondences and patterns within the word. The student should be able to read the word accurately three times in a row on different days to be considered accurate enough to add it to a personal word box, word ring, or fluency folder. Avoid teaching high-frequency words as "sight words" that need to be memorized as a whole word, unless there are no regular correspondences in the word. "Of" is an example of a word with no regular correspondences.

Vocabulary

17. With guidance and support, orally utilize new academic, content-specific, grade-level vocabulary and relate new words to prior knowledge.

18. Identify new meanings for familiar words and apply them accurately.
    Example: multiple meaning words such as duck, run, *and* bat

19. Ask and answer questions about unfamiliar words in discussions and/or text.
    a. Describe the relationship between words, including relating them to synonyms and antonyms.

20. Name and sort pictures of objects into categories based on common attributes while relating vocabulary to prior knowledge and building background knowledge.
    Examples: apples, oranges, grapes; hammer, nails, screwdriver

21. Use new and previously-taught vocabulary to produce and expand complete sentences in shared language activities.
    a. Use previously-taught vocabulary words, including nouns, verbs, and adjectives, in speaking and writing.
    b. Use new words and phrases acquired through conversations, reading and being read to, and responding to text.

Comprehension

22. Use content knowledge built during read-alouds of informational texts by participating in content-specific discussions with peers and/or through drawing or writing.

23. With prompting and support, manipulate words and/or phrases to create simple sentences, including declarative and interrogative, to help build syntactic awareness and comprehension at the sentence level.

24. With prompting and support, identify common types of texts and their features, including literary, informational, fairy tale, and poetry.

25. With prompting and support, identify the topic of texts, using titles, headings, illustrations, and text clues.

26. With prompting and support, describe the relationship between illustrations and the text in which they appear.

27. Identify and describe the main story elements in a literary text.
    a. With prompting and support, retell a text orally, including main character(s), setting, and important events in logical order.

28. With prompting and support, use text clues to determine main ideas and make predictions about an ending in a literary text.

29. With prompting and support, identify the main topic and key details in an informational text.

30. With prompting and support, ask and answer questions about key details in literary and informational texts.

31. With prompting and support, self-monitor comprehension of text by pausing to summarize and rereading for clarification, when comprehension is lacking.

32. With prompting and support, compare and contrast two texts.
    a. Distinguish between literary texts and informational texts.
    b. Compare and contrast the experiences of characters in a literary text.
    c. Compare and contrast two informational texts on the same topic.

Writing

33. Express ideas orally and connect these ideas through drawing and emergent writing.

34. Print legibly, using proper pencil grip.
    a. Print upper and lower case letters using proper approach strokes, letter formation, and line placement.
    b. With prompting and support, print first and last names using proper letter formation, capitalizing only the first letter of each name.

        Note: In Kindergarten, students are learning the most basic forms of capitalization. While the standard only requires that the first letter of each name be capitalized, some students' names may include additional capital letters, hyphens, or apostrophes. In such cases, students should learn to write their own names using proper capitalization and punctuation. Examples: De'Andre McGill, Kim Mi-Sun, Juan de Jesus
    c. With prompting and support, use lower case letters in majority of written work, using capitals only when appropriate.

35. Apply knowledge of grade-appropriate phoneme-grapheme correspondences and spelling rules (or generalizations) to encode words accurately.
    a. Encode at the phoneme level, using the most common grapheme/spelling(s), for a spoken phoneme (sound).
        Examples: /b/=b, /m/=m, /k/=k, c, -ck
    b. With prompting and support, encode vowel-consonant (VC) and consonant-vowel-consonant (CVC) words, while using some knowledge of basic position-based rules for spelling English words.
        Examples: /k/=k before i, e, or y; /k/= c before a, o, u, or any consonant; /k/= -ck after an accented short vowel
    c. With prompting and support, encode grade-appropriate high frequency words that follow regular phoneme-grapheme correspondences.
        Examples: am, at, can, he, we, be, in, it, came, like
    d. With prompting and support, encode grade-appropriate high frequency words that follow regular phoneme-grapheme correspondences and patterns *in all but one position*, pointing out the part of the word that does not follow the regular pattern.
        Example: In said, */s/ and /d/ are spelled using phoneme-grapheme correspondence, but ai must be learned by heart or memorized.*

36. When speaking and writing, follow the rules of standard English grammar, punctuation, capitalization, and grade-appropriate spelling.
    a. With prompting and support, transcribe spoken words to demonstrate that print represents oral language.
    b. With prompting and support, compose a simple sentence, including necessary components to create a complete sentence rather than a fragment.
    c. With prompting and support, identify the role or purpose of a noun and a verb within a sentence and the type of information it conveys.
    d. With prompting and support, write the correct number of words, with proper spacing, for a spoken phrase or sentence.
    e. With prompting and support, begin each sentence with a capital letter.
    f. With prompting and support, capitalize the pronoun *I* and names of individuals.
    g. With prompting and support, recognize, name, and correctly use end punctuation.
        Examples: period, question mark, exclamation mark

37. Actively participate in shared and independent writing experiences, for varied purposes and audiences, across different genres.
    a. Actively participate in shared writing experiences to create messages, lists, and labels for a drawing or illustration.
    b. Actively participate in shared writing experiences to create narratives with the events in chronological order and share feelings about the story, using drawing, dictating, and/or writing.
    c. Actively participate in shared writing experiences to create opinion pieces about a topic or text, state the opinion, supply a reason for the opinion, and provide a sense of closure, using drawing, dictating, and/or writing.
    d. Actively participate in shared writing experiences to create explanatory texts or provide factual information about a topic, using drawing, dictating, and/or writing.
    e. With prompting and support, compose writing for varied purposes and audiences, across different genres.

38. Improve pictorial and written presentations, as needed, by planning, revising, editing, and using suggestions from peers and adults.

    Examples: Plan by brainstorming; revise to clarify or aid audience's comprehension; edit written presentations to ensure appropriate spacing between letters and words, correct spelling and punctuation, and legibility as a courtesy to the audience and to show pride in one's work.

39. Participate in shared research and writing projects to answer a question or describe a topic.
    a. Include information recalled from personal experiences in research and writing projects.
    b. Gather information from provided sources for research and writing projects.

40. With guidance and support, use a variety of digital tools to produce and publish writing, working both independently and collaboratively with peers.

GRADE 1

Standards in Grade 1 continue the strong focus on Literacy Foundations: oral language, concepts of print, phonological and phonemic awareness, phonics (decoding), fluency, vocabulary, comprehension, and writing (including encoding), with an added level of rigor incorporated in each content subarea. The phonological awareness/phonemic awareness standards progress from early to basic to advanced skills indicative of the Simple View of Reading (Gough and Tunmer) and the Simple View of Writing (Berninger et al.). Students who achieve fluency standards in Grade 1 should be able to monitor, recognize, and self-correct errors as they read orally, promoting comprehension of grade-appropriate texts. Students continue reading and responding to multiple types of texts in various ways, decoding and encoding words, adding literacy knowledge, building and accessing background knowledge, understanding language structures, and using verbal reasoning. The level of specificity in these standards is essential for early learners to develop the phonemic awareness and phonics skills they need to become successful readers and writers.

The K-3 Recurring Standards for English Language Arts, shown in the chart below, are an important part of every grade level. Through these standards, students learn and practice active listening, utilize word-analysis skills, build background knowledge and vocabulary skills, learn and practice essential digital skills, and utilize a process to create and modify written work. The recurring standards will be incorporated throughout the grade level.

RECURRING STANDARDS FOR K-3

Students will:

R1. Utilize active listening skills during discussion and conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.

R2. Use knowledge of phoneme-grapheme correspondences and word analysis skills to decode and encode words accurately.

R3. Expand background knowledge and build vocabulary through discussion, reading, and writing.

R4. Use digital and electronic tools appropriately, safely, and ethically for research and writing, both individually and collaboratively.

R5. Utilize a writing process to plan, draft, revise, edit, and publish writings in various genres.

GRADE 1 CONTENT STANDARDS

Each content standard completes the stem "*Students will…"*

LITERACY FOUNDATIONS

Oral Language

1. Engage in collaborative discussions about topics and texts with peers and adults in small and large groups, utilizing agreed-upon rules.
2. Actively participate in shared reading experiences and collaborative discussions to build background knowledge and learn how oral reading should sound.
   Examples: read-alouds, oral dramatic activities
3. Ask and answer questions to seek help, get information, or clarify information to confirm understanding in response to information presented in audible, text, or digital format.
4. Present information orally using complete sentences and appropriate volume.
   a. Orally describe people, places, things, and events, expressing ideas with relevant details.

Concepts of Print

5. Locate a book's title, table of contents, glossary, and the names of author(s) and illustrator(s).
   a. Explain the roles of author(s) and illustrator(s).

Phonological Awareness/Phonemic Awareness

6. Demonstrate basic to advanced phonological and phonemic awareness skills in spoken words.
   a. Count, blend, segment, and delete syllables in spoken words, including polysyllabic words.
      Examples: par-ti-cu-lar, cer-ti-fi-cate
   b. Recognize and produce groups of rhyming words and distinguish them from non-rhyming groups of spoken words.
   c. Produce alliterative words.

Standard 6 continued...

d. Blend and segment phonemes in single-syllable spoken words made up of three to five phonemes, including words with consonant blends.

e. Add, delete, and substitute phonemes at the beginning or end of spoken words made up of three to five phonemes, and produce the resulting word.

Examples: pan *to* pant; flight *to* light; cat *to* cap

f. Distinguish long from short vowel sounds in spoken, single-syllable words.

g. Distinguish between commonly-confused vowel sounds and commonly-confused cognate consonant sounds, using knowledge of mouth position, voiced and unvoiced sounds, and manner of articulation.

Examples: /f/ and /v/, /p/ and /b/, /t/ and /d/, /k/ and /g/, /m/ and /n/, /ng/ and /n/, /s/ and /z/, unvoiced /th/ and voiced /th/, /ch/ and /sh/, /ĕ/ and /ā/, /ĕ/ and /ă/

*Note**:** This is extremely important as a foundational phonemic awareness skill for all learners.*

h. Identify the sound substitution in words with five to six phonemes.

Example: strips/straps, square/squire

Phonics

7. Apply knowledge of phoneme-grapheme correspondences and word analysis skills to decode and encode words accurately both in isolation and within decodable, grade-appropriate texts.

a. Produce the most frequent sound(s) for each letter of the alphabet, including *x, q*, and the long and short sounds of the vowels.

Examples: x= /ks/; q=/kw/; a=/ă/ and /ā/, s= /s/ and /z/

b. Decode and encode regularly-spelled, one-syllable words with closed syllables, open syllables, and vowel-consonant-e syllables, including words with blends in initial and final position.

*Note**:** Consonant blends should include st-, sm-, sn-, -st, -ft, -lp, sl, cr, cl, tr, dr, nt, nd, mp, and nk, at a minimum.*

c. Decode words with digraphs, trigraphs, and combinations, including digraphs *ck*, *sh, th, ch*, *wh, ph, ng*, trigraphs *tch* and *dge,* and combination *qu.*

Note: Some programs/experts call wh *a combination, others call it a digraph. Use common language across the school/district.*

d. Decode words with *a* after *w* read /ä/ and *a* before *l* read /â/.

Examples: wash, water, wasp; tall, all, talk, small, fall

Standard 7 continued...

e. With prompting and support, decode words with the hard and soft sounds of *c* and *g,* in context and in isolation.
   Examples: c=/k/ before a, o, u, or any consonant and c= /s/ before i, e, or y;
   g=/g/before a, o, u, or any consonant and g=/j/ before i, e, or y

f. Decode words with vowel *y* in the final position of one and two syllable words, distinguishing the difference between the long /ī/ sound in one-syllable words and the long /ē/ sound in two-syllable words, and words with vowel y in medial position, producing the short /ĭ/ sound for these words.
   Examples: fly, my; baby, happy; myth, gym

g. Decode regularly spelled one-syllable words with vowel-r syllables, including *ar, er, ir, or,* and *ur*.

h. With prompting and support, decode words with common vowel team syllables, including *ai, ay, ee, ea, igh, ie, oa, ou, ow, au, aw, oe, oo, ew, oi, oy,* and *ue*.

i. With prompting and support, decode words that follow the *-ild, -ost, -old, -olt,* and *-ind* patterns.
   Examples: mild, host, fold, jolt, kind

j. With prompting and support, decode two-syllable words using knowledge of closed syllables, open syllables, vowel-consonant-e syllables, vowel-r syllables, common vowel team syllables, and consonant-le syllables, including compound words that fit multiple syllable types.

k. With prompting and support, decode words with silent letter combinations.
   Examples: kn, wr, mb, gh, gn

l. With prompting and support, decode words with common prefixes including *un-, dis-, in-, re-, pre-, mis-, non-,* and *ex-*.

m. With prompting and support, decode words with common suffixes, including words with dropped *e* and *y*-to-*i* changes for suffix addition.
   Examples: -s, -ed, -ing, -es, -er, -est, -en, -y, -ly

n. Decode contractions with *am, is, has*, and *not*.
   Examples: I'm, he's, she's, isn't, don't

o. Decode grade-appropriate high frequency words that are spelled using predictable, decodable phoneme-grapheme correspondences.
   Examples: saw, all, made, can, his, walk, let, open, time

Fluency

8. Apply previously-taught phoneme-grapheme correspondences to decodable words with accuracy and automaticity, in and out of context.

9. Read grade-appropriate texts with accuracy and fluency.
    a. Read and reread grade-appropriate decodable text orally with accuracy and expression at an appropriate rate to support comprehension.
    b. Recognize and self-correct decoding and other errors in word recognition and reread for clarification.
    c. Participate in poetry reading, noticing phrasing, rhythm, and rhyme.
        Example: Pause between stanzas and between lines where punctuation indicates.

10. Read high-frequency words commonly found in grade-appropriate text.
    Note: High-frequency words should be taught with the main emphasis of the lesson being on regular correspondences and patterns within the word. The student should be able to read the word accurately and independently three times in a row on different days to be considered accurate enough to add to a personal word box, word ring, or fluency folder for fluency practice. Avoid teaching high-frequency words as "sight words" that need to be memorized as a whole word, unless there are no regular correspondences in the word. "Of" is an example of a word with no regular correspondences.

Vocabulary

11. Utilize new academic, content-specific, grade-level vocabulary, make connections to previously learned words, and relate new words to background knowledge.
    a. Make connections to a word's structure using knowledge of phonology, morphology, and orthography of the word to aid learning.

12. Ask and answer questions about unfamiliar words and phrases in discussions and/or text.
    a. Identify possessives and plurals and use them as clues to the meaning of text.
        Example: Jack's coat, mom's car; pigs, pig's, pigs'
    b. Identify meaningful parts of words (morphemes) and use them as clues to the meaning of unknown words, including frequently occurring affixes and inflections *-s, -es, -ed, -ing, -er,* and *-est.*
        Examples: Explain that adding suffix -s *changes a singular noun to a plural noun and adding suffix* -ed *changes a verb to past tense.*

Standard 12 continued...

c. Describe word relationships and nuances in word meanings, including relating them to their opposites and distinguishing shades of meaning in similar or related words.
   Examples: look, peek, glance, stare, glare; big, large, gigantic, monstrous
   Act out tiptoe, creep, *and* march *to distinguish shades of meaning in words related to* walk.
   Discuss synonyms and antonyms.

13. Use information found within the text to determine the meaning of an unfamiliar or multiple-meaning word or phrase.

14. Sort and categorize groups of words or pictures based on meaning, and label each category.
    Examples: colors, clothes, animals with wings

15. Identify and explain adjectives as descriptive words and phrases in all forms of texts, including poems.

16. Use grade-appropriate academic vocabulary in speaking and writing.

Comprehension

17. Use content knowledge built during read-alouds of informational and literary texts by participating in content-specific discussions with peers and/or through drawing and writing.

18. Manipulate words and/or phrases to create simple sentences, including declarative and interrogative, to help build syntactic awareness and comprehension at the sentence level.

19. Identify common types of texts and their features, including literary, informational, fairy tale, and poetry.

20. Use text features to locate key facts or information in printed or digital text.
    Examples: headings, tables of contents, glossaries, electronic menus, icons, bold words, captions, illustrations

21. Identify the main topic and key details of literary and informational texts.

22. Ask and answer questions about key details in literary and informational texts.

23. Identify and describe the main story elements in a literary text.
    a. Describe the characters and settings, using illustrations and textual evidence from a story.
    b. Retell the plot or sequence of major events in chronological order.

24. Identify who is telling the story, using evidence from the text.
    a. Use the term *narrator* to refer to the speaker who is telling the story.

25. Describe connections between two individuals, events, ideas, or pieces of information, including cause and effect, sequence, and problem and solution, in a literary text.

26. With prompting and support, use textual evidence to explain the central message or moral of a literary text.

27. Make predictions using information found within a literary text.

28. Self-monitor comprehension of text by pausing to summarize or rereading for clarification when comprehension is lacking.

29. Compare and contrast texts.
    a. Compare and contrast characters, settings, and major events in literary texts.
    b. Describe the connections between individuals, events, ideas, or pieces of information in an informational text.
    c. Point out similarities and differences between two texts on the same topic.

Writing

30. Write legibly, using proper pencil grip.
    a. Print upper and lowercase letters fluently, using proper approach strokes, letter formation, and line placement.
    b. Print first and last names using proper letter formation, capitalization, and punctuation.
        Examples: De'Andre McGill, Kim Mi-Sun, Juan de Jesus, Janie Parker
    c. Use lower case letters in the majority of written work, using capitals only when appropriate.
    d. Write letters of the English alphabet in alphabetical order from memory.

31. Apply knowledge of grade-appropriate phoneme-grapheme correspondences and spelling rules (or generalizations) to encode words accurately.
    a. Encode vowel-consonant (VC) and consonant-vowel-consonant (CVC) words, while using some knowledge of basic position-based rules for spelling English words in closed syllables.
        Examples: /k/=k before i, e, or y as in kit; /k/= c before a, o, u, or any consonant as in cup, cat, cop; /k/= -ck after an accented short vowel as in duck, back, rock, pick, deck
    b. Encode consonant-vowel (CV) words using knowledge of open syllable patterns.
        Examples: he, me, she, go, no

Standard 31 continued...

c. Encode words with two-consonant blends in beginning position, including blends that are commonly confused with other spellings, by distinguishing the placement and action of the lips, teeth, and tongue during articulation.
   Examples: cl, bl, sl, tr, cr, sk, st, sl, sm, sn, sp, sw, dr, br, bl
   Note: Many students spell the tr *blend with digraph* ch *because of the confusion of the coarticulation of the /t/ and /r/ sounds. Many students spell the* dr *blend with the letter* j *because of the confusion of the coarticulation of the /d/ and /r/ sounds.*

d. Encode words with consonant digraphs using knowledge that one sound may be spelled with two letters.
   Examples: sh, th, ch, wh, ng, ck

e. Encode words with vowel-consonant-e syllable patterns.
   Examples: hike, spike, joke, dime, make

f. With prompting and support, encode words with the common vowel teams and diphthongs.
   Examples: ee, ea, oa, ai, ay, au, aw, oi, oy, ou, ow, oo, igh

g. With prompting and support, encode words with vowel-r combinations *ar, or, er, ir,* and *ur.*

h. With prompting and support, encode words with final /ch/ sound spelled *-ch* and *-tch*.
   Examples: /ch/= ch after a consonant, vowel-r, or vowel team as in munch, bunch, porch, smooch
   /ch/= tch after a short vowel sound as in hatch, crutch, ditch

i. With prompting and support, encode words with final /f/, /l/, and /s/ sounds in one-syllable base words by doubling the final consonant when it follows a short vowel sound.
   Examples: cliff, hill, pass

j. Encode words with final /v/ sound, using knowledge that no English word ends with a v.
   Examples: have, give, save

k. Encode grade-appropriate high frequency words that follow regular phoneme-grapheme correspondences.
   Examples: am, at, can, he, we, be, in, it, came, like

l. Encode grade-appropriate high frequency words that follow regular phoneme-grapheme correspondences and patterns *in all but one position*, pointing out the part of the word that does not follow the regular pattern.
   Examples: said, are, to

m. Encode words with suffixes *-s, -es, -ing, -ed, -er,* and *-est.*
   Examples: dogs, wishes, jumping, jumped, faster, fastest

n. With prompting and support, encode words with common prefixes *re-, un-*, and *mis-*.

Standard 31 continued...

o. With prompting and support, encode frequently confused homophones, using knowledge of English and meaning to facilitate learning.

Examples: hear/here; for/four; to/too/two.

Note: To *is a preposition which begins a prepositional phrase or an infinitive.* Too *is an adverb meaning "excessively" or "also." Two is a number. Many other words in English which reflect the number two are spelled with* ***tw:*** *twin, twice, between, tweezers.*

32. Follow the rules of standard English grammar, punctuation, capitalization, and spelling appropriate to grade level.
    a. Identify the required features of a sentence, including capitalization of the first word and end punctuation.
    b. Transcribe spoken words to demonstrate that print represents oral language.
    c. Compose a simple sentence, including a subject and a predicate, that expresses a complete thought.
    d. With prompting and support, identify the role or purpose of a noun, verb, and adjective within a sentence and describe the type of the information it conveys.
    e. Write the correct number of words, with proper spacing, for a spoken phrase or sentence.
    f. Begin each sentence with a capital letter.
    g. Capitalize the pronoun *I* and names of individuals.
    h. Use commas in dates and words in a series.
    i. With prompting and support, recognize, name, and correctly use end punctuation, utilizing appropriate academic vocabulary.

Example: period for declarative sentences, question mark for interrogative sentences, exclamation mark for exclamatory sentences

33. Actively participate in shared writing experiences to compose and develop a well-organized paragraph with a topic sentence, details to support, and a concluding sentence.

34. With prompting and support, write a narrative that recounts two or more appropriately sequenced events using transitions, incorporating relevant details, and providing a sense of closure.

35. With prompting and support, write an informative or explanatory text about a topic, using facts from a source and providing a sense of closure.

36. With prompting and support, write an opinion piece about a topic, including at least one supporting reason from a source and providing a sense of closure.

37. With prompting and support, write simple poems about a chosen subject.

38. Develop and edit first drafts using appropriate spacing between letters, words, and sentences and left-to-right and top-to-bottom progression.

39. Improve writing, as needed, by planning, revising, and editing with guidance from peer editors, responding to their questions and suggestions.

40. Describe ideas, thoughts, and feelings, using adjectives, drawings, or other visual displays to clarify.

41. Organize a list of words into alphabetical order according to the first and (when necessary) second letters of the words.

42. Participate in shared research and writing projects to answer a question or describe a topic.
    a. Recall information from experiences to contribute to shared research and writing projects.
    b. Gather information from provided sources.

43. Use a variety of digital tools to produce and publish writing with guidance and support from adults, working both individually and in collaboration with peers.

GRADE 2

In Grade 2, Literacy Foundations continue to be essential as a basis for increased proficiency and a bridge to higher levels of instruction. Specificity in the standards remains to develop the needed phonemic awareness and phonics skills to become successful readers and writers. The categories Reading, Listening, Writing, and Speaking have been added to the organization of the standards as students are becoming more proficient in mastering foundational skills. Not every content area will have a standard in every category. In such cases, the category remains blank with the row shaded to indicate that the omission was intentional.

The writing process is integrated throughout the standards as a key to expressive learning. In accordance with the Simple View of Writing (Berninger et al.), foundational writing skills remain in the Literacy Foundations (standards 37-39); however, the written composition skills transition to the Written Expression category in standards 40-46 as students begin using the stages of the writing process more independently to produce narrative, informative, and opinion writings in response to texts. These tasks become more demanding as rigor increases from second to third grade.

The K-3 Recurring Standards for English Language Arts, shown in the chart below, are an important part of every grade level. Through these standards, students learn and practice active listening, utilize word-analysis skills, build background knowledge and vocabulary skills, learn and practice essential digital skills, and utilize a process to create and modify written work. The recurring standards are to be incorporated throughout the grade level.

RECURRING STANDARDS FOR K-3

Students will:

R1. Utilize active listening skills during discussion and conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.

R2. Use knowledge of phoneme-grapheme correspondences and word analysis skills to decode and encode words accurately.

R3. Expand background knowledge and build vocabulary through discussion, reading, and writing.

R4. Use digital and electronic tools appropriately, safely, and ethically for research and writing, both individually and collaboratively.

R5. Utilize a writing process to plan, draft, revise, edit, and publish writings in various genres.

GRADE 2 CONTENT STANDARDS

Each content standard completes the stem "*Students will…*"

LITERACY FOUNDATIONS

Oral Language

1. Participate in conversations and discussions with groups and peers utilizing agreed-upon rules.

2. Present information orally using complete sentences, appropriate volume, and clear pronunciation.
    a. Use oral language for different purposes: to inform, to entertain, to persuade, to clarify, and to respond.
    b. Use complex sentence structures when speaking.
    c. Ask and answer questions to seek help, clarify meaning, or get information.

3. Demonstrate oral literacy skills by participating in a variety of oral language activities.
    Examples: creating oral stories, participating in oral dramatic activities, reciting poems and stories

	READING	
	LISTENING	
	WRITING	

	SPEAKING	4. Orally answer *who, what, when, where, why,* and *how* questions about a text or conversation, using complete sentences to provide key ideas and details. 5. Create recordings of stories or poems. 6. Use visual aids and technology in oral presentations to present key ideas and details about a text or conversation, and add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify thoughts, feelings, and ideas. 7. Demonstrate standard English usage when speaking. a. Use collective nouns. b. Form and use frequently-occurring irregular plural nouns. c. Use reflexive pronouns. d. Form and use past tense forms of frequently-occurring irregular verbs. e. Use adjectives and adverbs. f. Produce and expand complete simple and compound sentences when speaking.

Phonological Awareness/Phonemic Awareness

8. Apply knowledge of voiced and unvoiced sounds and manner of articulation to distinguish between commonly-confused vowel sounds and commonly-confused cognate consonant sounds.
   Examples: /f/ and /v/, /p/ and /b/, /k/ and /g/, /t/ and /d/, /ch/ and /sh/, /ĕ/ and /ĭ/, /ĕ/, and /ă/
   Note: This is extremely important as a foundational phonemic awareness skill for all learners.

9. Demonstrate advanced phonemic awareness skills in spoken words.
   a. Add, delete, and substitute phonemes at the beginning, end, or middle of a spoken word made up of up to six phonemes and produce the resulting word.
      Examples: Addition - Say bell. *Now say* bell*, but add* /t/ *to the end of* bell**.** (belt)
      Addition - Say block. *Now say* block*, but add* /t/ *to the end of* block. (blocked)
      Deletion - Say fin. *Now say fin, but don't say /f/.* (in)
      Deletion - Say range. *Now say* range*, but don't say* /j/. (rain)
      Substitution - Say strap. *Now say* strap*, but change* /a/ *to* /i/. (strip)
      Substitution - Say bleed. *Now say* bleed*, but change the* /ē/ *to* /ā/. (blade)

Standard 9 continued….

b. Delete the initial sound in an initial blend in a one-syllable base word.
   Example: Say prank*. Now say* prank*, but don't say* /p/. (rank)
c. With prompting and support, delete the medial and final sounds in blends in one syllable base words.
   Examples: Say snail*. Now say* snail*, but don't say* /n/. (sail)
   Say wind*. Now say* wind*, but don't say* /d/. (win)
d. Apply phoneme chaining that changes only one sound at a time to show addition, deletion, substitution, and resequencing of sounds from one word to the next.
   Examples: bit, bet, bat; sat, sit; pit, pat
e. With prompting and support, reverse sounds within a word by saying the last sound first and the first sound last.
   Examples: fine, knife; cat, tack; park, carp

	READING	
	LISTENING	
	WRITING	
	SPEAKING	

Phonics

10. Apply knowledge of phoneme-grapheme correspondences, multisyllabic word construction, and syllable division principles to decode and encode (spell) words accurately in isolation and in context.
    a. Decode multisyllabic words with common syllable patterns, including open/closed, vowel-r, vowel-consonant-e, vowel teams, consonant-le, and *schwa* syllables.
    b. Apply knowledge of multisyllabic word construction and syllable division principles to decode grade-appropriate multisyllabic words.
       Examples: VC/CV, V/CV, VC/V, CV/VC; rab-bit, o-pen, cab-in, li-on
    c. Decode and encode words with three-consonant blends and blends containing digraphs.
    d. Decode and encode words with consonant digraphs, trigraphs, and combinations.
       Examples: qu, sh, ch, th, ph, wh, tch, dge

Standard 10 continued...

e. Decode and encode words with variable vowel teams and vowel diphthongs.
Examples: oi, oy; ou, ow; au, aw; oo, ew, ue; ee, ea; igh, ie; ai, ay

f. Decode and encode words with vowel-r combinations.
Examples: ar, air, are, ear, eer, er, ere, eir, ir, or, oar, ore, our, ur

g. Decode and encode words that follow the *-ild, -ost, -old, -olt,* and *-ind* patterns.
Examples: wild, most, cold, colt, mind

h. Decode and encode words with *a* after *w* read /ä/ and *a* before *l* read /â/.
Examples: wash, water, wasp; tall, all, talk, small, fall

i. Decode and encode words with *or* after *w* read /er/.
Examples: world, word, worm, worst, work

j. Decode and encode words with the hard and soft sounds of *c* and *g,* in context and in isolation.
Examples: c=/k/ before a, o, u, or any consonant and c= /s/ before i, e, or y
g=/g/before a, o, u, or any consonant and g=/j/ before i, e, or y

k. Decode and encode words with vowel *y* in the final position of one and two syllable words, distinguishing the difference between the long /ī/ sound in one-syllable words and the long /ē/ sound in two-syllable words, and words with vowel *y* in medial position, producing the short /ĭ/ sound for these words.
Examples: fly, my; baby, happy; myth, gym

l. Decode words with silent letter combinations.
Examples: kn, mb, gh

m. Decode and encode words with prefixes and suffixes, including words with dropped *e* and *y-to-i* changes for suffix addition.
Examples: pro-, trans-, non-, mid-; -ful, -less, -ness, -ed, ing, -es, -er, -est, -en, -y, -ly

n. Decode and encode grade-appropriate high frequency words that are spelled using predictable, decodable phoneme-grapheme correspondences, including those that contain only one irregularity.
Examples: decodable - number, way, my, than, word
decodable except for one irregularity - other (o is schwa), from- (o is schwa)
what - (a is schwa or short o depending on dialect)

o. Decode and encode contractions with *am, is, has, not, have, would,* and *will.*
Examples: I'm, he's, she's, isn't, don't, I've, he'd, they'll

	READING	
	LISTENING	

	WRITING	
	SPEAKING	

Fluency		
11. Apply previously-taught phoneme-grapheme correspondences to multisyllabic words with accuracy and automaticity, in and out of context. 12. Read and reread grade-appropriate text accurately, automatically, and with meaningful expression at a rate which supports comprehension. 13. Read grade-appropriate poetry, noticing phrasing, rhythm, and rhyme. 14. Read high-frequency words commonly found in grade-appropriate text. *Note: High-frequency words should be taught with the main emphasis of the lesson being on regular correspondences and patterns within the word. The student should be able to read the word accurately three times in a row on different days to be considered accurate enough to add to a personal word box, word ring, or fluency folder for fluency practice. Avoid teaching high-frequency words as "sight words" that need to be memorized as a whole word, unless there are no regular correspondences in the word. "Of" is an example of a word with no regular correspondences.*		
	READING	
	LISTENING	
	WRITING	
	SPEAKING	

Vocabulary

15. Utilize new academic, content-specific, grade-level vocabulary, making connections to previously learned words and relating new words to background knowledge.
    a. Make connections to a word's structure using knowledge of phonology, morphology, and orthography of the word to aid learning.

16. Describe word relationships and nuances in word meanings, including relating them to their opposites and distinguishing shades of meaning in similar or related words.
    a. Use knowledge of antonyms and synonyms.
    b. Distinguish shades of meaning among verbs and adjectives.
        Examples: Act out jog, gallop, *and* sprint *to distinguish shades of meaning in words related to* run.
        pretty, beautiful, gorgeous; tiny, small, petite
    c. Use knowledge of homophones to determine use of the correct word.
    d. With prompting and support, interpret figurative language.

17. Analyze meaningful parts of words and phrases in discussions and/or text.
    a. Identify possessives and plurals and use them as clues to the meaning of text.
        Example: girl's dress; boys' game; cats, cat's, cats'; houses, house's shutters
    b. Identify meaningful parts of words (morphemes) and use them as clues to the meaning of unknown words, including base words, compound words, and frequently occurring affixes and inflections.
        Examples: -less, -ful, -est
        Note: Adding suffix -est *changes an adjective to a superlative adjective; adding suffix* -ful *changes the part of speech.*

18. Use dictionary definitions and information found within the text to help determine meaning of unfamiliar or multi-meaning words.

19. Identify new vocabulary and the use of word meanings in text to establish real-life connections.

	READING	20. Use grade-level academic and domain-specific vocabulary to gain meaning from text.
	LISTENING	
	WRITING	21. Use grade-level academic and domain-specific vocabulary in writing.

	SPEAKING	

Comprehension

22. Use content knowledge built during read-alouds and independent reading of informational and literary texts by participating in content-specific discussions with peers and/or through writing.

23. Identify the main story elements in a literary text.
    a. Explain the plot of a narrative, using textual evidence to list the major events in sequence.
    b. Describe the characters' traits, feelings, and behaviors in a story.
    c. Describe the setting of a narrative, using textual evidence.
    d. Identify the central message or moral of a story.
    e. Identify the theme in myths, fables, and folktales.

24. Identify the main idea and supporting details of literary and informational texts.
    a. Explain how the supporting details contribute to the main idea.
    b. Recount or summarize key ideas from the text.

25. Identify and use various text features to locate ideas, facts, or supporting details in both written and digital formats.
    a. Identify and locate captions, bold print, subheadings, indexes, graphs, maps, glossaries, and illustrations.
    b. Explain how specific features can clarify a text or enhance comprehension.

26. Compare and contrast important details presented by two texts on the same topic or theme.
    a. Compare and contrast different versions of the same story by different authors, from different cultures, or from different points of view.
        Examples: The Three Little Pigs *and* The True Story of the Three Little Pigs*;* Cinderella *and* The Rough-Face Girl
    b. Compare and contrast story elements of literary texts.
        Examples: characters, settings, sequence of events, plots

27. Identify the text structures within literary and informational texts, including cause and effect, problem and solution, and sequence of events.

<table>
<tr><td colspan="3">28. Establish a purpose before reading literary and informational texts to enhance comprehension.
Examples: for pleasure, to identify main idea, to gather information or facts on a topic</td></tr>
<tr><td rowspan="4"></td><td>READING</td><td>29. With prompting and support, identify and interpret various cohesive devices that help link words and sentences to one another within the text as a scaffold to help build comprehension at the sentence and paragraph level.
Examples: pronoun references, word substitution using synonyms, conjunctions

30. Read and comprehend literary and informational texts.
a. State and confirm predictions about a text.
b. Use background knowledge to make connections to new text.
c. Draw conclusions based on the text.

31. Use information from a text to determine the author’s purpose in different forms of informational and literary texts.

32. Identify rhyme schemes in poems or songs.

33. Read and identify types of poems, including free verse, rhymed verse, haiku, and limerick.

34. Differentiate between fact and opinion in a text.
a. Use prior knowledge and information gathered from research to evaluate opinions in texts.
b. Use textual evidence and gathered research from reliable sources to prove facts.</td></tr>
<tr><td>LISTENING</td><td>35. Demonstrate listening skills and build background knowledge by asking and answering questions about texts read aloud.</td></tr>
<tr><td rowspan="2"></td><td>WRITING</td><td>36. Manipulate words and/or phrases to create simple and compound sentences, including coordinating conjunctions for, and, nor, but, or, yet, and so, to help build syntactic awareness and comprehension at the sentence level.</td></tr>
<tr><td>SPEAKING</td><td></td></tr>
</table>

Writing

37. Write legibly.
    a. Write words and sentences fluently using correctly-formed manuscript letters with appropriate size and spacing.
    b. Demonstrate cursive writing strokes, including undercurve, overcurve, downcurve, and slant.
    c. Form uppercase and lowercase letters in cursive.

38. Apply knowledge of grade-appropriate phoneme-grapheme correspondences, multisyllabic word construction, syllable division principles, and spelling rules (or generalizations) to encode words accurately.
    a. Encode grade-appropriate multisyllabic words using knowledge of syllable types, including open, closed, vowel-consonant-e, vowel teams, vowel-r, and consonant-le.
    b. Apply knowledge of multisyllabic word construction and syllable division principles to encode grade-appropriate words correctly.
        Examples: VC/CV, V/CV, VC/V, CV/VC; rab-bit, o-pen, cab-in, di-et
    c. Encode words with final /v/ and /j/ sounds using knowledge that no English word ends with a v or j.
        Examples: have, give, save; cage, rage, budge, lodge
    d. Encode one- and two-syllable words with long and short vowel patterns.
    e. Encode words with two- and three-consonant blends, including those containing digraphs.
        Examples: st, sm, sn, sl, cl, dr, br, bl, str, scr, thr, squ, spl, spr
    f. Encode words with consonant digraphs, trigraphs, and combinations.
        Examples: ph, gh, ch, sh, wh, th, ng, tch, dge, qu
    g. Encode words with the common vowel teams, including diphthongs.
        Examples: ai, ay, ea, ee, ei, igh, oa, ow, ou, ue, ew, eigh
    h. Encode words with vowel-r combinations.
        Examples: *ar, or, ir, er, ur, air, ear, oar*
    i. Encode words that follow the -*ild, -ost, -old, -olt*, and -*ind* patterns.
        Examples: wild, cold, most, colt, mind
    j. Encode words with *a* after *w* read /ä/ and *a* before *l* read /â/.
        Examples: wash, water, wasp; tall, all, talk, small, fall
    k. Encode words with *or* after *w* read /er/.
        Examples: world, word, worm, worst, work
    l. Encode words with hard and soft *c* and *g*.
        Examples: carry, cent; game, giraffe

Standard 38 continued….

m. Encode words with vowel *y* in the final position of one and two syllable words, distinguishing the difference between the long /ī/ sound in one-syllable words and the long /ē/ sound in two-syllable words, and words with vowel *y* in medial position, producing the short /ĭ/ sound for these words.
Examples: fly, my; baby, happy; myth, gym

n. Encode words with prefixes and suffixes, including words with dropped *e* and *y-to-i* changes for suffix addition.
Examples: pro-, trans-, non-, mid-, -ful, -less, -ness, -ed, ing, -es, -er, -est, -en, -y, -ly

o. Encode grade-appropriate high frequency words that are spelled using predictable, decodable phoneme-grapheme correspondences, including those that contain only one irregularity.
Examples: decodable - number, way, my, than, word
decodable except for one irregularity - other (o is schwa); from- (o is schwa); what- (a is schwa or short o depending on dialect)

p. Encode contractions with *am, is, has, not, have, would,* and *will*, using apostrophes appropriately.
Examples: I'm, he's, she's, isn't, don't, I've, he'd, they'll

q. Encode frequently confused homophones accurately, using knowledge of English orthography and meaning to facilitate learning.
Examples: their/they're/there; eight/ate; cent/scent/sent

39. Organize a list of words into alphabetical order according to first, second, and third letters.

	READING	
	LISTENING	
	WRITING	40. Write a personal or fictional narrative using a logical sequence of events, including details to describe actions, thoughts, and feelings and providing a sense of closure. 41. Write informative or explanatory texts, introducing the topic, providing facts and relevant details to develop points, and providing a conclusion. 42. Write an opinion piece about a topic or text with details to support the opinion, using transitional words and providing a sense of closure.

		43. Write complete sentences demonstrating knowledge of punctuation conventions. a. Utilize commas with words in a series in a sentence. b. Use apostrophes to form contractions and possessives. *Examples: contractions with* am, is, has, not *(I'm, she's, don't)* c. Use punctuation to set off interjections. d. Expand sentences using frequently-occurring conjunctions. *Examples: because, so, but* 44. With prompting and support, compose and develop a well-organized paragraph with a topic sentence, details to support, and a concluding sentence. 45. Demonstrate understanding of standard English language conventions when writing. a. Identify the role of a noun, verb, adjective, and adverb within a sentence and explain the type of the information it conveys. b. Form regular nouns and verbs by adding *-s* or *-es*. c. Form and use simple present and past verb tenses. d. Form plurals by changing *-y* to *-ies.* e. Form and use frequently-occurring irregular plural nouns and verbs. f. Use plural possessives. 46. Gather and use research to answer questions to complete a research product. a. Create topics of interest for a research project. b. Create questions to gather information for a research project. c. Find information from a variety of sources. *Examples: books, magazines, newspapers, digital media* d. Define *plagiarism* and explain the importance of using their own words.
	SPEAKING	

GRADE 3

In Grade 3, Literacy Foundations continue to provide the main framework for the standards and a bridge to higher levels of instruction, along with the categories Reading, Listening, Writing, and Speaking that were introduced in Grade 2. Grade 3 students progress from learning basic cursive writing strokes to writing legibly with correctly formed cursive letters and spacing. Reading comprehension standards progress through increasingly more comprehensive and challenging skills, and students learn to express their thoughts effectively in a variety of formats including poetry writing. Not every content area will have a standard in every category. In such cases, the category remains blank with the row shaded to indicate that the omission was intentional. The gray column to the left of the categories is included as an indicator of the organizational structure, which becomes more intricate in Grades 4-5.

The writing process is integrated throughout the standards as a key to expressive learning. In accordance with the Simple View of Writing (Berninger et al.), foundational writing skills still appear in the Literacy Foundations category (standards 31-32); however, the written composition skills transition to the Written Expression category in standards 33-42 as students use the stages of the writing process more independently to produce narrative, informative, and argumentative writings in response to various types of texts. These tasks become more demanding as rigor increases from third to fourth grade.

The K-3 Recurring Standards for English Language Arts, shown in the chart below, are an important part of every grade level. Through these standards, students learn and practice active listening, utilize word-analysis skills, build background knowledge and vocabulary skills, learn and practice essential digital skills, and utilize a process to create and modify written work. The recurring standards are to be incorporated throughout the grade level.

RECURRING STANDARDS FOR K-3

Students will:

R1. Utilize active listening skills during discussion and conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.

R2. Use knowledge of phoneme-grapheme correspondences and word analysis skills to decode and encode words accurately.

R3. Expand background knowledge and build vocabulary through discussion, reading and writing.

R4. Use digital and electronic tools appropriately, safely, and ethically for research and writing, both individually and collaboratively.

R5. Utilize a writing process to plan, draft, revise, edit, and publish writings in various genres.

GRADE 3 CONTENT STANDARDS

Each content standard completes the stem "*Students will…*"

LITERACY FOUNDATIONS

Oral Language

1. Contribute meaningful ideas to discussions with groups and peers utilizing agreed upon rules.
    a. Elaborate on responses in conversations and discussions.
        Examples: use precise, descriptive language; build upon previously expressed ideas

2. Present information orally using complex sentence structures, appropriate volume, and clear pronunciation.
    a. Use oral language for different purposes: to inform, to entertain, to persuade, to clarify, and to respond.

3. Apply oral literacy skills by participating in a variety of oral language activities.
    Examples: plays, dramas, choral readings, oral reports

	READING	
	LISTENING	
	WRITING	
	SPEAKING	4. Ask and answer questions using complete sentences and grade-level vocabulary. 5. Express ideas, opinions, and feelings orally in a logical sequence clearly, accurately, and precisely, using appropriate volume, clear pronunciation, and standard English grammar. 6. Use digital tools to enhance oral presentations, working collaboratively.

Phonological Awareness/Phonemic Awareness

7. Demonstrate advanced phonemic awareness skills in spoken words.
    a. Delete phonemes in initial and final blends of a spoken word.
        Examples: Say smoke. *Now say* smoke*, but don't say* /m/. (soak)
        Say best. *Now say* best*, but don't say* /s/. (bet)
    b. Substitute phonemes in initial and final blends in a spoken word.
        Examples: *Say* sweep. *Now say* sweep*, but change the* /w/ *to* /l/. (sleep)
        Say list. *Now say* list*, but change the* /s/ to /f/. (lift)
    c. Reverse phonemes in a spoken word.
        Examples: Say safe. *Now say* safe *but say the last sound first and the first sound last. (*face*)*
        Say slack. *Now say* slack *but say the last sound first and the first sound last.* (class)
    d. In a series of words, apply phoneme chaining that changes only one sound at a time to show addition, deletion, substitution and resequencing of sounds from one word to the next.
        Examples: sap, lap, lip, slip, slit, lit; gob, cob, cub, cup, cap; train, rain, lane, lame, blame
    e. Use knowledge of syllable and affix substitution and deletion to demonstrate morphological changes.
        Examples: Say photograph. *Change* graph *to* cell. (photocell)
        Say anytime. *Change* time *to* where. (anywhere)
        Say blocked. *Change* /t/ *to* /ing/. (blocking)

	READING	
	LISTENING	
	WRITING	
	SPEAKING	

Phonics

8. Apply knowledge of phoneme-grapheme correspondences, multisyllabic word construction, and syllable division principles to decode and encode (spell) words accurately in isolation and in context.
    a. Decode multisyllabic words with common syllable patterns, including open/closed, vowel-r, vowel-consonant-e, vowel teams, consonant-le, and odd or *schwa* syllables.
    b. Apply knowledge of multisyllabic word construction and syllable division principles to decode grade-appropriate multisyllabic words.
        Examples: VC/CV, V/CV, VC/V, CV/VC; com-mit-ment, e-vent, ev-er-y, po-et
    c. Decode and encode words with three-consonant blends, digraphs, trigraphs, quadrigraph *eigh*, combinations, diphthongs, and silent letter combinations.
        Examples: spl-, str-, scr-, squ-; th, sh, ch, ck, ph; tch, dge, igh; er, ir, ar, or; oi, oy, ou, ow; kn, gn, mb, wr, gh
    d. Decode and encode words with graphemes that represent multiple sound-symbol correspondences by applying knowledge of most common to least common frequency.
        Examples: y *can be read* /y/ *in* yet, /ē/ *in* candy, /ī/ *in* fly
        digraph ch *can be read* /ch/ *in* chair, /sh/ *in* chef, *and* /k/ *in* school
        diphthong ow *is rea*d /ou/ *in* cow, *but digraph* ow *is read* /ō/ *in* snow
    e. Decode and encode multisyllabic words using knowledge of stress or accent to pronounce a word correctly, including the *schwa* sound when appropriate.
        Examples: the noun con´/vict *vs. the verb* con/vict´*; the noun* pro´/duce *vs. the verb* pro/duce´
    f. Decode and encode words using knowledge of the morphological structure of a word, including prefixes, suffixes, and roots.
        Examples: fore-, anti-, post-, sub-; -ment, -hood, -er, -or; port, ject, form, dict
    g. Decode and encode contractions with *am, is, has, not, have, would,* and *will*.
        Examples: I'm, he's, she's, isn't, don't, I've, he'd, they'll

Standard 8 continued...

h. Decode and encode frequently confused homophones accurately using knowledge of English and meaning to facilitate learning.

Examples: hear/here; night/knight; tacks/tax

i. Decode and encode words with hard and soft *c* and *g*.

j. Decode and encode grade-appropriate high frequency words that follow regular and irregular phoneme-grapheme correspondences, using knowledge of the specific sound-symbol correspondences that are irregular.

	READING	
	LISTENING	
	WRITING	
	SPEAKING	

Fluency

9. Apply previously-taught phoneme-grapheme correspondences to multisyllabic words with accuracy and automaticity, in and out of context.

10. Read and reread grade-appropriate text accurately, automatically, and with meaningful expression at a rate which supports comprehension.

11. Read and reread grade-appropriate poetry, practicing phrasing, rhythm, rhyme, and meaningful expression.

12. Read high-frequency words commonly found in grade-appropriate text accurately and automatically.

Note: High-frequency words should be taught with the main emphasis of the lesson being on regular correspondences and patterns within the word. The student should be able to read the word accurately three times in a row on different days to be considered accurate enough to add to a personal word box, word ring, or fluency folder. Avoid teaching high-frequency words as "sight words" that need to be memorized as a whole word, unless there are no regular correspondences in the word. "Of" is an example of a word with no regular correspondences.

	READING	

	LISTENING	
	WRITING	
	SPEAKING	

Vocabulary

13. Utilize new academic, content-specific, grade-level vocabulary to make connections to previously learned words and relate new words to background knowledge.
    a. Make connections to a word's structure using knowledge of phonology, morphology, and orthography of the word to aid learning.

14. Describe word relationships and nuances in word meanings, including relating them to their opposites and distinguishing shades of meaning in similar or related words, including nouns, verbs, and adjectives.
    a. Determine meaning of words using synonyms in context.
    b. Determine meaning of words using antonyms as a clue.
    c. Describe the similarities and differences between related words.
    d. Use knowledge of homophones to determine appropriate use of words.
    e. Interpret figurative language.
    f. Identify relationships and nuances in word meanings to determine real-life connections between words and their use.

        Examples: Discuss relationships in words related to home (house, residence, habitat) *and give reasons for choosing a particular word in speaking or writing.*
        Distinguish shades of meaning in words related to bad (terrible, awful, horrible) *and give reasons for choosing a particular word in speaking or writing.*
        Distinguish shades of meaning in words related to talk (yell, scream, bellow) *and give reasons for choosing a particular word in speaking or writing.*

15. Analyze meaningful parts (morphemes) of words and phrases in discussions and/or text.
    a. Identify meaningful parts of words (morphemes) and use them as clues to the meaning of unfamiliar words, including base words, roots, and frequently occurring affixes and inflections.
        Examples: affixes -less, -ful, pro-, trans- *; roots* aqua, cent, port, form, ject, spect, dict, tend, fer
    b. Apply knowledge of the changes in tense (-*ed*), number (-*s*), and degree (-*er* and -*est*) signified by inflected endings to determine the meaning of a word.
    c. Identify common and derivational prefixes and suffixes and use them as clues to a word's meaning.
        Examples: pre-, re-, mis-; -ly, -less, -ful, -able, -ment
    d. Identify common Latin and Greek roots and use them to determine the meaning of unfamiliar words.
    e. Sort words with shared and varied suffixes by parts of speech.

	READING	16. Use knowledge of grade-level academic and domain-specific vocabulary to gain meaning from text.
	LISTENING	
	WRITING	17. Use grade-level academic and domain-specific vocabulary in writing.
	SPEAKING	

Comprehension

18. Demonstrate content knowledge built during independent reading of informational and literary texts by participating in content-specific discussions with peers and/or through writing.

19. Determine the explicit or implied main idea and supporting details of a text.
    a. Explain how supporting details contribute to the main idea, using textual evidence.
    b. Recount or summarize the key ideas from the text.

20. Establish a purpose before reading literary and informational texts to enhance comprehension, including identifying background knowledge and generating questions about the topic or characters.
    Examples: reading for pleasure, application, or information; to identify a theme or an author's purpose

	READING	21. Identify and interpret various cohesive devices that link words and sentences to one another within the text. *Examples: pronoun references, conjunctions, word substitution using synonyms* *Note: Working with cohesive devices is a scaffold to building comprehension at both sentence and paragraph levels.* 22. Describe literary elements within a story, including setting, plot, characters, and themes. a. Describe in detail the characters' behavior, emotions, and traits and explain how their actions influence events in the story. b. Explain how the characters' actions and dialogue contribute to the meaning of the story. c. Identify the central message, theme, or moral in a story, including myths, fables, and folktales, and explain the meaning conveyed in the passage. d. Compare and contrast the themes, settings, and plots from two texts. 23. Identify and use text features in informational passages to locate information. *Examples: headings, photographs, illustrations, labels, charts, graphs, legends* a. Explain how text features support details in the text. b. Explain how illustrations contribute to meaning in a story. c. Interpret text features used in written and digital formats. 24. Identify the text structures within literary and informational texts. a. Explain how the structures, including comparison and contrast, sequence of events, problem and solution, and cause and effect, contribute to the meaning of the text, using textual evidence. 25. Identify statements in informational texts as facts or opinions. a. Use prior knowledge and/or details from the text to distinguish fact from opinion. b. Use information gathered from research to evaluate opinions. 26. Use text comparisons (text to text, text to self, and text to world) to make meaning. a. Use prior knowledge to determine similarities between texts they are reading and texts they have previously read. b. Compare different versions of the same story.

		27. Read prose, poetry, and dramas, identifying the literary devices used by the author to convey meaning. *Examples: personification, imagery, alliteration, onomatopoeia, symbolism, metaphor, simile* 28. Identify the narration of a literary text as first person or third person.
	LISTENING	29. Determine the main idea of a text read aloud or information presented in an audible format.
	WRITING	30. Manipulate words and/or phrases to create compound sentences, including coordinating conjunctions *for, and, nor, but, or, yet,* or *so*, and complex sentences to help build syntactic awareness and comprehension at the sentence level.
	SPEAKING	

Writing

31. Write legibly in cursive with connected, correctly-formed letters and appropriate spacing between words.

32. Apply knowledge of grade-appropriate phoneme-grapheme correspondences, multisyllabic word construction, syllable division rules, and spelling rules (or generalizations) to encode words accurately.
    a. Apply knowledge of multisyllabic word construction and syllable division principles to encode multisyllabic words.
        Examples: VC/CV, V/CV, VC/V, CV/VC; com-mit-ment, e-vent, ev-er-y, po-et
    b. Encode multisyllabic words, using common syllable patterns: open/closed, vowel-r, vowel-consonant-e, vowel teams, consonant-le, and odd or *schwa* syllables.
    c. Encode words with two and three letter blends and previously taught digraphs, trigraphs, combinations, diphthongs, quadrigraph *eigh*, vowel *y*, hard and soft *c* and *g*, silent letter combinations, and contractions.
    d. Encode words with less common prefixes, suffixes, and common Latin roots.
        Examples: prefixes: fore-, pro-, intra-, inter-, trans-, non-, over-, sub-, super-, semi-, anti-, mid-, ex-, post-
        suffixes: -y, -ly, -ful, -ment, -hood, -less, -ness, -er, -or, -en
        Latin roots: port, form, ject, spect, dict, tend, fer
    e. Encode frequently confused homophones accurately, using context to determine correct spelling.
        Examples: hear/here; night/knight; tacks/tax

	READING	
	LISTENING	
	WRITING	33. Write personal or fictional narratives with a logical plot (sequence of events), characters, transitions, and a sense of closure. 34. Write informative or explanatory texts about a topic using sources, including an introduction, facts, relevant details with elaboration, and a conclusion. 35. Write an argument to convince the reader to take an action or adopt a position, using an introduction, logical reasoning supported by evidence from various sources, and a conclusion. 36. Demonstrate knowledge of the rules of standard English grammar including punctuation, capitalization, sentence formation, and spelling appropriate for third grade. a. Use articles *a, an,* and *the* correctly. b. Identify the role of a noun, verb, adjective, adverb, pronoun, preposition, and conjunction within a sentence and explain the type of the information it conveys. c. Form plural nouns, verbs, and possessives, including irregular plural nouns and verbs. d. Use simple abbreviations, including days of the week, months of the year, titles, units of metric and customary measurement, street names, and state names. 37. Compose simple, compound, and complex sentences with correct subject-verb agreement. a. Identify and correct sentence fragments and run-on sentences. b. Identify the subject and predicate of a sentence. 38. Compose and develop a well-organized paragraph with a topic sentence, details to support, and a concluding sentence. 39. Gather and evaluate information about a topic from a variety of sources, including digital sources, and utilize it to create a project, report, or presentation. a. Avoid plagiarism by using their own words and utilizing digital sources ethically.

		40. Use grade-level and domain-appropriate vocabulary in writing. a. Use specific vocabulary to develop a story. b. Use specific vocabulary to explain or inform on a topic. 41. Use words and phrases in writing for effect and elaboration. a. Use transition words and phrases for sentence variety. 42. Write poetry or prose in response to visual images to interpret their meanings.
	SPEAKING	

GRADES 4-5 OVERVIEW

In Grades 4 and 5, students continue to grow as readers, writers, listeners, and speakers. They are still concrete learners, but they are beginning to delve into abstract thinking. Collaboration with peers and instructors is critical in these grades as students learn to develop ideas by drawing upon the insight of others. Literacy growth and development are fostered by direct, explicit reading instruction which is built on foundational literacy skills and on regular formative assessments. Inquiry- and discovery-based learning environments draw upon the natural curiosity of fourth and fifth grade students, encouraging their engagement, creating deeper understanding, and forging a more personal connection to what they read, write, speak, and hear.

Although Foundational Literacy headings are not used in Grades 4 and 5, students continue to develop foundational skills, building on the alphabetic principle, comprehension and encoding, fluency, phonemic awareness, phonics, phonological awareness, and vocabulary foundations laid in Grades K-3 in accordance with the Alabama Literacy Act. In Grades 4 and 5, standards are elevated to ensure continuous student mastery appropriate for upper elementary proficient readers. Students extend learning from concrete ideas to abstract concepts.

When students exhibit deficits in foundational skills, teachers should refer to the companion resources that will be published to support the course of study and to school and district RtI and intervention plans.

Reading standards in Grades 4 and 5 continue to be a major component of receptive content instruction. Reading skills, developed with equal focus on fiction and informational text, allow students to comprehend relationships, author interpretations, events, procedures, ideas, and concepts across content areas. Instruction should provide opportunities for students to read widely and deeply from a broad range of high-quality, rigorous literary and informational texts in order to build the confidence and background knowledge needed for a solid reading foundation. Students can build this solid foundation when instruction is intentionally and coherently structured to develop rich content knowledge within and across grades.

The writing process is integrated throughout the standards in Grades 4 and 5 as a major impetus to expressive learning. The Simple View of Writing (Berninger et al.) was a guiding factor in development of these standards. In order for students to become proficient writers, they must possess foundational writing skills to encode and organize words and composition skills to formulate and organize content. Students use the stages of the writing process to meet the challenging expectations of the standards by producing narrative, informative, and argumentative writings in response to many types of texts. These tasks become more demanding as rigor increases from fourth to fifth grade. Focusing on language and grammar skills during the writing process embeds language learning into

meaningful practice. The inclusion of keyboarding and handwriting techniques during writing enhances clear expression and production of work. Short research projects combine aspects of reading and writing to produce comprehensive, abstract work. Conventions of standard English (including relative pronouns, verb forms, prepositional phrases, and appropriate capitalization and punctuation) and general academic and domain-specific vocabulary continue to be critical components in language development that students apply to reading, speaking, and listening as well as to writing.

Listening and speaking skills enhance learning for both reception and expression for students in Grades 4 and 5. Through discussion, collaboration, and reporting, students learn to be productive participants in conversations that require them to compare, contrast, analyze, and synthesize a multitude of ideas in various domains. Technology is used to enhance and expand both reception and expression, allowing students to transcend traditional learning environments by accessing and communicating information virtually.

When "including" appears in content standards, it should be construed as "including but not limited to." The items listed must be taught; others may also be included in instruction.

Examples represent options that might prove useful in instruction of the standard. They are not intended to be exhaustive lists and the suggestions listed do not have to be taught.

Grades 4-5 Recurring Standards for English Language Arts, listed at the beginning of each grade level, are to be fully included in instruction.

GRADE 4

In Grade 4, the Literacy Foundation headings Oral Language, Phonological Awareness, and Phonemic Awareness are no longer listed with Content Areas as the focus changes from oral language to written responses to literature, which require increased academic vocabulary and technical skills. While students still ask and answer questions about literary and informational texts, they increasingly perform these tasks mentally ("thinking about their thinking") and usually write their responses instead of expressing them aloud. Students who still struggle with oral language, phonological awareness, and phonemic awareness should receive intervention and/or individualized instruction to close those gaps and to develop the expertise needed for reading and interpreting more complex literary works.

The focus areas Reception and Expression are now listed alongside the categories of Reading, Listening, Writing, and Speaking, indicating the alignment of each area with the categories' primary goals: reception of ideas with the Reading and Listening categories, and expression of ideas with the Writing and Listening categories.

Content areas may not have a standard in every category. In such cases, the category remains blank with the row shaded to indicate that the omission was intentional.

The Grades 4-5 Recurring Standards for English Language Arts, shown in the chart below, are an important part of every grade level. Through these standards, students learn and practice active listening, utilize context to decipher word meanings, learn and practice essential digital skills, become adept at finding and understanding literary devices, determine the formality of different situations in order to respond appropriately, and utilize a process to create and modify written work. The recurring standards are to be incorporated throughout the grade level.

RECURRING STANDARDS FOR GRADES 4-5

Students will:

R1. Utilize active listening skills during discussion and conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.

R2. Use context clues to determine meanings of unfamiliar spoken or written words.

R3. Use digital and electronic tools appropriately, safely, and ethically when researching and writing, both individually and collaboratively.

R4. Utilize a writing process to plan, draft, revise, edit, and publish writings in various genres.

R5. Identify and explain literary devices in prose and poetry.

R6. Assess the formality of occasions in order to speak or write using appropriate language and tone.

GRADE 4 CONTENT STANDARDS

Each content standard completes the stem "*Students will…*"

<table>
<tr><th colspan="3">LITERACY FOUNDATIONS</th></tr>
<tr><th colspan="3">Phonics</th></tr>
<tr><td colspan="3">1. Apply knowledge of grade-appropriate phoneme-grapheme correspondences, syllable types, and morphological structure to read unfamiliar multisyllabic words accurately, both in context and in isolation.</td></tr>
<tr><td rowspan="2">RECEPTION</td><td>READING</td><td>2. Determine and use the correct syllable type(s) to decode unfamiliar multisyllabic words, including open, closed, vowel-consonant-e, r-controlled, vowel team (including diphthongs), consonant-le, and "leftovers" including odd and schwa syllables.
Examples: dam-age, ac-tive, na-tion
3. Apply knowledge of roots, prefixes, and suffixes to decode unfamiliar multisyllabic words.</td></tr>
<tr><td>LISTENING</td><td></td></tr>
<tr><td>EXPRESSION</td><td>WRITING</td><td>4. Apply knowledge of roots, prefixes, and suffixes to encode unfamiliar multisyllabic words.</td></tr>
</table>

	SPEAKING	

Fluency		
5. Demonstrate fluency when reading grade-level text and when responding through writing or speaking.		
RECEPTION	READING	6. Read grade-level text orally with appropriate pauses, phrasing, stress, intonation, rate, and integration to support comprehension. 7. Read words with irregular and regular spelling patterns accurately and automatically.
	LISTENING	
EXPRESSION	WRITING	8. Write routinely and independently in response to text.
	SPEAKING	

Vocabulary		
9. Accurately interpret general academic and domain-specific words and phrases.		
RECEPTION	READING	10. Interpret words and phrases, including figurative language, as they are used in a text. a. Explain how specific word choices shape meaning or tone. b. Explain how figurative language contributes to the meaning of text, including simile, metaphor, alliteration, personification, hyperbole, and idioms. c. Use the relationships between synonyms, antonyms, and homographs to increase understanding of word meanings.
	LISTENING	

EXPRESSION	WRITING	11. Use commonly misused words correctly in writing. *Examples: accept/except; effect/affect; racket/racquet; its/it's; your/you're; our/are; quiet/quit/quite*
	SPEAKING	12. Consult reference materials to find the pronunciation of unknown words and phrases. 13. Use grade-appropriate general academic and domain-specific words and phrases in presentations and discussions.

Comprehension		
14. Demonstrate comprehension of literary and informational text by utilizing its content when discussing or writing in response to the text.		
RECEPTION	READING	15. Analyze in depth a character, setting, or event in a story or drama, drawing on specific details in the text. a. Identify and explain attitudes and influences of multiple characters within a text. b. Explain how the main character changes throughout the story, using explicit evidence from the text. c. Make an inference about a character's behavior, the setting, and/or specific events, using explicit details from the story. 16. Describe how authors use literary devices and text features to convey meaning in prose, poetry, and drama. a. Identify clues in the text to recognize implicit meanings. b. Apply prior knowledge to textual clues to draw conclusions about the author's meaning. c. Make an inference about the meaning of a text and support it with textual evidence.

		17. Identify the narrator's point of view in a literary text and explain how it differs from a character's perspective. a. Explain the difference between first person and third person narration, including omniscient and third person limited. b. State an opinion of the author's use of narration, supporting reasoning with examples from the text. 18. Identify the point of view in a narrative and describe how the narrative would be different if told from the perspective of a different character or narrator. a. Compare and contrast firsthand and secondhand accounts of the same event or topic, describing the differences in focus and the information provided. b. Compare the perspectives of different characters within a text. 19. Compare and contrast the treatment of similar themes in stories, myths, and traditional literature from different cultures. a. Determine and state an implied theme, explicit theme, or life lesson from a myth, story, or other traditional literature. b. Analyze a common or shared theme and its development in stories, myths, and/or other traditional literature. 20. Use details and examples from a text to indicate what the text explicitly states. a. Interpret facts from an informational article, using details and examples from the text to explain the interpretation. b. List the main questions answered by an informational article. c. Categorize statements in an article or other informational text as fact or opinion and give reasons for each choice. d. Explain the differences between primary and secondary sources, giving examples from texts.

<table>
<tr><td rowspan="2"></td><td></td><td>21. Explain how relevant details support the implied or explicit main idea of a text.
a. Determine the central idea or theme of a text.
b. Explain the difference between implied and explicit details.
c. Summarize the key supporting details by citing evidence from a text.

22. Analyze events, procedures, ideas, or concepts in informational texts, including what happened and why, based on specific information in the text.
a. Cite evidence to explain the author's perspective toward a topic in an informational text.

23. Evaluate how text features and structures contribute to the meaning of an informational text.
a. Identify and describe the structures within a text, including description, comparison and contrast, sequence, problem and solution, and cause and effect.
b. Interpret information from text features in both print and digital formats.

24. Explain how an author uses reasons and evidence to support particular points and claims in an informational text or argument.
a. Make text-based inferences to determine possible reasons for an author's stance.

25. Explain how the form of a poem contributes to its meaning.

26. Analyze how rhythm and rhyme in poetry contribute to meaning.</td></tr>
<tr><td>LISTENING</td><td>27. Identify the reasons and evidence a speaker provides to support particular points.</td></tr>
<tr><td rowspan="2">EXPRESSION</td><td>WRITING</td><td>28. Write clear and coherent responses to texts, using explicit or implicit evidence that supports a particular point.</td></tr>
<tr><td>SPEAKING</td><td>29. Add audio recordings to presentations, when appropriate, to enhance the development of main ideas or themes.</td></tr>
</table>

		30. Synthesize information on a topic in order to write or speak knowledgeably about the subject. a. Make complex inferences within and across texts to determine the importance of information. b. Use evidence to explain information across texts including different perspectives and/or points of view. 31. Orally paraphrase portions of a text or information presented in diverse media when collaborating and/or presenting.

Writing		
32. Respond in writing to literature and informational text, including stories, dramas, poetry, and cross-curricular texts, both independently and with support, demonstrating grade-level proficiency.		
RECEPTION	READING	33. Use research to produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. a. Introduce a research topic clearly and group related ideas. b. Integrate and cite evidence to present research findings in written form. c. Paraphrase portions of texts or information presented in diverse media and formats.
	LISTENING	
EXPRESSION	WRITING	34. Write fluently and legibly in cursive, using correctly formed letters with appropriate spacing. 35. Write personal or fictional narratives using a logical plot, transitional words and phrases, sensory details, and dialogue, and providing a sense of closure. 36. Write informative or explanatory text about a topic using sources, incorporating academic vocabulary, and including an introduction, facts, details with elaboration, and a conclusion.

		37. Write an argument to persuade the reader to take an action or adopt a position, using an introduction, logical reasoning supported by evidence from relevant sources, and linking words to connect their argument to the evidence. 38. Compose complete sentences with correct subject-verb agreement, punctuation, and usage. a. Order adjectives within sentences according to conventional patterns. *Example:* a small red bag *rather than* a red small bag b. Form and use prepositional phrases and conjunctions. c. Recognize and correct sentence fragments and run-on sentences. d. Use commas, apostrophes, and quotation marks correctly. e. Use correct capitalization, including familial relations and proper adjectives. f. Spell grade-appropriate words correctly, consulting references as needed. 39. Demonstrate command of the conventions of standard English grammar and usage. a. Use relative pronouns *who, whose, which,* and *that*, relative adverbs *where, when,* and *how,* and irregular possessive nouns. b. Form and use the progressive verb tenses. *Examples: I was walking, I am walking* c. Use modal auxiliaries to convey various conditions. *Examples: can, may, must* 40. Compose friendly and formal letters using appropriate elements, including date, greeting, body, and a signature. a. Write return address and mailing address in the proper locations on an envelope.

	SPEAKING	41. Present an opinion orally, sequencing ideas logically and using relevant facts. a. Express appropriate and meaningful responses to questions posed by others. 42. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes, and speaking clearly with adequate volume, appropriate pacing, and clear pronunciation. a. Articulate ideas, claims, and perspectives in a logical sequence, presenting information, findings, and credible evidence from multiple sources and modalities to enhance listeners' understanding.

GRADE 5

In Grade 5, standards continue to lay the literacy foundations needed for mental inquiry, creating a bridge between learning to read and reading to learn. This transition emphasizes the development of literary analysis skills needed to derive written responses from diverse texts, as well as the importance of listening and speaking in response to information presented by others. As in Grade 4, the oral language, phonemic awareness, and phonological awareness headings are no longer listed. Students who still struggle with oral language, phonological awareness, and phonemic awareness should receive intervention and/or individualized instruction to close those gaps and to develop the expertise needed for reading and interpreting more complex literary works.

Within the Literacy Foundations umbrella, the focus areas of Reception and Expression continue to align with the categories of Reading, Listening, Writing, and Speaking. Content areas may not have a standard in every category. In such cases, the category remains blank with the row shaded to indicate that the omission was intentional.

The Grades 4-5 Recurring Standards for English Language Arts, shown in the chart below, are an important part of every grade level. Through these standards, students learn and practice active listening, utilize context to decipher word meanings, learn and practice essential digital skills, become adept at finding and understanding literary devices, determine the formality of different situations in order to respond appropriately, and utilize a process to create and modify written work. The recurring standards are to be incorporated throughout the grade level.

RECURRING STANDARDS FOR GRADES 4-5

Students will:

R1. Utilize active listening skills during discussion and conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.

R2. Use context clues to determine meanings of unfamiliar spoken or written words.

R3. Use digital and electronic tools appropriately, safely, and ethically when researching and writing, both individually and collaboratively.

R4. Utilize a writing process to plan, draft, revise, edit, and publish writings in various genres.

R5. Identify and explain literary devices in prose and poetry.

R6. Assess the formality of occasions in order to speak or write using appropriate language and tone.

GRADE 5 CONTENT STANDARDS

Each content standard completes the stem "*Students will…*"

<table>
<tr><th colspan="3">LITERACY FOUNDATIONS</th></tr>
<tr><td colspan="3">Phonics</td></tr>
<tr><td colspan="3">1. Apply phonics and word analysis skills to encode and decode words in grade-level texts.</td></tr>
<tr><td rowspan="2">RECEPTION</td><td>READING</td><td>2. Use combined knowledge of letter-sound correspondences, appropriate blending, syllabication patterns, morphology, and word attack skills to read unfamiliar multisyllabic, grade-level words accurately in context and in isolation.
3. Determine or clarify the meaning of unknown and multiple-meaning words and phrases, choosing flexibly from a range of strategies.</td></tr>
<tr><td>LISTENING</td><td></td></tr>
<tr><td rowspan="2">EXPRESSION</td><td>WRITING</td><td>4. Write familiar and unfamiliar multisyllabic, grade-level appropriate words accurately in context and in isolation.</td></tr>
<tr><td>SPEAKING</td><td></td></tr>
</table>

<table>
<tr><th colspan="3">Fluency</th></tr>
<tr><td colspan="3">5. Demonstrate fluency when independently reading, writing, and speaking in response to grade-level literary and informational text, including stories, dramas, poetry, and cross-curricular texts.</td></tr>
<tr><td rowspan="2">RECEPTION</td><td>READING</td><td>6. Read grade-level text orally with accuracy, automaticity, appropriate prosody or expression, purpose, and understanding, self-correcting and rereading as necessary.</td></tr>
<tr><td>LISTENING</td><td></td></tr>
<tr><td rowspan="2">EXPRESSION</td><td>WRITING</td><td>7. Write routinely and independently for varied amounts of time.</td></tr>
<tr><td>SPEAKING</td><td>8. Orally present information and original ideas clearly.

9. Express ideas clearly and effectively to diverse partners or groups.
a. Pose and respond to explicit questions in ways that contribute to the discussion and elaborate on the remarks of others.
b. Verbally summarize information read aloud or presented in diverse media and formats.
c. Report orally on a topic or text, sequencing ideas logically and supporting main ideas with appropriate facts and relevant details.
d. Speak clearly at an understandable rate.

10. Respond directly to specific information shared by others in classroom discussion, using facts to support the ideas being discussed.
a. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from discussion.</td></tr>
</table>

<table>
<tr><th colspan="3">Vocabulary</th></tr>
<tr><td colspan="3">11. Acquire and use grade-level vocabulary, clarifying the meaning of unknown and multiple-meaning words and phrases in text, choosing flexibly from a range of strategies.</td></tr>
<tr><td rowspan="2">RECEPTION</td><td>READING</td><td>12. Interpret the meaning of words, phrases, and patterns as they are used in texts, including domain-specific and academic vocabulary and figurative language.
a. Locate similes, metaphors, personification, hyperbole, imagery, alliteration, onomatopoeia, and idioms and interpret their meanings in context.
b. Explain the meanings of common idioms, adages, and proverbs.
c. Use the relationships between synonyms, antonyms, and homographs to increase understanding of word meanings.
d. Explain how an author’s vocabulary and style influence the tone and mood of a text and support his/her purpose for writing.
e. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meanings of words.</td></tr>
<tr><td>LISTENING</td><td>13. Determine or clarify the meaning of unknown and multiple-meaning words and phrases.</td></tr>
<tr><td rowspan="2">EXPRESSION</td><td>WRITING</td><td>14. Write using grade-appropriate general academic and domain-specific words and phrases accurately, including those that signal contrasting ideas, additional information, and other logical relationships.</td></tr>
<tr><td>SPEAKING</td><td>15. Use grade-appropriate general academic and domain-specific words and phrases during presentations and discussion.</td></tr>
</table>

<table>
<tr><th colspan="3">Comprehension</th></tr>
<tr><td colspan="3">16. Demonstrate comprehension of varied literary and informational texts by utilizing its content when discussing or writing in response to the text.

17. Demonstrate comprehension of text by asking and responding to questions about literary elements used in the text.
Examples: theme, plot, point of view</td></tr>
<tr><td>RECEPTION</td><td>READING</td><td>18. Explain the relationships among events, people, or concepts in informational texts, supported by textual evidence.

19. Interpret how authors use literary elements throughout a text, including character, setting, conflict, dialogue, and point of view.

20. Explain how the author's use of character types throughout a narrative helps drive its plot.
Examples: static, dynamic, and stock characters

21. Compare and contrast characters, points of view, or events in two or more literary texts.

22. Determine the implied and/or explicit main idea in literary and informational texts.

23. Determine and analyze themes of various culturally-diverse literary texts, supporting analysis with textual evidence.
a. Analyze common themes of diverse texts with support from textual evidence.
b. Summarize a story or drama, describing how the plot unfolds and how characters respond to challenges or change their thoughts and actions and citing textual evidence.

24. Determine and evaluate the effectiveness of digital and print text features and structures, including comparison and contrast, problem and solution, and cause and effect.
a. Identify various text features used in diverse forms of text.
b. Compare and contrast the overall structure of events, ideas, concepts, or information in multiple texts.</td></tr>
</table>

		25. Determine credibility and appropriateness of a research source by distinguishing between fact and the author's opinion in informational text. 26. Analyze how two or more texts address similar topics in diverse media and formats, including graphics, live and/or recorded performances, and written works. a. Explain how visual and multimedia elements contribute to the overall meaning and tone of a text. b. Compare and contrast the approaches to theme in several stories within a genre. c. Locate information quickly within a text and apply information from multiple sources to analysis of the topics. d. Explain how an author uses reasons and evidence to support particular points in a text. e. Compare the approaches of several authors of articles about the same or similar topics. 27. Review the key ideas expressed in a text and draw conclusions, using facts to support them.
	LISTENING	28. Use audio and/or visual sources of information to obtain the answer to a question.
EXPRESSION	WRITING	29. Summarize in writing a variety of texts, stating their implied and/or explicit main ideas. a. Use textual evidence to support summarization. b. Cite appropriately when summarizing. 30. Quote literary and informational texts accurately to support conclusions and inferences drawn from them.
	SPEAKING	31. Include multimedia components and visual displays in presentations to enhance the development of main ideas or themes when appropriate. *Examples: graphics, sounds*

<table>
<tr><th colspan="3">Writing</th></tr>
<tr><td colspan="3">32. Respond in writing to literature and informational text, including stories, dramas, poetry, and cross-curricular texts, independently and with grade-level proficiency.</td></tr>
<tr><td rowspan="2">RECEPTION</td><td>READING</td><td></td></tr>
<tr><td>LISTENING</td><td></td></tr>
<tr><td>EXPRESSION</td><td>WRITING</td><td>33. Write fluently and legibly in cursive, using correctly formed letters with appropriate spacing and placing text elements correctly on the page.
Examples: headings, titles, paragraph indentions

34. Write personal or fictional narratives incorporating literary elements (characters, plot, setting, conflict), dialogue, strong voice, and clear event sequences.

35. Write informative or explanatory texts using multiple sources to examine a topic, conveying ideas and information clearly and incorporating a strong organizational structure, relevant details, and elaboration.

36. Write an argument to persuade the reader to take an action or adopt a position, stating a claim, supporting the claim with relevant evidence from sources, using connectives to link ideas, and presenting a strong conclusion.
Examples: first, as a result, therefore, in addition

37. Write about research findings independently over short and/or extended periods of time.

38. Gather information on a topic or question, and share the results through various modes of writing, including projects and presentations.
a. Locate information in print and digital sources.
b. Summarize, quote, and paraphrase information in notes and finished work, providing a list of sources.
c. Integrate information from several texts on the same topic into presentations of research.</td></tr>
</table>

		39. Demonstrate command of the conventions of standard English grammar and usage in writing. a. Evaluate the usage of pronouns for the proper case. *Examples: subjective, objective, possessive* b. Identify inappropriate shifts in pronoun number and person. c. Use varied pronouns and their antecedents correctly in composing and revising writing. d. Use subject-verb agreement correctly when composing and revising writing. e. Use verb tenses to convey various times, sequences, states, and conditions. f. Recognize and correct inappropriate shifts in verb tense, including subject-verb agreement. g. Use perfect verb tenses to compose and revise writing. h. Use correlative conjunctions correctly when composing and revising writing. 40. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Use commas to separate items in a series, separate introductory elements from the rest of a sentence, set off tag questions, and indicate direct address. b. Use underlining, quotation marks, or italics to indicate the titles of different types of works. c. Spell grade-level words correctly, consulting references as needed. 41. Write using grade-appropriate general academic and domain-specific words and phrases accurately, including those that signal contrasting ideas, additional information, and other logical relationships. 42. Consult print and digital reference materials to find the pronunciation and to determine or clarify the precise meaning of key words and phrases. *Examples: dictionaries, glossaries*
	SPEAKING	

GRADES 6-8 OVERVIEW

Students in the middle grades undergo physical, social, emotional, and intellectual changes that affect their daily learning experiences. Individuals progress from pre-adolescence to adolescence at vastly different rates. This process is neither sequential nor predictable and often includes periods of fluctuation between adolescence and pre-adolescence. While middle school students are sensitive to the opinions of peers, they are beginning to assert their independence when dealing with adults. Although some students are just beginning to navigate the digital world and understand their place in it, many are already proficient. Regardless of skill level, all students must continue to grow in their digital knowledge as our world continues to change.

Like students in earlier grades, middle school students engage through diverse learning styles and require differentiation in both instruction and assessment to reach their potential. They have varied interests, and their skill levels differ. Middle grades students thrive in collaborative groups, both heterogeneous and homogeneous. Heavy emphasis is placed on the sharing of ideas with supporting evidence in pairs, small groups, and in larger settings.

As they move from concrete thinking to abstract concepts, middle school students increasingly question others' messages and points of view and enhance their ability to express and justify their own. To acknowledge this transition in thinking, standards in the middle grades also transition from the earlier grades' explicit focus on building foundational literacy skills (with concurrent emphasis on reading and writing) to the application of foundational skills and knowledge to read and respond to various types of literature. Students transition to fully applying those skills in a literacy environment. The Course of Study for Grades 6-8 marks this progression by organizing standards into types of literacy (critical, digital, language, research, and vocabulary). An overarching concept at the beginning of each type focuses on its central task. These overarching concepts are the same in each grade from six through twelve.

Middle school learners are eager and filled with curiosity on a more analytical level. Thus, the world of reading expands for middle school students. Reading becomes more holistic and profound in subject matter. Sources of reading span all subject areas, cultures, and formats as students begin to recognize the interconnectedness of their world. These texts also become sources for research. Students in the middle level begin to discern the validity and credibility of information, as well as the importance of employing that discernment in today's world. Students also learn the importance of citing their sources to acknowledge the work of other academics and to build their own credibility as researchers and writers.

Writing in the middle grades becomes more rigorous as the emphasis on organization and textual evidence becomes a daily requirement. Writing is fostered and sustained by both shorter pieces of writing and longer, more challenging works. Students in Grades 6-8 hone their vocabulary literacy by paying attention to connotative meanings, understanding their audience, and expanding their academic and

domain-specific vocabulary. They also continue to develop their language and grammar skills as they review foundational knowledge and build upon it with new concepts in their writing, reading, listening, and speaking.

Grades 6-8 standards are designed to build a solid foundation as students transition to advanced competencies in Grades 9-12. The rigor and the depth of knowledge required in the standards gradually increase through the grades to prepare students for the challenges of high school work.

Notes on instruction:

When "including" appears in content standards, it should be construed as "including but not limited to." The items listed must be taught; others may also be included in instruction.

Examples represent options that might prove useful in instruction of the standard. They are not intended to be exhaustive lists and the suggestions listed are not required to be taught.

Some standards are very close in meaning across the middle school grades. It is expected that rigor will be increased by selecting more challenging literature and requiring more advanced writing in successive grades.

Grade 6-8 Recurring Standards for English Language Arts, listed at the beginning of each grade level, are to be fully included in instruction.

GRADE 6

As students enter sixth grade, they increasingly move from concrete to abstract thinking, examine and challenge the ideas of others, and expand their ability to express and justify their own points of view. To acknowledge this transition in thinking, standards in the middle grades also transition from the earlier grades' explicit focus on building foundational literacy skills (with concurrent emphasis on reading and writing) to the application of foundational skills and knowledge to read and respond to various types of literature. The Course of Study for Grades 6-8 marks this progression by organizing standards into types of literacy (critical, digital, language, research, and vocabulary). Each literacy type is followed by an explanation of its overarching concept, which is the same in each grade from six through twelve. The categories (reading, listening, writing, and speaking) continue as in previous grades, with a standard in every category.

The Grades 6-8 Recurring Standards for English Language Arts, shown in the chart below, are an important part of every grade level. Students must utilize these necessary skills daily as they build their knowledge base, strengthen existing abilities, and strive to master each grade level's standards. These recurring standards are to be emphasized throughout the middle grades.

RECURRING STANDARDS FOR GRADES 6-8

Students will:

Reception

R1. Utilize active listening skills during discussion and conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.

R2. Use context clues to determine meanings of unfamiliar spoken or written words.

Expression

R3. Use digital and electronic tools appropriately, safely, and ethically when researching and writing, both individually and collaboratively.

R4. Utilize a writing process to plan, draft, revise, edit, and publish writings in various genres.

R5. Assess the formality of occasions in order to speak or write using appropriate language and tone.

R6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

GRADE 6 CONTENT STANDARDS

Each content standard completes the stem "*Students will…*"

CRITICAL LITERACY		
Process and employ information for a variety of academic, occupational, and personal purposes.		
RECEPTION	READING	1. Identify and explain an author's rhetorical choices, including point of view, purpose, anecdotes, and figurative, connotative, and technical word meanings, to develop central and supporting ideas. 2. Make inferences and draw logical conclusions from the content and structures of informational texts, including comparison and contrast, problem and solution, claims and evidence, cause and effect, description, and sequencing. 3. Explain how authors use setting, plot, characters, theme, conflict, dialogue, and point of view to contribute to the meaning and purpose of prose and poetry, using textual evidence from the writing. 4. Describe the use of literary devices in prose and poetry, including simile, metaphor, personification, onomatopoeia, hyperbole, tone, imagery, irony, symbolism, and mood, and indicate how they support interpretations of the text.

	LISTENING	5. Evaluate the development of central and supporting ideas in recorded or live presentations by examining the speaker's rhetorical choices regarding point of view, purpose, anecdotes, and figurative, connotative, and technical word meanings. 6. Support interpretations of recorded or live presentations by examining the speaker's use of hyperbole, tone, symbolism, imagery, mood, irony, and onomatopoeia.
EXPRESSION	WRITING	7. Produce clear, coherent narrative, argument, and informative/explanatory writing in which the development, organization, style, and tone are relevant to task, purpose, and audience, using an appropriate command of language. a. Write narratives incorporating key literary elements, including characters, plot, setting, point of view, resolution of a conflict, dialogue, and sensory details. b. Write informative or explanatory texts with an organized structure and a formal style, incorporating a focused point of view, a clear purpose, credible evidence, and technical word meanings. c. Write an argument to convince the reader to take an action or adopt a position, stating a claim and supporting the claim with relevant, well-organized evidence from credible sources.
	SPEAKING	8. Participate in collaborative discussions using information from a source. 9. Participate in collaborative discussions about literary devices and elements found in prose and poetry.

DIGITAL LITERACY		
Use technology, including the Internet, to research, analyze, produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information, people, and resources and to display information flexibly and dynamically.		
RECEPTION	READING	10. Determine subject, occasion, audience, purpose, tone, and credibility of digital sources. *Examples: online academic journals, social media, blogs, podcasts* 11. Utilize written, visual, digital, and interactive texts to generate and answer literal, interpretive, and applied questions.
	LISTENING	12. Interpret language to determine subject, occasion, audience, purpose, and credibility of digital sources, with guidance and support.
EXPRESSION	WRITING	13. Create and edit digital products that are appropriate in subject and purpose for a particular audience or occasion. *Examples: social media posts, blog posts, podcast episodes, infographics*
	SPEAKING	14. Enhance oral presentations by introducing ideas in digital formats with specific attention to subject, occasion, audience, and purpose. *Examples: speaking to defend or explain a digital poster, multimedia presentation, or video*

<table>
<tr><th colspan="3">LANGUAGE LITERACY</th></tr>
<tr><td colspan="3">Recognize and demonstrate command of the conventions of standard English grammar, mechanics, and usage, including appropriate formality of language.</td></tr>
<tr><td rowspan="2">RECEPTION</td><td>READING</td><td>15. Identify the conventions of standard English grammar and usage in published texts.
a. Identify subject-verb agreement when interrupted by a prepositional phrase, with inverted word order, and with indefinite pronouns as subjects.
b. Evaluate pronoun usage for number and case.
Examples: subjective, objective, possessive
c. Identify common errors in pronoun usage.
Examples: person, number, ambiguous antecedents

16. Identify the conventions of standard English capitalization, punctuation, and spelling in published texts.
a. Identify commas, parentheses, and dashes that are used to set off nonrestrictive or parenthetical elements in texts from various genres.
Examples: poetry, informational texts, narratives</td></tr>
<tr><td>LISTENING</td><td>17. Assess a speaker’s organizational choices to determine point of view, purpose, and effectiveness.

18. Identify a speaker’s correct usage of language, including subject-verb agreement and pronouns.</td></tr>
<tr><td>EXPRESSION</td><td>WRITING</td><td>19. Demonstrate command of standard English grammar, usage, and mechanics when writing.
a. Use commas, parentheses, or dashes to set off nonrestrictive or parenthetical elements.
b. Revise writing for correct mechanics with a focus on commas, apostrophes, quotation marks, colons, and semicolons.</td></tr>
</table>

		Standard 19 continued... c. Compose and revise writing by using various pronouns and their antecedents correctly. *Examples: personal, intensive, reflexive, demonstrative, relative, interrogative, indefinite*
	SPEAKING	20. Choose language that maintains consistency in style and tone in a variety of formal and/or informal settings.

RESEARCH LITERACY

Engage in inquiry through the research process to locate, acquire, refine, and present relevant and credible findings in multiple modes.

RECEPTION	READING	21. Summarize ethical guidelines and explain how they govern the process of finding and recording information from primary, secondary, and digital sources, with guidance and support. 22. Assess the relevance, reliability, and validity of information from printed and/or digital texts.
	LISTENING	23. Use an audio or audio-visual source of information to obtain the answer to a question.
EXPRESSION	WRITING	24. Write about research findings independently over short and/or extended periods of time. 25. Quote, paraphrase, and summarize information from sources and present findings, following an appropriate citation style, with guidance and support. *Example: MLA, APA*
	SPEAKING	26. Utilize research findings to communicate relevant details, opinions, and ideas about a topic or text in oral presentations. a. Answer questions in discussions about their research findings.

VOCABULARY LITERACY		
Increase academic, domain-specific, and grade-level-appropriate vocabularies through reading, word study, and class discussion.		
RECEPTION	READING	27. Discover word meanings by analyzing word parts, examining connotation and denotation, or using print or digital reference tools.
	LISTENING	28. Discover word meanings through active listening in various contexts. *Examples: classroom discussion, oral presentations, digital formats*
EXPRESSION	WRITING	29. Use academic vocabulary in writing to communicate effectively.
	SPEAKING	30. Use vocabulary to create specific reactions or effects when speaking in various classroom and digital situations.

GRADE 7

In seventh grade, students' ability to think abstractly increases. Seventh graders continue to examine and challenge the ideas of others and expand their ability to express and justify their own points of view. Standards in the middle grades transition from the earlier grades' explicit focus on building foundational literacy skills to the application of foundational skills and knowledge in order to read and respond to various types of literature. The Course of Study for Grades 6-8 marks this progression by organizing standards into types of literacy (critical, digital, language, research, and vocabulary) to reflect the progression of complexity from elementary to secondary content. Each literacy type is followed by an explanation of its overarching concept, which is the same in each grade from six through twelve. The categories (reading, listening, writing, and speaking) continue as in previous grades, with a standard in every category.

The Grades 6-8 Recurring Standards for English Language Arts, shown in the chart below, are an important part of every grade level. Students must utilize these necessary skills daily as they build their knowledge base, strengthen existing abilities, and strive to master each grade level's standards. These recurring standards are to be emphasized throughout the middle grades.

RECURRING STANDARDS FOR GRADES 6-8

Students will:

Reception

R1. Utilize active listening skills during discussion and conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.

R2. Use context clues to determine meanings of unfamiliar spoken or written words.

Expression

R3. Use digital and electronic tools appropriately, safely, and ethically when researching and writing, both individually and collaboratively.

R4. Utilize a writing process to plan, draft, revise, edit, and publish writings in various genres.

R5. Assess the formality of occasions in order to speak or write using appropriate language and tone.

R6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

GRADE 7 CONTENT STANDARDS

Each content standard completes the stem "*Students will…*"

CRITICAL LITERACY		
Process and employ information for a variety of academic, occupational, and personal purposes.		
RECEPTION	READING	1. Evaluate the contributions of informational text elements, including categories, point of view, purpose, and figurative, connotative, and technical word meanings, to develop central and supporting ideas. 2. Evaluate how effectively an author uses structures of informational texts, including comparison and contrast, problem and solution, cause and effect, and substantiated or unsubstantiated claims and evidence, to achieve a purpose. 3. Explain how the author's choice of setting, plot, characters, theme, conflict, dialogue, and point of view contribute to and/or enhance the meaning and purpose of prose and poetry, using textual evidence from the writing. 4. Evaluate literary devices to support interpretations of literary texts using textual evidence, including simile, metaphor, personification, onomatopoeia, hyperbole, imagery, tone, symbolism, irony, and mood.
	LISTENING	5. Evaluate rhetorical strategies used to develop central and supporting ideas in recorded or live presentations, including point of view, purpose, comparison, categories, and word meanings (figurative, connotative, and technical).

		6. Evaluate the speaker's use of hyperbole, tone, symbolism, imagery, mood, irony, and onomatopoeia in a live or recorded presentation.
EXPRESSION	WRITING	7. Produce clear, coherent narrative, argument, and informative/explanatory writing in which the development, organization, style, and tone are relevant to task, purpose, and audience, using an appropriate command of language. a. Write narratives to convey a series of events incorporating key literary elements, establishing a clear purpose, using narrative techniques (dialogue, pacing, description, and reflection), and sequencing events coherently (chronological and/or flashback). b. Write informative or explanatory texts with an organized structure and a formal style to examine ideas or processes effectively while developing the topic and utilizing appropriate transitions, precise vocabulary, and credible information or data when relevant. c. Write an argument to defend a position by introducing and supporting claim(s), acknowledging alternate or opposing claims, and presenting reasons and relevant text evidence from accurate and credible sources.
	SPEAKING	8. Participate in collaborative discussions about arguments by evaluating claims, findings, and evidence from a source. 9. Participate in collaborative discussions about prose and poetry by evaluating the use of literary devices and elements.

DIGITAL LITERACY		
Use technology, including the Internet, to research, analyze, produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information, people, and resources and to display information flexibly and dynamically.		
RECEPTION	READING	10. Assess subject, occasion, audience, purpose, tone, and credibility of various digital sources. *Examples: online academic journals, social media, blogs* 11. Compare and contrast the effectiveness of techniques used in a variety of digital sources to generate and answer literal, interpretive, and applied questions and create new understandings. 12. Determine the intended purposes of techniques used for rhetorical effect in multiple digital sources.
	LISTENING	13. Interpret language through active listening to determine subject, occasion, audience, purpose, tone, and credibility of digital sources.
EXPRESSION	WRITING	14. Create and edit digital products that are appropriate in subject, occasion, audience, purpose, and tone. 15. Utilize digital tools and/or products to enhance meaning. *Examples: hashtags, videos, slide presentations, audio clips, GIFS, memes; social media platforms*
	SPEAKING	16. Convey ideas in an appropriate digital format with specific attention to subject, occasion, audience, purpose, and tone.

LANGUAGE LITERACY

Recognize and demonstrate command of the conventions of standard English grammar, mechanics, and usage, including appropriate formality of language.

<table>
<tr><td rowspan="2">RECEPTION</td><td>READING</td><td>17. Identify the conventions of standard English grammar and usage in writing.
a. Identify subject-verb agreement with compound subjects joined by correlative and coordinating conjunctions and with collective nouns when verb form depends on the rest of the sentence.
b. Identify the usage of simple, compound, complex, and compound-complex statements and questions to signal differing relationships among ideas in a text.
c. Evaluate the functions of phrases and clauses in general and their function in specific sentences.

18. Identify the conventions of standard English capitalization, punctuation, and spelling in a variety of texts.
a. Correct improper usage of commas, apostrophes, quotation marks, colons, and semicolons through peer editing.</td></tr>
<tr><td>LISTENING</td><td>19. Evaluate a speaker’s organizational choices to determine point of view, purpose, and effectiveness.

20. Identify a speaker’s formality of language in order to comprehend, interpret, and respond appropriately.</td></tr>
<tr><td>EXPRESSION</td><td>WRITING</td><td>21. Create written work using standard English grammar, usage, and mechanics.
a. Revise their own writing using correct mechanics with a focus on commas, apostrophes, quotation marks, colons, and semicolons.
b. Construct simple, compound, complex, and compound-complex sentences to represent relationships among ideas.
c. Embed phrases and clauses within a sentence, recognizing and correcting misplaced or dangling modifiers.</td></tr>
</table>

	SPEAKING	22. Choose language that expresses ideas precisely and concisely.

RESEARCH LITERACY		
Engage in inquiry through the research process to locate, acquire, refine, and present relevant and credible findings in multiple modes.		
RECEPTION	READING	23. Implement ethical guidelines while finding and recording information from a variety of primary, secondary, and digital sources. 24. Determine the relevance, reliability, and validity of information from nonfiction and fictional printed and/or digital texts.
	LISTENING	25. Use active listening to acquire information and assess its relevance and credibility.
EXPRESSION	WRITING	26. Produce research writings over extended periods with time for research, reflection, and revision and within shorter time frames, with minimal guidance. *Examples: a day or two, a single sitting* 27. Quote, paraphrase, summarize, and present findings, following an appropriate citation style and avoiding plagiarism. *Example: MLA, APA*
	SPEAKING	28. Incorporate research into oral presentations, summarizing and supporting opinions and ideas with relevant details. a. Collect information through the research process to answer follow-up questions and participate in discussions about their research findings.

VOCABULARY LITERACY		
Increase academic, domain-specific, and grade-level-appropriate vocabularies through reading, word study, and class discussion.		
RECEPTION	READING	29. Determine word meaning through the use of word parts, context clues, connotation and denotation, or print or digital reference tools. *Examples: affixes, Greek and Latin roots, stems; dictionary, thesaurus, glossary* 30. Read and evaluate texts from science, social studies, and other academic disciplines to determine how those disciplines treat domain-specific vocabulary and content organization.
	LISTENING	31. Infer word meaning through active listening in various contexts for purposeful, effective communication. *Examples: classroom discussion, oral presentations, digital formats*
EXPRESSION	WRITING	32. Apply vocabulary in writing to convey and enhance meaning.
	SPEAKING	33. Select and utilize effective words and phrases that are suitable for purpose and audience to communicate clearly in a variety of situations.

GRADE 8

Standards for Grade 8 follow the format of Grades 6 and 7, with standards arranged according to types of literacy (critical, digital, language, research, and vocabulary). Each literacy type is followed by an explanation of its overarching concept, which is the same in each grade from six through twelve. The categories (reading, listening, writing, and speaking) continue as in previous grades, with a standard in every category.

The Grades 6-8 Recurring Standards for English Language Arts, shown in the chart below, are an important part of each grade level. Students must utilize these necessary skills daily as they build their knowledge base, strengthen existing abilities, and strive to master each grade level's standards. These recurring standards are to be emphasized throughout the middle grades.

RECURRING STANDARDS FOR GRADES 6-8

Students will:

Reception

R1. Utilize active listening skills during discussion and conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.

R2. Use context clues to determine meanings of unfamiliar spoken or written words.

Expression

R3. Use digital and electronic tools appropriately, safely, and ethically when researching and writing, both individually and collaboratively.

R4. Utilize a writing process to plan, draft, revise, edit, and publish writings in various genres.

R5. Assess the formality of occasions in order to speak or write using appropriate language and tone.

R6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

GRADE 8 CONTENT STANDARDS

Each content standard completes the stem "*Students will…*"

CRITICAL LITERACY		
Process and employ information for a variety of academic, occupational, and personal purposes.		
RECEPTION	READING	1. Analyze how informational and graphic text elements, including allusions, point of view, purpose, comparisons, categories, and figurative, connotative, and technical word meanings, develop central and supporting ideas. 2. Make complex inferences from the structure and content of a text, including comparison and contrast, problem and solution, cause and effect, and substantiated and unsubstantiated claims and evidence, to draw logical conclusions about the author's perspective. 3. Analyze how authors use key literary elements, including setting, plot, theme, characters, internal and external conflict, dialogue, and point of view, to contribute to the meaning and purpose of a text, using text evidence as support. 4. Analyze the use of literary devices, including simile, metaphor, personification, onomatopoeia, hyperbole, imagery, tone, symbolism, irony, mood, and allusion, to support interpretations of literary texts, using textual evidence to support the analysis. 5. Compare and contrast the perspectives in a variety of fiction, nonfiction, informational, digital, and multimodal texts produced from diverse historical, cultural, and global viewpoints.
	LISTENING	6. Evaluate the development of central and supporting ideas in recorded or live presentations by examining the speaker's rhetorical strategies and choices regarding point of view, purpose, comparisons, analogies, categories, allusions, and figurative, connotative, and technical word meanings.

		7. Critique the speaker's use of hyperbole, tone, symbolism, imagery, mood, irony, and onomatopoeia in a live or recorded presentation.
EXPRESSION	WRITING	8. Produce clear, coherent narrative, argument, and informative/explanatory writing in which the development, organization, style, and tone are relevant to task, purpose, and audience, using an appropriate command of language. a. Write narratives that establish a clear purpose, use narrative techniques, and sequence events coherently. *Examples: narratives - memoir, short story, personal narrative; techniques - dialogue, pacing, description, reflection; sequencing - chronological, reverse chronological, flashback* b. Write informative or explanatory texts to examine and convey complex ideas or processes effectively, by developing the topic with relevant information or data from credible sources and using appropriate transitions and precise vocabulary. c. Write an argument to defend a position by introducing and supporting a claim, distinguishing the claim from opposing claims, presenting counterclaims and reasons, and citing accurate, relevant textual evidence from credible sources.
	SPEAKING	9. Participate in collaborative discussions about arguments by evaluating claims, findings, reasoning, relevance, and evidence from multiple sources. 10. Engage in coherent and collaborative discussions about prose and poetry by evaluating the use of literary devices and elements.

DIGITAL LITERACY		
Use technology, including the Internet, to research, analyze, produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information, people, and resources and to display information flexibly and dynamically.		
RECEPTION	READING	11. Analyze digital texts to determine subject, occasion, audience, purpose, tone, and credibility.
	LISTENING	12. Interpret and evaluate language through active listening to determine subject, occasion, audience, purpose, tone, and credibility of digital sources.
EXPRESSION	WRITING	13. Create and edit digital products that are appropriate in subject, occasion, audience, point of view, purpose, and tone. 14. Utilize digital tools and/or products to enhance meaning. *Examples: hashtags, videos, slide presentations, audio clips, GIFS, memes, clips from social media*
	SPEAKING	15. Deliver ideas in an appropriate digital format with specific attention to subject, occasion, audience, purpose, and tone. *Examples: speaking to defend or explain a digital poster, multimedia presentation, or video on an area of interest*

LANGUAGE LITERACY

Recognize and demonstrate command of the conventions of standard English grammar, mechanics, and usage, including appropriate formality of language.

RECEPTION	READING	16. Examine the use of conventions of standard English grammar and usage in writing. a. Identify gerunds, participles, infinitives, and clauses. b. Analyze the effects of active and passive voice and shifts in verb tense. c. Explain how using simple, compound, complex, or compound-complex statements and questions signals differing relationships among ideas in a text. 17. Examine the use of conventions of standard English capitalization, punctuation, and spelling in a variety of texts. a. Correct improper usage of commas, apostrophes, quotation marks, colons, semicolons, hyphens, and dashes through peer editing.
	LISTENING	18. Analyze a speaker's formality of language in order to comprehend, interpret, and respond appropriately. *Examples: active/passive voice, diction, syntax* 19. Evaluate a speaker's rhetorical and organizational choices in order to determine point of view, purpose, and effectiveness.
EXPRESSION	WRITING	20. Produce writing that shows a command of standard English grammar, usage, and mechanics. a. Construct verbals (gerunds, participles, and infinitives) in pieces of writing, including isolated sentences, paragraphs, and essays. b. Compose writing using verbs in active and passive voice to establish mood. c. Revise their own writing for correct mechanics with a focus on commas, apostrophes, quotation marks, colons, and semicolons. d. Construct simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas. e. Form and use verbs in context in the indicative, imperative, interrogative, conditional, and subjunctive moods. f. Recognize and correct inappropriate shifts in verb tense.

	SPEAKING	21. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.

RESEARCH LITERACY

Engage in inquiry through the research process to locate, acquire, refine, and present relevant and credible findings in multiple modes.

RECEPTION	READING	22. Apply ethical guidelines while finding and recording information from a variety of primary, secondary, and digital sources. 23. Determine the relevance, reliability, and validity of information from nonfiction and fictional printed and/or digital texts.
	LISTENING	24. Assess the relevance and credibility of orally-presented information to answer a question, solve a problem, or defend a position.
EXPRESSION	WRITING	25. Produce research writings independently over extended periods of time which encompass research, reflection, and revision and over shorter time frames. *Examples: a day or two, a single sitting* 26. Quote, paraphrase, summarize, and present findings, following a recognized citation style and avoiding plagiarism to demonstrate responsible and ethical research practices. *Examples: MLA, APA*
	SPEAKING	27. Synthesize and present information during the research process to answer follow-up questions and participate in both informal and formal discussions about research findings with grade-appropriate command of language.

VOCABULARY LITERACY		
Increase academic, domain-specific, and grade-level-appropriate vocabularies through reading, word study, and class discussion.		
RECEPTION	READING	28. Analyze word meanings through the use of word parts, context clues, connotation and denotation, and print or digital reference tools. *Examples: affixes, stems, Greek and Latin roots* 29. Read, analyze, and evaluate texts from science, social studies, and other academic disciplines to determine how those disciplines treat domain-specific vocabulary and content organization.
	LISTENING	30. Analyze and connect word meanings through active listening in various contexts for purposeful, effective communication. *Examples: classroom discussion, oral presentations, digital formats*
EXPRESSION	WRITING	31. Integrate effective vocabulary into writing to create specific effects and communicate purposefully.
	SPEAKING	32. Utilize appropriate vocabulary in various classroom, digital, and real-world situations to facilitate effective communication.

GRADES 9-12 OVERVIEW

In Grades 9-12, a rigorous and successful high school English Language Arts program challenges students to integrate literacy skills in order to complete complex tasks and create sophisticated products. While life goals differ from one student to another, it remains incumbent upon high schools to provide instruction that enables all of them to develop the skills for meeting the demands of the twenty-first century. To that end, this course of study provides standards that address literacy as the integration of skills and allow the robust exchange and application of ideas.

Literacy involves the reception and expression of ideas in many contexts for many purposes. High school students are mature learners who can proficiently read and write individually and in group settings; they are mastering abstract thought, refining self-monitoring skills, and developing listening and speaking skills so they can receive and express ideas clearly, appropriately, and productively.

Engagement with digital resources and the creation of digital products are essential for high school students. Abstract thinking allows them to discern purpose and to draw conclusions about the value of the ideas expressed and the effectiveness of the media, rhetorical, and aesthetic techniques used. At this age, students are equipped to consider and generate opposing points of view, pose questions, and make decisions about the most effective ways to present ideas. They are capable of determining the quality and credibility of sources, synthesizing information, and giving appropriate credit. Accurately conveying the ideas of others in appropriate contexts and working with others to select and present information in the most effective way are the hallmarks of skilled communicators. While working with others, students learn to accept revision and augmentation of their ideas, respond constructively to the ideas of others, and accept that not all the ideas proposed will appear in a finished product. Students advocate for their own ideas while being receptive to those of others.

The high school standards are written to encourage student access to sophisticated ideas and techniques within complex and diverse literary works. With diversity in mind, Alabama Course of Study standards emphasize the literature of varied times and places. Both ninth and tenth grade standards emphasize world literature to give students a broad and deep foundation for the primary focus on American literature in the eleventh grade and British literature in the twelfth grade. While standards for Grades 9 and 10 emphasize literature outside the United States and the British Isles, they do not preclude teaching American or British works. Local education agencies may choose to incorporate American or British works alongside those from other areas in order to create thematic units or to provide comparison and contrast among authors, literary genres and forms, subjects, points of view, purposes, or writing styles.

The literature of America before, during, and after European arrival warrants a year of specific attention because of literature's deep ties to all aspects of culture, and its study encourages a cross-curricular understanding and appreciation of qualities that distinguish American literature specifically and American culture in general. A year of focus on the literature of the British Isles provides both a linguistic and

cultural starting point that more fully contextualizes the eventual forming of the United States and informs a sophisticated understanding of the connections between American and British literature contrasted with the unique character of each.

Even though each grade level features a specific area of literary emphasis, the unequalled literary contributions of William Shakespeare justify the inclusion of study of a Shakespeare play in every year of high school. Shakespeare's dramatic works provide an unparalleled opportunity to see the interplay of sophisticated themes and masterful linguistic techniques. His plays further occupy a unique and important position as cultural and aesthetic touchstones. A Shakespeare play is required in Grade 12, and Shakespeare's poetry and plays are strongly recommended in Grades 9-11. It is also suggested that a work by another master playwright be included each year, drawing from a wide range of cultures and times from ancient Greece and Asia to the present.

Standards are designed to equip students to discern purpose (including recognizing irony and satire), understand the importance of aesthetic decisions by the author, and note how choices of syntax and diction shape and clarify meaning. Local school districts are encouraged to select a curriculum which includes challenging texts representing various time periods, places, and cultural and philosophical perspectives and to support students as they learn to adapt fluidly to multiple nonfiction, informational, and technical texts with varying degrees of complexity in order to determine purpose and use information effectively.

Finally, standards are organized under types of literacy (critical, digital, language, and research) to reflect the applications of literacy in a rapidly changing world. This format represents an effort to show that successful communication requires multifaceted receptive and expressive skills. The organizing groups are not to be construed as educational units, nor should standards only be taught within a particular focus area. Instead, the groupings illustrate the interconnected nature of all communication skills. Each heading is followed by an explanation of its overarching concept, which is the same in each grade.

Notes on instruction:

- When "including" appears in standards, it should be construed as "including but not limited to." The items listed must be taught; others may also be included in instruction.
- Examples present options that might prove useful in instruction of the standard. They are not intended to be exhaustive lists and the suggestions listed are not required to be taught.
- When a standard specifies writing or speaking "suitable for an authentic audience," it does not require that the writing or speech must actually be presented to such an audience.
- Some standards are very close in meaning in Grades 9 and 10 and in Grades 11 and 12. It is expected that rigor will be increased by selecting more challenging literature in successive grades.

GRADE 9

The Grades 9-12 Recurring Standards for English Language Arts, shown in the chart below, are an important part of every course. Through these recurring standards, students learn and practice active listening, read a variety of workplace and literary texts, learn and practice essential digital skills, utilize a process to create and modify written work, implement conventions of language and usage, and utilize context to decipher word meanings. The recurring standards are to be incorporated throughout the course.

RECURRING STANDARDS FOR GRADES 9-12

Students will:

Reception

R1. Read a variety of print and nonprint documents to acquire new information and respond to the needs and demands of society and the workplace.
Examples: emails, directions, diagrams, charts, other common workplace documents

R2. Read and comprehend a variety of literary texts to develop a literal and figurative understanding as appropriate to the type of text, purpose, and situation.
Examples: short and long prose texts, poetry, dramas

R3. Utilize active listening skills in formal and informal conversations, following predetermined norms.

Expression

R4. Use digital and electronic tools appropriately, safely, and ethically.

R5. Utilize a writing process which includes planning, revising, editing/peer-editing, and rewriting to create a focused, organized, and coherent piece of writing for a specific purpose and audience.

R6. Employ conventions of grammar, mechanics, and usage in order to communicate effectively with a target audience.
Examples: punctuation, capitalization, spelling, effective sentence structure, appropriate formality of language

R7. Use context clues to determine meanings of unfamiliar spoken or written words.

GRADE 9 CONTENT STANDARDS

Each content standard completes the stem "*Students will…*"

CRITICAL LITERACY		
Process and employ information for a variety of academic, occupational, and personal purposes.		
RECEPTION	READING	1. Read, analyze, and evaluate complex literary and informational texts written from various cultural perspectives, with an emphasis on works originating outside the United States and the British Isles through 1599. 2. Analyze information from graphic texts to draw conclusions, defend claims, and make decisions. *Examples: tables, graphs, charts, digital dashboards, flow charts, timelines, forms, maps, blueprints* 3. Analyze how an author's cultural perspective influences style, language, and themes. 4. Analyze how authors use characterization, connotation, denotation, figurative language, literary elements, and point of view to create and convey meaning in a variety of texts. 5. Analyze the impact of context and organizational structures on theme, tone, and the meaning of the work as a whole. 6. Compare and/or contrast the perspectives in a variety of fiction, nonfiction, informational, digital, and multimodal texts produced from diverse historical, cultural, and global points of view, not limited to the grade-level literary focus. 7. Read, analyze, and evaluate texts from science, social studies, and other academic disciplines to determine how those disciplines treat domain-specific vocabulary and content organization.

<table>
<tr><td></td><td>LISTENING</td><td>8. Through active listening, evaluate tone, organization, content, and non-verbal cues to determine the purpose and credibility of a speaker.</td></tr>
<tr><td rowspan="2">EXPRESSION</td><td>WRITING</td><td>9. Compose both short and extended narrative, informative/explanatory, and argumentative writings that are clear and coherent, use an appropriate command of language, and demonstrate development, organization, style, and tone that are relevant to task, purpose, and audience.
Examples: paragraphs, constructed responses, essays
a. Write a memoir, narrative essay, or personal or fictional narrative to convey a series of events, establishing a clear purpose and using narrative techniques.
Examples: dialogue, pacing, description, reflection
b. Write explanations and expositions that incorporate evidence, using transitions and techniques that objectively introduce and develop topics.
Examples: relevant and sufficient facts, extended definitions, concrete details, quotations
c. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning, relevant and sufficient evidence, transitions, and a concluding statement or section that follows from the information presented.</td></tr>
<tr><td>SPEAKING</td><td>10. Present research findings to a peer audience, either formally or informally, conveying credible, accurate information from multiple sources, including diverse media.
11. Participate in collaborative discussions involving multiple perspectives, responding and contributing with relevant evidence and commentary.</td></tr>
</table>

DIGITAL LITERACY

Use technology, including the Internet, to research, analyze, produce, publish, and update individual or shared writing products, taking

RECEPTION	READING	12. Interpret digital texts to determine their subject, occasion, audience, purpose, tone, and credibility.
	LISTENING	13. Interpret a digital audio source to determine its subject, occasion, audience, purpose, tone, and credibility.
EXPRESSION	WRITING	14. Create and edit digital texts that are suitable in purpose and tone for their intended audience and occasion.
	SPEAKING	15. Create and deliver a collaborative presentation that is suitable in purpose and tone for its intended audience and occasion.

LANGUAGE LITERACY

Recognize and demonstrate command of the conventions of standard English grammar, mechanics, and usage, including appropriate formality of language.

RECEPTION	READING	16. Interpret how an author's grammar and rhetorical style contribute to the meaning in both fiction, including poetry and prose, and nonfiction, including historical, business, informational, and workplace documents.
	LISTENING	17. Classify formality of language in order to comprehend, interpret, and respond appropriately.

		18. Analyze a speaker's rhetorical, aesthetic, and organizational choices in order to determine point of view and purpose.
EXPRESSION	WRITING	19. Apply conventions of language to communicate effectively with a target audience, including punctuation; capitalization; spelling; verb, pronoun, and modifier usage; and effective sentence structure. a. Exhibit stylistic consistency in writing.
	SPEAKING	20. Adapt speech to purpose and audience in a variety of contexts and tasks, demonstrating command of formal English conventions as indicated or appropriate.

RESEARCH LITERACY

Engage in inquiry through the research process to locate, acquire, refine, and present relevant and credible findings in multiple modes.

RECEPTION	READING	21. Locate and determine the usefulness of relevant and credible information to answer a question, solve a problem, or defend a position. 22. Use a variety of search tools and research strategies. *Examples: library databases, search engines; keyword search, boolean search*
	LISTENING	23. Use audio sources to obtain useful and credible information to answer a question, solve a problem, or defend a position.
EXPRESSION	WRITING	24. Utilize responsible and ethical research practices to write clear, coherent products with a command of language suitable for a particular target audience and purpose. 25. Integrate information from at least two sources into writing by quoting, paraphrasing, or summarizing and cite sources, following the rules of a particular style guide. *Examples: MLA, APA*

		26. Compose clear, coherent writing that incorporates information from at least one scholarly source and demonstrates a clear position on a topic, answers a research question, or presents a solution to a problem.
	SPEAKING	27. Utilize responsible and ethical research practices to present clear, coherent products with a command of language suitable for a particular target audience and purpose.

GRADE 10

The Grades 9-12 Recurring Standards for English Language Arts, shown in the chart below, are an important part of every course. Through these recurring standards, students learn and practice active listening, read a variety of workplace and literary texts, learn and practice essential digital skills, utilize a process to create and modify written work, implement conventions of language and usage, and utilize context to decipher word meanings. The recurring standards are to be incorporated throughout the course.

RECURRING STANDARDS FOR GRADES 9-12

Students will:

Reception

R1. Read a variety of print and nonprint documents to acquire new information and respond to the needs and demands of society and the workplace.
Examples: emails, directions, diagrams, charts, other common workplace documents

R2. Read and comprehend a variety of literary texts to develop a literal and figurative understanding as appropriate to the type of text, purpose, and situation.
Examples: short and long prose texts, poetry, dramas

R3. Utilize active listening skills in formal and informal conversations, following predetermined norms.

Expression

R4. Use digital and electronic tools appropriately, safely, and ethically.

R5. Utilize a writing process which includes planning, revising, editing/peer-editing, and rewriting to create a focused, organized, and coherent piece of writing for a specific purpose and audience.

R6. Employ conventions of grammar, mechanics, and usage in order to communicate effectively with a target audience.
Examples: punctuation, capitalization, spelling, effective sentence structure, appropriate formality of language

R7. Use context clues to determine meanings of unfamiliar spoken or written words.

GRADE 10 CONTENT STANDARDS

Each content standard completes the stem "*Students will…*"

<table>
<tr><th colspan="3">CRITICAL LITERACY</th></tr>
<tr><td colspan="3">Process and employ information for a variety of academic, occupational, and personal purposes.</td></tr>
<tr><td rowspan="2">RECEPTION</td><td>READING</td><td>1. Read, analyze, and evaluate complex literary and informational texts written from various cultural perspectives, with an emphasis on works originating outside the United States and the British Isles from 1600 to the present.

2. Analyze and evaluate information from graphic texts to draw conclusions, defend claims, and make decisions.
Examples: tables, graphs, charts, digital dashboards, flow charts, timelines, forms, maps, blueprints

3. Analyze how an author's cultural perspective influences style, language, and themes.

4. Interpret an author's use of characterization, connotation, denotation, figurative language, literary elements, and point of view to create and convey meaning in a variety of texts.

5. Analyze context and organizational structures to determine theme, tone, and the meaning of the work as a whole.

6. Compare and/or contrast the perspectives in a variety of fiction, nonfiction, informational, digital, and multimodal texts produced from diverse historical, cultural, and global viewpoints, not limited to the grade-level literary focus.

7. Read, analyze, and evaluate texts from science, social studies, and other academic disciplines to determine how those disciplines treat domain-specific vocabulary and content organization.</td></tr>
<tr><td>LISTENING</td><td>8. Through active listening, evaluate tone, organization, content, and non-verbal cues to determine the purpose and credibility of a speaker.</td></tr>
</table>

<table>
<tr><td rowspan="2">EXPRESSION</td><td>WRITING</td><td>9. Compose both short and extended narrative, informative/explanatory, and argumentative writings that are clear and coherent, use an appropriate command of language, and demonstrate development, organization, style, and tone that are relevant to task, purpose, and audience.
Examples: paragraphs, constructed responses, essays
a. Write a memoir, narrative essay, or personal or fictional narrative to convey a series of events, establishing a clear purpose, using narrative techniques, and sequencing events coherently.
Examples: dialogue, pacing, description, reflection; chronological order, reverse chronological order, flashbacks
b. Write explanations and expositions that incorporate relevant evidence, using effective transitions that objectively introduce and develop topics.
Examples: specific facts, examples, details, statistics/data, examples appropriate to the audience's knowledge of the topic
c. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning, relevant and sufficient evidence, appropriate transitions, and a concluding section that follows from and supports the information presented.</td></tr>
<tr><td>SPEAKING</td><td>10. Present research findings to peers, either formally or informally, integrating credible, accurate information from multiple sources, including diverse media.

11. Participate in collaborative discussions involving multiple perspectives, responding and contributing with relevant evidence and commentary.</td></tr>
</table>

DIGITAL LITERACY

Use technology, including the Internet, to research, analyze, produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information, people, and resources and to display information flexibly and dynamically.

RECEPTION	READING	12. Interpret digital texts to determine subject, occasion, audience, purpose, tone, and credibility.
	LISTENING	13. Interpret a digital audio source to determine subject, occasion, audience, purpose, tone, and credibility.
EXPRESSION	WRITING	14. Create and edit collaborative digital texts that are suitable in purpose and tone for their intended audience and occasion.
	SPEAKING	15. Create and deliver an individual or collaborative presentation that is suitable in purpose and tone for its intended audience and occasion. *Examples: speaking to defend or explain a digital poster, multimedia presentation, or video in an area of interest related to college or career choices*

LANGUAGE LITERACY

Recognize and demonstrate command of the conventions of standard English grammar, mechanics, and usage, including appropriate formality of language.

RECEPTION	READING	16. Interpret how an author's grammar and rhetorical style contribute to the meaning in both fiction, including poetry and prose, and nonfiction, including historical, business, informational, and workplace documents.

	LISTENING	17. Classify formality of language in order to comprehend, interpret, and respond appropriately. 18. Analyze a speaker's rhetorical, aesthetic, and organizational choices in order to determine point of view and purpose. *Examples: Analyze Mahatma Gandhi's "Quit India" speech.* *Analyze "The Appeal of 18 June" by Charles de Gaulle.*
EXPRESSION	WRITING	19. Apply conventions of language to communicate effectively with a target audience, including punctuation; capitalization; spelling; verb, pronoun, and modifier usage; and
	SPEAKING	20. Adapt speech to purpose and audience in a variety of contexts and tasks,

RESEARCH LITERACY

Engage in inquiry through the research process to locate, acquire, refine, and present relevant and credible findings in multiple modes.

RECEPTION	READING	21. Locate and determine the usefulness of relevant and credible information to answer a question, solve a problem, or defend a position. 22. Use a variety of search tools and research strategies to locate credible sources. *Examples: library databases, search engines; keyword search, boolean search*
	LISTENING	23. Use audio sources to obtain useful and credible information to answer a question, solve a problem, or defend a position.
EXPRESSION	WRITING	24. Utilize responsible and ethical research practices to write clear, coherent products with a command of language suitable for a particular target audience and purpose. 25. Integrate information from at least two kinds of sources into writing, using quotations, paraphrases, and summaries that consistently follow a particular style guide. *Examples: MLA, APA*

		26. Compose clear, coherent writing that incorporates information from at least one scholarly and at least one non-scholarly source and demonstrates a clear position on a
	SPEAKING	27. Utilize responsible and ethical research practices to present clear, coherent products with a command of language suitable for a target audience and purpose.

GRADE 11

The Grades 9-12 Recurring Standards for English Language Arts, shown in the chart below, are an important part of every course. Through these recurring standards, students learn and practice active listening, read a variety of workplace and literary texts, learn and practice essential digital skills, utilize a process to create and modify written work, implement conventions of language and usage, and utilize context to decipher word meanings. The recurring standards are to be incorporated throughout the course.

RECURRING STANDARDS FOR GRADES 9-12

Students will:

Reception

R1. Read a variety of print and nonprint documents to acquire new information and respond to the needs and demands of society and the workplace.
Examples: emails, directions, diagrams, charts, other common workplace documents

R2. Read and comprehend a variety of literary texts to develop a literal and figurative understanding as appropriate to the type of text, purpose, and situation.
Examples: short and long prose texts, poetry, dramas

R3. Utilize active listening skills in formal and informal conversations, following predetermined norms.

Expression

R4. Use digital and electronic tools appropriately, safely, and ethically.

R5. Utilize a writing process which includes planning, revising, editing/peer-editing, and rewriting to create a focused, organized, and coherent piece of writing for a specific purpose and audience.

R6. Employ conventions of grammar, mechanics, and usage in order to communicate effectively with a target audience.
Examples: punctuation, capitalization, spelling, effective sentence structure, appropriate formality of language

R7. Use context clues to determine meanings of unfamiliar spoken or written words.

GRADE 11 CONTENT STANDARDS

Each content standard completes the stem "*Students will…*"

CRITICAL LITERACY		
Process and employ information for a variety of academic, occupational, and personal purposes.		
RECEPTION	READING	1. Read, analyze, and evaluate complex literary and informational texts written from various points of view and cultural perspectives, with an emphasis on works of American literature. 2. Synthesize information from two or more graphic texts to draw conclusions, defend claims, and make decisions. *Examples: tables, graphs, charts, digital dashboards, flow charts, timelines, forms, maps, blueprints* 3. Analyze how an author explicitly exhibits his/her cultural perspective in developing style and meaning. 4. Analyze how an author uses characterization, figurative language, literary elements, and point of view to create and convey meaning. 5. Evaluate structural and organizational details in literary, nonfiction/informational, digital, and multimodal texts to determine how genre supports the author's purpose. 6. Analyze a text's explicit and implicit meanings to make inferences about its theme and determine the author's purpose. 7. Compare and/or contrast the perspectives in a variety of fiction, nonfiction, informational, digital, and multimodal texts produced from diverse historical, cultural, and global viewpoints, not limited to the grade level literary focus.

		8. Read, analyze, and evaluate texts from science, social studies, and other academic disciplines and explain how those disciplines treat domain-specific vocabulary and content and organize information. 9. Follow instructions in technical materials to complete a specific task. *Example: Read and follow instructions for formatting a document.*
	LISTENING	10. Through active listening, evaluate tone, organization, content, and non-verbal cues to determine the purpose and credibility of a speaker.
EXPRESSION	WRITING	11. Compose and edit both short and extended products in which the development and organization are relevant and suitable to task, purpose, and audience, using an appropriate command of language. *Examples: paragraphs, constructed responses, essays* a. Incorporate narrative techniques in other modes of writing as appropriate. *Examples: flashback, anecdote, foreshadowing, story-telling, sensory details, character development* b. Write explanations and expositions that examine and convey complex ideas or processes effectively, develop the topic utilizing and citing credible sources of information or data when relevant, use intentional transitions, choose precise vocabulary, and maintain an organized structure. c. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning supported by relevant and sufficient evidence, making rhetorical choices that convey a specific tone or style, including intentional transitions, and providing a logical conclusion that captures the larger implications of the topic or text. 12. Collaborate on writing tasks in diverse groups, making necessary compromises to accomplish a goal, sharing responsibility for collaborative work, and showing respect for the individual contributions of each group member.

	SPEAKING	13. Synthesize multiple sources of information (including diverse media), evaluate the credibility and accuracy of each source, and share information orally. 14. Participate in collaborative discussions involving multiple cultural and literary perspectives, responding to, contributing to, building upon, and questioning the ideas of others with relevant, appropriate evidence and commentary.

DIGITAL LITERACY

Use technology, including the Internet, to research, analyze, produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information, people, and resources and to display information flexibly and dynamically.

RECEPTION	READING	15. Analyze digital texts and evaluate their effectiveness in terms of subject, occasion, audience, purpose, tone, and credibility.
	LISTENING	16. Analyze elements of audible communications and evaluate their effectiveness in terms of subject, occasion, audience, purpose, tone, and credibility of digital sources. *Examples: words, music, sound effects*
EXPRESSION	WRITING	17. Use images, sound, animation, and other modes of expression to create or enhance individual or collaborative digital and multimodal texts that are suitable in purpose and tone for their intended audience and occasion.
	SPEAKING	18. Create and deliver an oral presentation, created collaboratively from individual contributions, that is suitable in purpose and tone for its intended audience and occasion. *Examples: speaking to defend or explain a digital poster, multimedia presentation, or video in an area of interest related to college or career choices.*

LANGUAGE LITERACY		
Recognize and demonstrate command of the conventions of standard English grammar, mechanics, and usage, including appropriate formality of language.		
RECEPTION	READING	19. Interpret how an author's grammar and rhetorical style contribute to the meaning in both fiction, including poetry and prose, and nonfiction, including historical, business, informational, and workplace documents.
	LISTENING	20. Analyze the formality of language in a variety of audible sources in order to comprehend, interpret, and respond appropriately. 21. Analyze a speaker's rhetorical, aesthetic, and organizational choices in order to determine point of view, purpose, and effectiveness.
EXPRESSION	WRITING	22. Apply conventions of standard English grammar, mechanics, and usage, including appropriate formality of language, to communicate effectively with a target audience. a. Exhibit stylistic complexity and sophistication in writing.
	SPEAKING	23. Deliver a speech suitable for an authentic audience for a specific purpose, demonstrating command of formal English when indicated or appropriate. *Examples: student-led conference, public meeting, community-based group*

RESEARCH LITERACY		
Engage in inquiry through the research process to locate, acquire, refine, and present relevant and credible findings in multiple modes.		
RECEPTION	READING	24. Evaluate the credibility of sources in terms of authority, relevance, accuracy, and purpose. a. Assess the usefulness of written information to answer a research question, solve a problem, or take a position. 25. Use a variety of search tools and research strategies to locate credible sources. *Examples: library databases, search engines; keyword search, boolean search*
	LISTENING	26. Locate and acquire audible information to answer a question, solve a problem, or defend a position, utilizing active listening to assess its usefulness, relevance, and credibility.
EXPRESSION	WRITING	27. Synthesize research results, using responsible, ethical practices to gather information, and write clear, coherent products demonstrating command of language that is suitable for the target audience and purpose. 28. Integrate ethically-acquired information from at least three sources of varying types, including at least one visual or statistical source, into a research product, using proper quoting, paraphrasing, summarizing, and citation practices that consistently follow rules of a particular style guide. *Examples: MLA, APA* 29. Compose clear, coherent writing that incorporates information from a variety of scholarly and non-scholarly sources and demonstrates a clear position on a topic, answers a research question, or presents a solution to a problem.
	SPEAKING	30. Synthesize research using responsible and ethical practices to create and orally present clear, coherent products demonstrating command of language that is suitable for the target audience and purpose.

GRADE 12

The Recurring Standards for English Language Arts, shown in the chart below, are an important part of every course. Through these recurring standards, students learn and practice active listening, read a variety of workplace and literary texts, learn and practice essential digital skills, utilize a process to create and modify written work, implement conventions of language and usage, and utilize context to decipher word meanings. The recurring standards are to be incorporated throughout the course.

RECURRING STANDARDS FOR GRADES 9-12

Students will:

Reception

R1. Read a variety of print and nonprint documents to acquire new information and respond to the needs and demands of society and the workplace.
Examples: emails, directions, diagrams, charts, and other common workplace documents.

R2. Read and comprehend a variety of literary texts to develop a literal and figurative understanding as appropriate to the type of text, purpose, and situation.
Examples: short and long prose texts, poetry, and dramas.

R3. Utilize active listening skills in formal and informal conversations, following predetermined norms.

Expression

R4. Use digital and electronic tools appropriately, safely, and ethically.

R5. Utilize a writing process which includes planning, revising, editing/peer-editing, and rewriting to create a focused, organized, and coherent piece of writing for a specific purpose and audience.

R6. Employ conventions of grammar, mechanics, and usage in order to communicate effectively with a target audience.
Examples: punctuation, capitalization, spelling, effective sentence structure, and appropriate formality of language.

R7. Use context clues to determine meanings of unfamiliar spoken or written words.

GRADE 12 CONTENT STANDARDS

Each content standard completes the stem "*Students will…*"

CRITICAL LITERACY		
Process and employ information for a variety of academic, occupational, and personal purposes.		
RECEPTION	READING	1. Read, analyze, and evaluate complex literary and historical texts written from particular points of view or cultural experiences, with an emphasis on works of literature from the British Isles. a. Read, analyze, and evaluate a play by William Shakespeare, including an examination of its contributions to the English language and its influences on other works of literature. 2. Synthesize information from two or more graphic texts to draw conclusions, defend claims, and make decisions. *Examples: tables, graphs, charts, digital dashboards, flow charts, timelines, forms, maps, blueprints* 3. Evaluate how an author explicitly exhibits his/her cultural perspective in developing style and meaning. 4. Evaluate an author's use of characterization, figurative language, literary elements, and point of view to create and convey meaning. 5. Evaluate structural and organizational details in texts to determine the author's purpose, including cases in which the meaning is ironic or satirical. 6. Analyze a text's explicit and implicit meanings to make inferences about its theme and determine the author's purpose. 7. Compare and/or contrast the perspectives in a variety of fiction, nonfiction, informational, digital, and multimodal texts produced from diverse historical, cultural, and global viewpoints, not limited to the grade level literary focus.

		8. Read, analyze, and evaluate texts from science, social studies, and other academic disciplines and explain how those disciplines treat domain-specific vocabulary and content and organize information. 9. Follow instructions in technical materials to complete a specific task. *Example: Read and follow instructions for formatting a document.*
	LISTENING	10. Determine through active listening the purpose, credibility, and effectiveness of a speaker or multiple sources of information by evaluating tone, organization, content, and verbal and non-verbal cues and identifying any fallacious reasoning or distorted evidence.
EXPRESSION	WRITING	11. Compose, edit, and revise both short and extended products in which the development, organization, and style are relevant and suitable to task, purpose, and audience, using an appropriate command of language. a. Incorporate narrative techniques into other modes of writing as appropriate. *Examples: flashback, anecdote, foreshadowing, story-telling, sensory details, character development* b. Write explanations and expositions that examine and convey complex ideas or processes effectively, develop the topic utilizing and citing credible sources of information or data when relevant, use intentional transitions, choose precise vocabulary, and maintain an organized structure and style. c. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence, making intentional rhetorical choices to convey a specific tone or style, including intentional transitions, and providing a logical conclusion that captures the larger implications of the topic or text. 12. Within diverse and collaborative writing groups, effectively and respectfully demonstrate a willingness to make necessary compromises to accomplish a goal, share responsibility for collaborative work, and consider contributions made by each group member.

	SPEAKING	13. Evaluate the credibility and accuracy of sources from diverse media and/or formats and then use multiple suitable sources of information to develop an idea or further a position. 14. Actively engage in collaborative discussions about topics and texts, expressing their own ideas by respectfully contributing to, building upon, and questioning the ideas of others in pairs, diverse groups, and whole class settings.

DIGITAL LITERACY

Use technology, including the Internet, to research, analyze, produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information, people, and resources and to display information flexibly and dynamically.

RECEPTION	READING	15. Analyze digital texts and evaluate their effectiveness in terms of subject, occasion, audience, purpose, tone, and credibility.
	LISTENING	16. Analyze elements of audible communications and evaluate their effectiveness in terms of subject, occasion, audience, purpose, tone, and credibility of digital sources. *Examples: words, music, sound effects*
EXPRESSION	WRITING	17. Use images, sound, animation, and other modes of expression to create or enhance individual or collaborative digital and multimodal texts that are suitable in purpose and tone for their intended audience and occasion.
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LANGUAGE LITERACY		
Recognize and demonstrate command of the conventions of standard English grammar, mechanics, and usage, including appropriate formality of language.		
RECEPTION	READING	19. Interpret how an author's grammar and rhetorical style contribute to the meaning in both fiction, including poetry and prose, and nonfiction, including historical, business, informational, and workplace documents.
	LISTENING	20. Evaluate the formality of language in a variety of audible sources to comprehend, interpret, and respond appropriately. 21. Analyze a speaker's rhetorical, aesthetic, and organizational choices in order to determine point of view, purpose, and effectiveness.
EXPRESSION	WRITING	22. Apply conventions of standard English grammar, mechanics, and usage, including appropriate formality of language, to communicate effectively with a target audience. a. Exhibit stylistic complexity, sophistication, and consistency in writing.
	SPEAKING	23. Deliver a speech suitable for a professional audience of college and/or workforce stakeholders for a specific purpose, demonstrating command of formal English.

RESEARCH LITERACY

Engage in inquiry through the research process to locate, acquire, refine, and present relevant and credible findings in multiple modes.

RECEPTION	READING	24. Evaluate the credibility of sources in terms of authority, relevance, accuracy, and purpose. a. Assess the usefulness of written information to answer a research question, solve a problem, or take a position. 25. Use a variety of search tools and research strategies to locate and acquire credible, relevant, and useful information. *Examples: library databases, search engines; keyword search, boolean search*
	LISTENING	26. Locate and acquire audible information to answer a question, solve a problem, or defend a position, utilizing active listening to assess its usefulness, relevance, and credibility.
EXPRESSION	WRITING	27. Synthesize research results, using responsible, ethical practices to gather information, and write clear, coherent products demonstrating command of language that is suitable for the target audience and purpose. 28. Integrate ethically-acquired information from at least three sources of varying types, including at least one visual or statistical source, into a research product, using proper quoting, paraphrasing, summarizing, and citation practices that consistently follow rules of a particular style guide. *Examples: MLA, APA* 29. Compose clear, coherent writing that incorporates information from a variety of scholarly and non-scholarly sources and demonstrates a clear position on a topic, answers a research question, or presents a solution to a problem.
	SPEAKING	30. Synthesize research using responsible and ethical practices to create and orally present clear, coherent products demonstrating command of language that is suitable for the target audience and purpose.

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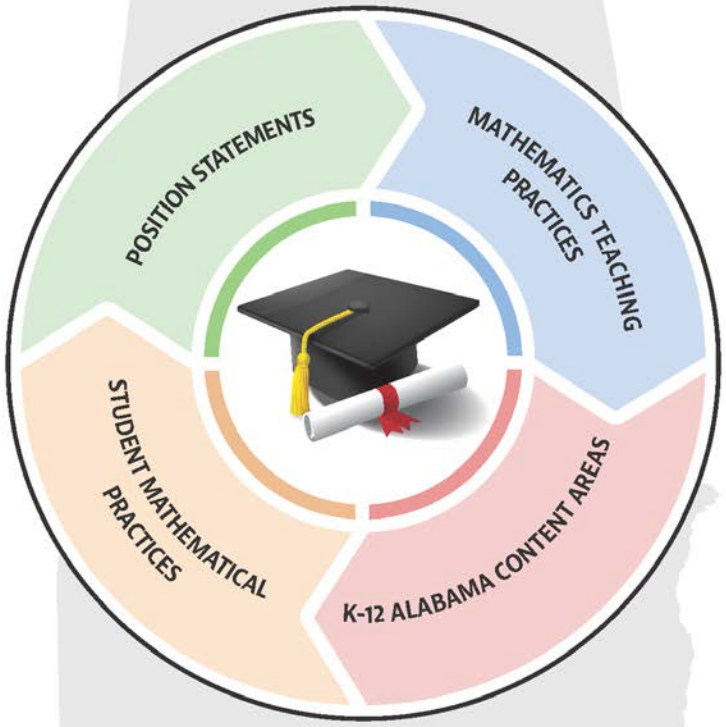
ALABAMA COURSE OF STUDY

MATHEMATICS



Eric G. Mackey, State Superintendent of Education
Alabama State Department of Education

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Alabama State Department of Education
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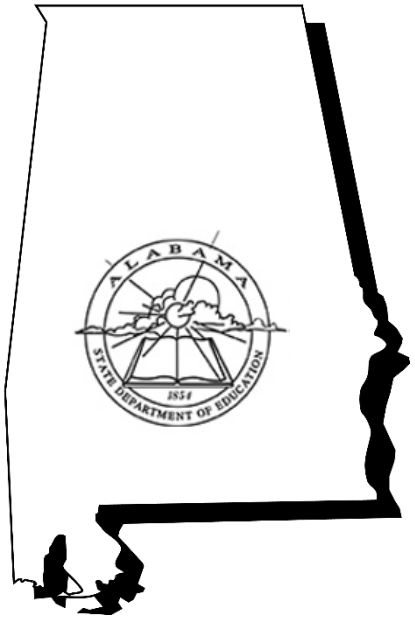
2019 Alabama Course of Study: Mathematics

2019 Alabama Course of Study
Mathematics



Eric G. Mackey
State Superintendent of Education

STATE SUPERINTENDENT OF EDUCATION'S MESSAGE

Dear Educator:

Society and the workplace require that all Alabama students receive a solid foundation of knowledge, skills, and understanding in mathematics. Alabama educators must focus on the teaching of mathematics in ways that enable students to expand professional opportunities, understand and critique the world, and experience the joy, wonder, and beauty of mathematics. To address this goal, the content of the *2019 Alabama Course of Study: Mathematics* sets high standards for all students and reflects changes designed to better meet the needs of students and teachers in the State of Alabama.

The *2019 Alabama Course of Study: Mathematics*, was developed by educators and business and community leaders to provide a foundation for building quality mathematics programs across the state. Implementing the content of this document through appropriate instruction will enable all Alabama students to be mathematically well-prepared graduates.

Eric G. Mackey
State Superintendent of Education

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State Superintendent
Eric G. Mackey
Secretary and Executive Officer

2019 Alabama Course of Study: Mathematics

Table of Contents

2019 Alabama Course of Study: Mathematics

PREFACE

The *2019 Alabama Course of Study: Mathematics* provides the framework for the Grades K-12 mathematics program in Alabama's public schools. Content standards in this document are minimum and required (*Code of Alabama,* 1975, §16-35-4). They are fundamental and specific, but not exhaustive. In developing local curriculum, school systems may include additional content standards to reflect local philosophies and add implementation guidelines, resources, and activities which are beyond the scope of this document.

The 2019 Alabama Mathematics Course of Study Committee and Task Force conducted exhaustive research during the development of this Course of Study, analyzing mathematics standards and curricula from other states, the *2016 Revised Alabama Course of Study: Mathematics*, national reports and recommendations on K-12 mathematics education, the latest NAEP Frameworks, and numerous articles in professional journals and magazines. Many members attended state, regional, and national conventions to update their knowledge of current trends and issues in mathematics education. The Committee and Task Force also listened to and read statements from interested individuals and groups throughout the state, and thoroughly discussed issues among themselves and with colleagues. The Committee and Task Force reached consensus and developed what members believe to be the best Grades K-12 Mathematics Course of Study for students in Alabama's public schools.

2019 Alabama Course of Study: Mathematics

ACKNOWLEDGMENTS

This document was developed by the 2019 Alabama Mathematics Course of Study Committee and Task Force, composed of early childhood, intermediate school, middle school, high school, and college educators appointed by the Alabama State Board of Education and business and professional persons appointed by the Governor (*Code of Alabama*, 1975, §16-35-1). The Committee and Task Force began work in March of 2018 and submitted the document to the Alabama State Board of Education for adoption at the December 12, 2019, meeting.

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2019 Alabama Course of Study: Mathematics

GENERAL INTRODUCTION

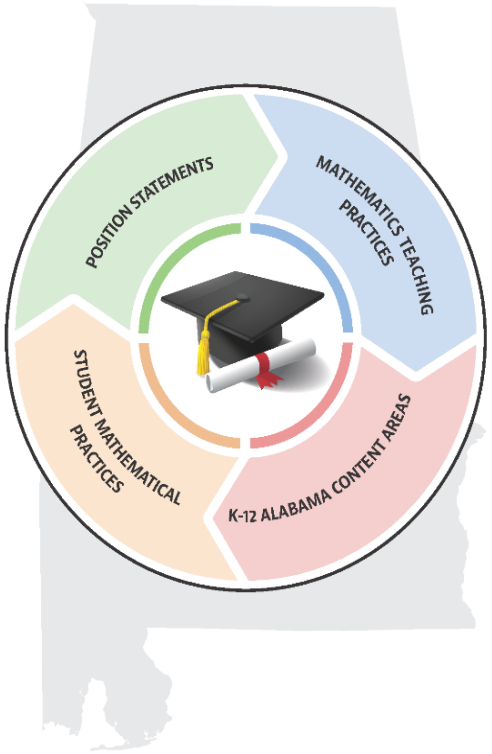
The *2019 Alabama Course of Study: Mathematics* defines the knowledge and skills students should know and be able to do after each course and upon graduation from high school. Mastery of the standards enables students to expand professional opportunities, understand and critique the world, and experience the joy, wonder, and beauty of mathematics (National Council of Teacher of Mathematics [NCTM], 2018). Courses within the *2019 Alabama Course of Study: Mathematics* are organized into Alabama Content Areas which are adapted from those present in the draft of the NAEP *2025 Mathematics Framework*. High school courses also incorporate recommendations for the Essential Concepts as identified by the National Council of Teachers of Mathematics (2018) and other documents. All standards contained in this document are:

- aligned with college and work expectations;
- written in a clear, understandable, and consistent format;
- designed to include rigorous, focused, and critical content and application of knowledge through high-order skills;
- formulated upon strengths and lessons of current Alabama standards;
- informed by high-performing mathematics curricula in other countries to ensure all students are prepared to succeed in our global economy and society; and
- grounded on sound, evidence-based research.

What students can learn at any particular grade level depends upon prior learning. Grade placements for specific topics have been made on the basis of state and international comparisons and on the collective experience and professional judgment of educators, researchers, and mathematicians. Learning opportunities will continue to vary across schools and school systems, and educators should make every effort to meet the needs of individual students based on the student's current understanding.

Mastery of the standards enables students to build a solid foundation of knowledge, skills, and understanding in mathematics. To ensure student success, effective implementation of the *2019 Alabama Course of Study: Mathematics* requires local education agencies to develop local curriculum guides utilizing the minimum required content of this document.

2019 Alabama Course of Study: Mathematics
CONCEPTUAL FRAMEWORK



2019 Alabama Course of Study: Mathematics

CONCEPTUAL FRAMEWORK

The conceptual framework graphic illustrates the purpose of the *2019 Alabama Course of Study: Mathematics,* which is to ensure that all students receive the mathematics preparation they need to access further educational and professional opportunities, to understand and critique the world around them, and to experience the joy, wonder, and beauty of mathematics (NCTM, 2018). This purpose is depicted by a cyclical pattern formed by position statements, content, student mathematical practices, and mathematics teaching practices that contribute to the development of the mathematically-prepared graduate, represented by the diploma and mortarboard in the center. The cycle has no defined starting or ending point; all of its components must be continuously incorporated into the teaching and learning of mathematics. This integration is essential to the development of an excellent mathematics education program for public schools in Alabama, represented by the shaded map of the state behind the cycle. The four critical components of an excellent mathematics education program are Student Mathematical Practices; Alabama Content Areas and 9-12 Essential Content; Mathematics Teaching Practices; and Position Statements.

The Student Mathematical Practices, also referred to as the Standards for Mathematical Practice, embody the processes and proficiencies in which students should regularly engage as they learn mathematics. These practices include making sense of problems and persevering in solving them; constructing arguments and critiquing reasoning of others; modeling; using appropriate tools; attending to precision; finding and using structure; and finding and expressing regularity in repeated reasoning. Proficiency with these practices is critical in using mathematics, both within the classroom and in life. Mathematical Practices are a fundamental component in the National Assessment of Educational Progress (NAEP) framework and are included as Alabama standards to be incorporated across all grades; they are explained in further detail on pages 11-14.

The vehicle for developing these practices is found in the next component of the cycle, the content standards. These standards specify what students should know and be able to do at the end of each grade or course. The standards are organized in Alabama Content Areas, which are based on the content areas in the 2025 NAEP mathematics framework. They are designed to provide an effective trajectory of learning across the grades that ensures students are well-prepared for future success.

In Grades 9-12, the Alabama Content Standards are organized into subgroups of essential concepts described by the National Council of Teachers of Mathematics (NCTM) in its seminal publication, *Catalyzing Change in High School Mathematics: Initiating Critical Conversations* (2018). These essential concepts are designed to be achieved by all students within the first three years of high school mathematics, and they form the foundation for additional coursework designed to meet students' specific post-high school needs and interests.

The next component of the cycle consists of the eight Mathematics Teaching Practices (NCTM, 2014), which should be consistent components of every mathematics lesson across grades K-12. They are:

1. **Establish mathematics goals to focus learning.** Effective teaching of mathematics establishes clear goals for the mathematics that students are learning, situates goals within learning progressions, and uses the goals to guide instructional decisions.
2. **Implement tasks that promote reasoning and problem solving.** Effective teaching of mathematics engages students in solving and discussing tasks that promote mathematical reasoning and problem-solving and allow multiple entry points and varied solution strategies.
3. **Use and connect mathematical representations**. Effective teaching of mathematics engages students in making connections among mathematical representations to deepen understanding of mathematics concepts and procedures and as tools for problem-solving.
4. **Facilitate meaningful mathematical discourse**. Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments.
5. **Pose purposeful questions**. Effective teaching of mathematics uses purposeful questions to assess and advance students' reasoning and sense-making about important mathematical ideas and relationships.
6. **Build procedural fluency from conceptual understanding.** Effective teaching of mathematics builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems.
7. **Support productive struggle in learning mathematics**. Effective teaching of mathematics consistently provides students, individually and collectively, with opportunities and supports to engage in productive struggle as they grapple with mathematical ideas and relationships.
8. **Elicit and use evidence of student thinking.** Effective teaching of mathematics uses evidence of student thinking to assess progress toward mathematical understanding and to adjust instruction continually in ways that support and extend learning.

Appendix A provides information that illustrates how these Mathematics Teaching Practices support equitable instruction in the mathematics classroom.

The final component of the cycle is the Position Statements, which are explained in detail in the next section of this document. The Position Statements set forth the foundational requirements for excellence in mathematics education. They deal with access and equity, teaching and learning, curriculum, tools and technology, assessment, and professionalism. All stakeholders, from parents and teachers to policy-makers and business leaders, should examine and embrace these Position Statements to foster excellence in mathematics education in Alabama.

The graphic depicts a dynamic process of establishing and achieving an excellent mathematics program for the State of Alabama. Placement of a diploma at the center is no accident, because all efforts are focused on preparing Alabama students for their future. Mathematics will be part of that future, and students must be well equipped to meet the challenges of higher education and meaningful employment.

POSITION STATEMENTS

> *Today, mathematics is at the heart of most innovations in the "information economy," which is increasingly driven by data. Mathematics serves as the foundation for careers in science, technology, engineering, and mathematics (STEM) and, increasingly, as the foundation for careers outside STEM. Moreover, mathematical literacy is needed more than ever to filter, understand, and act on the enormous amount of data and information that we encounter every day.... The digital age inundates us with numbers in the form of data, rates, quantities, probabilities, and averages, and this fact of twenty-first-century life increases the importance of and need for today's students to be mathematically and statistically literate consumers, if not producers, of information.* (National Council of Teachers of Mathematics [NCTM], *Catalyzing Change in High School Mathematics,* 2018, p. 1)

Mathematics is critical for the future success of each and every student in Alabama, enabling them to expand their professional opportunities, understand and critique the world, and experience the joy, wonder, and beauty of mathematics (NCTM, 2018). To help students achieve this goal, schools should implement the six position statements, which outline foundational practices to ensure excellence in Alabama mathematics programs. Specific pages in *Principles to Action: Ensuring Mathematical Success for All* (NCTM, 2014) that are related to each position statement are indicated in italics at the end of the statement. All stakeholders, from parents and teachers to policy-makers and business leaders, should examine and embrace these principles to foster excellence in mathematics education in Alabama.

Access and Equity in Mathematics Education

An excellent mathematics program in Alabama promotes access and equity, which requires being responsive to students' backgrounds, experiences, and knowledge when designing, implementing, and assessing the effectiveness of a mathematics program so that all students have equitable opportunity to advance their understanding each school year.

Access and equity in mathematics at the school and classroom levels is founded on beliefs and practices that empower each and every student to participate meaningfully in learning mathematics and to achieve outcomes in mathematics that are not predicted by or associated with student characteristics. For all students, mathematics is an intellectually challenging activity that transcends their racial, ethnic, linguistic, gender, and socioeconomic backgrounds. Promoting curiosity and wonder through mathematical discourse is possible when schools and classrooms provide equitable access to challenging curriculum and set high expectations for all students.

School leaders, teachers, and community stakeholders need to collaborate on issues impacting access and equity for each and every student, such as tracking, beliefs about innate levels of mathematical ability, and differentiated learning. To gain more insight, read and discuss "Access and Equity" in Principles to Actions *(pp. 59-69).*

Teaching and Learning Mathematics

An excellent mathematics program in Alabama requires teaching practices that enable students to understand that mathematics is more than finding answers; mathematics requires reasoning and problem-solving in order to solve real-world and mathematical problems.

Teaching matters. Teachers bear the responsibility of ensuring student attainment of content by all who enter their classrooms, regardless of pre-existing skills and knowledge. To increase student proficiency in mathematics, the following mathematics teaching practices (NCTM, 2014) should be integrated into daily instruction:

- Establish mathematics goals to focus learning.
- Implement tasks that promote reasoning and problem-solving.
- Use and connect mathematical representations.
- Facilitate meaningful mathematical discourse.
- Pose purposeful questions.
- Build procedural fluency from conceptual understanding.
- Support productive struggle in learning mathematics.
- Elicit and use evidence of student thinking.

These mathematics teaching practices are also an element of the Conceptual Framework. See Appendix A.

Student learning involves more than developing discrete mathematical skills; mathematical proficiency has been defined by the National Research Council (2001) to include five strands: conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and a productive disposition. Note that procedural fluency involves not just finding answers quickly, but "skill in carrying out procedures flexibly, accurately, efficiently, and appropriately" (National Research Council, 2001).

School leaders, teachers, and community stakeholders need to collaborate on issues impacting teaching and learning mathematics, such as mathematics learning goals; opportunities students are afforded to discuss their thinking; students' understanding and encouragement to persevere as they reason, problem-solve, and develop conceptual understanding; and teachers' orchestration of and student participation in whole class discussions. To gain more insight, read and discuss the "Mathematics Teaching Practices" section in Principles to Actions *(pp. 7-57).*

Mathematics Curriculum

An excellent mathematics program in Alabama includes a curriculum that develops the grade level mathematics content standards along coherent learning progressions which build connections among areas of mathematical study and between mathematics and the real world.

There are differences among standards, textbooks, and curriculum. The Alabama Content Standards delineate what students are expected to learn within each grade level or course. A curriculum is a sequence of tasks, activities, and assessments that teachers enact to support students in learning the standards while drawing on a textbook or other resources when appropriate. Textbooks and other resources that align with standards should be provided for teachers. For example, a standard might read that students will be fluent with two-digit multiplication or that students are fluent with multiplying binomials. A single lesson does not accomplish either of these standards, nor is it productive to have students simply practice this skill in isolation without building from conceptual understanding as described in one of the *Principles to Actions* mathematics teaching principles. A sequence of lessons needs to include examples using concrete models or other appropriate representations to support students in developing strategies that provide a foundation for developing procedural fluency.

School leaders, teachers, and community stakeholders need to collaborate on how the curriculum is designed to provide access for all students, how procedural fluency is built from conceptual understanding, and how the curriculum aligns with the content standards and adopted textbooks. To gain more insight, read and discuss the "Curriculum" section in Principles to Actions *(pp. 70-77).*

Mathematical Tools and Technology

An excellent mathematics program in Alabama seamlessly integrates tools and technology as essential resources to help students develop a deep understanding of mathematics, communicate about mathematics, foster fluency, and support problem-solving.

Teachers and students should be provided with appropriate tools and technology to support student learning. Students should use mathematical tools and technology in a variety of settings for a variety of purposes. Teachers should design learning activities using tools and technology so that students are mastering concepts, not just practicing skills. For example, base 10 blocks serve as a tool for learning mathematics, and a document camera is technology which can share the display of base 10 blocks that students are manipulating to acquire conceptual understanding. Interactive technology can help students explore mathematical ideas in order to increase their understanding of mathematics. High school students may manipulate the graph of a function in a computer program using sliders that change the values in its equation in order to better understand particular types of functions. Tools and technology can also be used to differentiate learning experiences. Teachers should be provided with appropriate professional learning opportunities to support effective student use of these tools and technologies.

School leaders, teachers, and community stakeholders need to analyze how mathematics classrooms currently incorporate tools and technology to develop students' procedural fluency from conceptual understanding and how tools and technology can be further integrated to support the communication and understanding of mathematical ideas. To gain more insight, read and discuss "Tools and Technology" in Principles to Actions *(pp. 78-88).*

Assessment of Mathematics Learning

An excellent mathematics program in Alabama includes formative assessment to inform future teaching decisions and summative assessment to assess students' ability to problem-solve, to demonstrate conceptual understanding and procedural skills, and to provide feedback to inform students of their progress.

Two types of assessment, summative and formative, require attention in mathematics classrooms. Traditionally, instruction has focused on concluding a learning segment with summative assessments, including tests, projects, quizzes, or state assessments. While use of summative assessments is essential, such measures should be used to fully evaluate students' mathematical proficiency, including procedural fluency, problem-solving ability, and conceptual understanding. To expand and improve summative assessment results, students need opportunities throughout the school year to persevere, with teacher support, in struggling with cognitively demanding tasks.

Formative assessment occurs throughout this learning process as students solve tasks and teachers provide support through questioning. During instruction, teachers can learn a great deal about how students think as they draw on prior knowledge to solve novel problems. Formative assessment is possible only when teachers are questioning students' thinking during the learning process. Formative assessments may include the use of questions that drive instructional-decision making, exit slips or bell ringers, teacher observation of student discourse, reengagement lessons, the "number talk" format, and evaluations of student work samples. Formative assessment is a powerful tool for making instructional decisions that move student learning forward.

School leaders, teachers, and community stakeholders need to collaborate about how students' thinking is formatively assessed during instruction and to analyze summative assessments in order to evaluate the extent to which problem-solving, conceptual understanding, and procedural skills are being addressed in mathematics classrooms. To gain more insight, read and discuss the "Assessment" section in Principles to Actions *(pp. 89-98).*

Professional Mathematics Teachers

An excellent mathematics program in Alabama requires educators to hold themselves and their colleagues accountable for seeking and engaging in professional growth to improve their practice as lifelong learners in order to promote student understanding of mathematics as a meaningful endeavor applicable to everyday life.

Professionals are dedicated to learning and improving their craft, which ultimately benefits students. To achieve growth in the five areas described in this section, districts, schools, and teachers must recognize that continuous professional learning is required. Designing and enacting effective lessons and valid assessments requires teachers to increase their knowledge and skill throughout their careers. To prepare the next generation of thinkers, the mathematics education community in Alabama (and beyond) must work together to support one another in learning. Teaching in ways that promote student collaboration in learning mathematics from and with each other requires adults to model effective collaboration in their own learning and progress.

Teachers should embrace learning and professional growth. Local school systems should provide face-to-face and/or online professional learning, specifically designed to address mathematics content and instruction, for all teachers. Active participation in state and national mathematics organizations and service as mentors to others are additional means through which teachers can collaborate with others and expand their practice. State and national resources include Alabama Council of Teachers of Mathematics (ACTM); Alabama Learning Exchange (ALEX); Alabama Mathematics, Science, and Technology Initiative (AMSTI); and the National Council of Teachers of Mathematics (NCTM).

School leaders, teachers, and community stakeholders need to collaborate on the amount of time provided and how effectively and productively the allotted time is used to plan curriculum and individual lessons, reflect on instruction, and design assessments to improve student learning outcomes. To gain more insight, read and discuss the "Professionalism" section in Principles to Actions *(pp. 99-108).*

Finally, we recommend that school leaders, teachers, and stakeholders read and discuss the "Taking Action" section of Principles to Actions *(pp. 109-117). Discussing and reading* Principles to Actions *as a school community or mathematics department will stimulate productive conversations that can lead to classroom improvements which will support the mathematics learning for all students across Alabama.*

STUDENT MATHEMATICAL PRACTICES

The Standards for Mathematical Practice, called "Student Mathematical Practices" in this document, describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices are based on important processes and proficiencies that have long-standing importance in mathematics education. The processes are the National Council of Teachers of Mathematics (NCTM) process standards of problem-solving, reasoning and proof, communication, representation, and connections. The proficiencies are adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations, and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently, and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy). These are the strands of mathematical proficiency specified in the National Research Council's report, *Adding It Up*: *Helping Children Learn Mathematics* (2001). Most recently, these Student Mathematical Practices have been supported by the National Assessment of Educational Progress (NAEP) in the draft of the *2025 NAEP Mathematics Framework* which was open for public comment in the spring of 2019. The completed *Mathematics Framework for the 2025 National Assessment of Educational Progress,* which was released November 21, 2019, summarized the student mathematical practices into five NAEP Mathematical Practices and reaffirmed the importance of incorporating these approaches and behaviors in the study of mathematics at all levels.

The eight Student Mathematical Practices are listed below along with a description of behaviors and performances of mathematically proficient students.

Mathematically proficient students:

1. Make sense of problems and persevere in solving them.

These students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. These students consider analogous problems and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculators to obtain the information they need. Mathematically proficient students can explain correspondences among equations, verbal descriptions, tables, and graphs, or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solve complex problems and identify correspondences between different approaches.

2. Reason abstractly and quantitatively.
Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships. One is the ability to *decontextualize*, to abstract a given situation, represent it symbolically, and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents. The second is the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. Construct viable arguments and critique the reasoning of others.
These students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. These students justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments; distinguish correct logic or reasoning from that which is flawed; and, if there is a flaw in an argument, explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until the middle or upper grades. Later, students learn to determine domains to which an argument applies. Students in all grades can listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. Model with mathematics.
These students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, students might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, students might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts, and formulas and can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. Use appropriate tools strategically.
Mathematically proficient students consider available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and the tools' limitations. For example, mathematically proficient high school students

analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a Web site, and use these to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. Attend to precision.

These students try to communicate mathematical ideas and concepts precisely. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. Mathematically proficient students are careful about specifying units of measure and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, and express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. These students also can pause and reflect for an overview or a shift in perspective. They can observe the complexities of mathematics, such as seeing some algebraic expressions as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that mental picture to realize that the value of the expression cannot be more than 5 for any real numbers x and y.

8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As students work to solve a problem, mathematically proficient students maintain oversight of the process while attending to the details and continually evaluate the reasonableness of their intermediate results.

Connecting the Student Mathematical Practices to the Standards for Mathematical Content

The eight Student Mathematical Practices described on the previous pages indicate ways in which developing student practitioners of the discipline of mathematics increasingly must engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle, and high school years. It is important that designers of curriculum, assessment, and professional development be aware of the need to connect the mathematical practices to the mathematical content standards.

The Student Mathematical Practices are a balanced combination of procedure and understanding. Expectations that begin with the word "understand" are often especially good opportunities to connect mathematical practices to mathematical content. Students who lack understanding of a topic may rely too heavily on procedures. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, pause for an overview, or deviate from a known procedure to find a shortcut. Thus, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

In this respect, those content standards which set an expectation of understanding are potential "points of intersection" between the Student Mathematical Practices and the Standards for Mathematical Content. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus needed to qualitatively improve curriculum, instruction, assessment, professional development, and student achievement in mathematics.

DIRECTIONS FOR INTERPRETING CONTENT STANDARDS GRADES K – 8

The 2019 *Alabama Course of Study: Mathematics* for Grades K-8 is organized around the following elements: **Student Mathematical Practices**, **Alabama Content Areas, Clusters**, and **Content Standards**. These four elements are explained below.

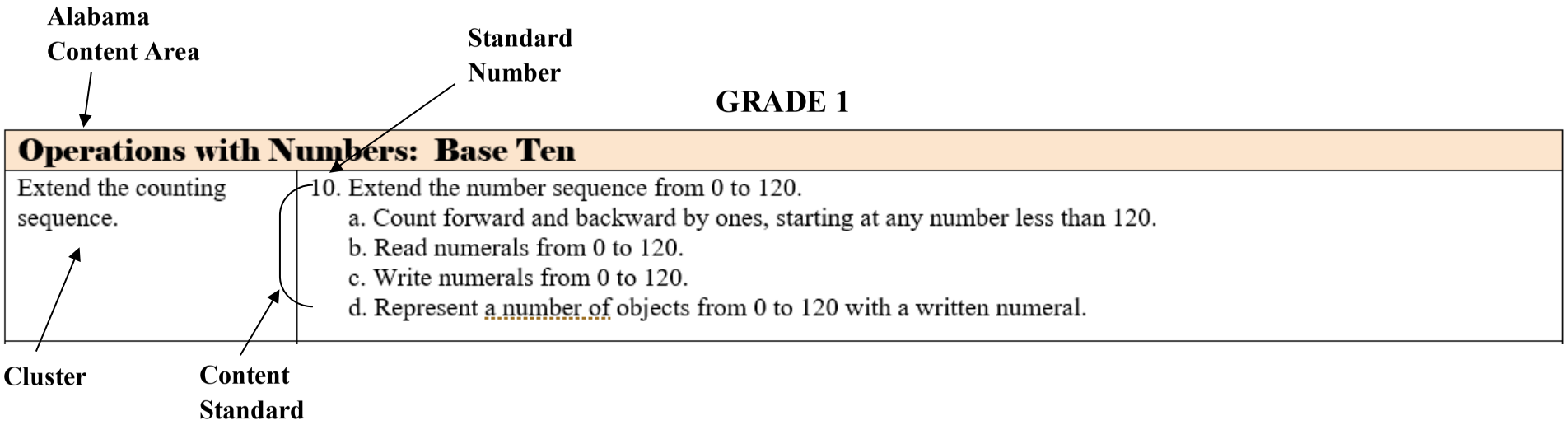
The **Student Mathematical Practices** represent what students are doing as they learn mathematics. These practices are processes and proficiencies in which students should regularly engage as they learn mathematics. Proficiency with these practices is critical in using mathematics, both within the classroom and in life. These practices are identified at the beginning of each grade band and are to be incorporated across all grades.

Alabama Content Areas are large groups of related clusters and content standards. In the example on the next page, the Alabama Content Area is "Operations with Numbers: Base Ten." Standards from different Alabama Content Areas may be closely related.

Clusters group related content standards. The cluster in the example is "Extend the counting sequence." Because mathematics is a connected subject, standards from different clusters may sometimes be closely related.

Content Standards, listed to the right of each cluster, contain the minimum required content and define what students should know and be able to do at the conclusion of a course or grade. Some have sub-standards**,** indicated with *a, b, c, d,* which are extensions of the content standards and are also required. Some standards are followed by examples, which are not required to be taught. When standards indicate that drawings may be used, the drawings need not show details but should show the mathematics in the problem. The order in which standards are listed within a course or grade is not intended to convey a sequence for instruction. Each content standard completes the stem "*Students will...*"

The course of study does not dictate curriculum, teaching methods, or sequence. Each local education authority (LEA) should create its own curriculum and pacing guide based on the Course of Study. LEAs may add standards to meet local needs and incorporate local resources. Even though one topic may be listed before another, the first topic does not have to be taught before the second. A teacher may choose to teach the second topic before the first; to teach both at the same time to highlight connections; or to select a different topic that leads to students reaching the standards for both topics.



DIRECTIONS FOR INTERPRETING THE CONTENT STANDARDS HIGH SCHOOL

Standards in the required high school courses of the 2019 *Alabama Course of Study: Mathematics* are organized in alignment with the essential concepts described by National Council of Teachers of Mathematics (2018), which embody the concepts and skills that all students need to build their mathematical foundation for the continued study of mathematics and for future mathematical needs.

The **essential concepts** are listed the left side of the table. They are divided among four **Alabama Content Areas** (Number; Algebra and Functions; Data Analysis, Statistics, and Probability; and Geometry and Measurement), which appear as headings above the list of standards for each course. Each content area (except Number) is further organized into several **focus areas (**groups of related concepts**),** similar to clusters in Grades K-8. These focus areas appear as headings above the standards.

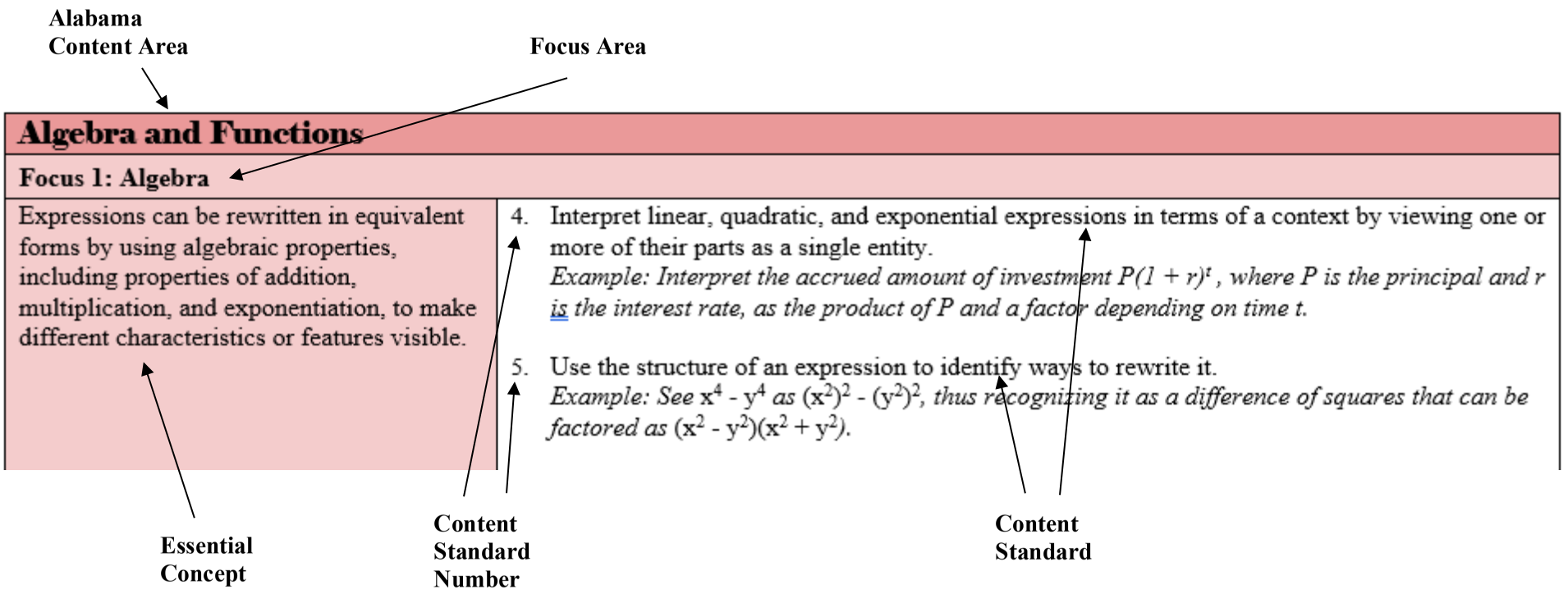
Content Standards support attainment of the essential concepts and are written beside them in the table. These numbered standards define what students should understand (know) and be able to do at the conclusion of a course or grade. Content standards contain minimum required content. Some have sub-standards**,**

indicated with *a, b, c, d,* which are extensions of the content standards and are also required. Some standards are followed by examples, which are not required to be taught.

Some related standards appear across multiple high school courses. In many cases, there is a bold print statement to indicate the scope of the standard and to align the content that is taught across the courses. The full scope of every standard should be addressed during instruction.

The order in which standards are listed within a course or grade is not intended to convey a sequence for instruction. When standards indicate that drawings may be used, the drawings need not show details but should show the mathematics in the problem. Each content standard completes the stem "*Students will...*"

The essential concepts are used to organize the required courses: *Geometry with Data Analysis, Algebra I with Probability,* and *Algebra II with Statistics.* The specialized courses taken after *Algebra II with Statistics* are organized in ways related to their specific subject matter which extend beyond the essential concepts to directly support students' professional and personal goals.

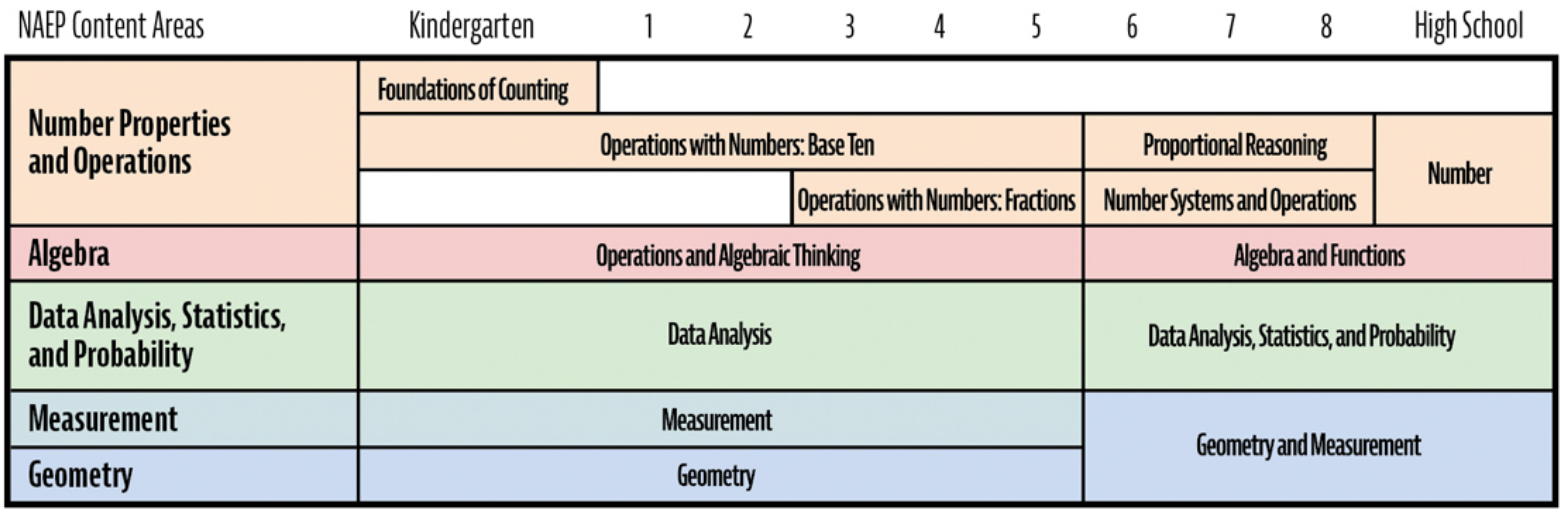


GRADES K-2 OVERVIEW

The K-2 section of the 2019 *Alabama Course of Study: Mathematics* focuses on developing the foundations of mathematics. As the diagram illustrates below, K-2 students actively explore and investigate the meaning and relationships of numbers through Foundations of Counting; Operations with Numbers: Base Ten; Operations and Algebraic Thinking; Data Analysis; Measurement; and Geometry, which are identified as Alabama Content Areas. Students grow in mathematical understanding from year to year as they use the Student Mathematical Practices and attain the content standards. The K-2 standards establish the groundwork for future mathematical success.

The Alabama Content Areas shown below illustrate a progression designed to ensure that all students are equitably prepared to develop conceptual understanding of mathematics. The NAEP (National Assessment of Educational Progress) content areas reflect an emphasis on the importance of mathematical reasoning throughout the full spectrum of mathematical content. Alabama Content Areas explicitly define the framework needed for students to develop a comprehensive understanding of underlying mathematics concepts.

Overview of Alabama Mathematics Content Areas



Kindergarten Mathematics Overview

Kindergarten content is organized into six Alabama Content Areas as outlined in the table below: Foundations of Counting; Operations and Algebraic Thinking; Operations with Numbers: Base Ten; Data Analysis; Measurement; and Geometry. Related standards are grouped into clusters, which are listed below each content area. Standards indicate what the student should know or be able to do by the end of the grade.

Alabama Content Areas	Foundations of Counting	Operations and Algebraic Thinking	Operations with Numbers: Base Ten	Data Analysis	Measurement	Geometry
Clusters	• Know number names and the count sequence. • Count to tell the number of objects. • Compare numbers.	• Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. • Understand simple patterns.	• Work with numbers 11-19 to gain foundations for place value.	• Collect and analyze data and interpret results.	• Describe and compare measurable attributes.	• Identify and describe shapes. • Analyze, compare, create, and compose shapes.

The eight Student Mathematical Practices, listed in the chart below, represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, in the classroom and in everyday life. **The Student Mathematical Practices are standards to be incorporated across all grades**.

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

Content Priorities

In kindergarten, instructional time should focus on two critical areas:

1. developing a sound sense of numbers by representing and comparing numbers, using sets of objects; and
2. recognizing and describing shapes and using spatial relations.

The majority of learning time should be focused on number sense.

1. Through their learning in the **Foundations of Counting** and **Operations and Algebraic Thinking** Alabama Content Areas, students
   - develop a formal sense of numbers including number sequence, one-to-one correspondence, cardinality, and subitizing;
   - use numbers, including written numerals, to represent quantities and to solve quantitative problems such as counting objects in a set, counting out a given number of objects, comparing sets or numerals, and modeling simple joining and separating situations with sets of objects, eventually with equations such as 5 + 2 = 7 and 7 – 2 = 5. (*Note: Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but not required.*);
   - choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away; and
   - duplicate and extend simple patterns by using concrete objects.
     (Note: Looking for, duplicating, and extending patterns are important processes in thinking algebraically.)

2. Through their learning in the **Geometry** and **Measurement** Alabama Content Areas, students
   - describe objects in their physical world using both mathematical vocabulary and geometric ideas;
   - identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., in different sizes and orientations);
   - identify three-dimensional shapes such as cubes, cones, cylinders, and spheres;
   - use basic shapes and spatial reasoning to model objects in their environment to create and compose more complex shapes; and
   - explore pennies.
     (Note: The term explore *indicates that the topic is an important concept which builds the foundation for progression toward mastery in later grades.)*

When standards indicate that drawings may be used, the drawings need not be detailed but should show the mathematics in the problem.

NOTE: Although not all content areas in the grade level have been included in the overview, all standards should be included in instruction.

Kindergarten Content Standards

Each content standard completes the stem *"Students will…"*

Foundations of Counting	
Know number names and the count sequence. *Note on number reversals: Learning to write numerals is generally more difficult than learning to read them. It is common for students to reverse numerals at this stage.*	1. Count forward orally from 0 to 100 by ones and by tens. Count backward orally from 10 to 0 by ones. 2. Count to 100 by ones beginning with any given number between 0 and 99. 3. Write numerals from 0 to 20. a. Represent 0 to 20 using concrete objects when given a written numeral from 0 to 20 (with 0 representing a count of no objects).
Count to tell the number of objects.	4. Connect counting to cardinality using a variety of concrete objects. a. Say the number names in consecutive order when counting objects. b. Indicate that the last number name said tells the number of objects counted in a set. c. Indicate that the number of objects in a set is the same regardless of their arrangement or the order in which they were counted. d. Explain that each successive number name refers to a quantity that is one larger. 5. Count to answer "how many?" questions. a. Count using no more than 20 concrete objects arranged in a line, a rectangular array, or a circle. b. Count using no more than 10 concrete objects in a scattered configuration. c. Draw the number of objects that matches a given numeral from 0 to 20.
Compare numbers.	6. Orally identify whether the number of objects in one group is *greater/more than, less/fewer than,* or *equal/the same as* the number of objects in another group, in groups containing up to 10 objects, by using matching, counting, or other strategies. 7. Compare two numbers between 0 and 10 presented as written numerals (without using inequality symbols).

Operations and Algebraic Thinking	
Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. **Note: Drawings need not be detailed but should show the mathematics in the problem.*	8. Represent addition and subtraction up to 10 with concrete objects, fingers, pennies, mental images, drawings, claps or other sounds, acting out situations, verbal explanations, expressions, or equations. 9. Solve addition and subtraction word problems, and add and subtract within 10, by using concrete objects or drawings to represent the problem. 10. Decompose numbers less than or equal to 10 into pairs of smaller numbers in more than one way, by using concrete objects or drawings, and record each decomposition by a drawing or equation. *Example: 5 = 2 + 3 and 5 = 4 + 1* 11. For any number from 0 to 10, find the number that makes 10 when added to the given number, by using concrete objects or drawings, and record the answer with a drawing or equation. 12. Fluently add and subtract within 5.
Understand simple patterns.	13. Duplicate and extend simple patterns using concrete objects.

Operations with Numbers	
Work with numbers 11-19 to gain foundations for place value.	14. Compose and decompose numbers from 11 to 19 by using concrete objects or drawings to demonstrate understanding that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Data Analysis	
Collect and analyze data and interpret results.	15. Classify objects into given categories of 10 or fewer; count the number of objects in each category and sort the categories by count. a. Categorize data on Venn diagrams, pictographs, and "yes-no" charts using real objects, symbolic representations, or pictorial representations.

Measurement	
Describe and compare measurable attributes.	16. Identify and describe measurable attributes (length, weight, height) of a single object using vocabulary such as *long/short, heavy/light,* or *tall/short*. 17. Directly compare two objects with a measurable attribute in common to see which object has "more of" or "less of" the attribute and describe the difference. *Example: Directly compare the heights of two children and describe one child as "taller" or "shorter."*

Geometry	
Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	18. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of, behind*, and *next to*. 19. Correctly name shapes regardless of their orientations or overall sizes. 20. Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").
Analyze, compare, create, and compose shapes.	21. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (number of sides and vertices or "corners"), and other attributes. *Example: having sides of equal length* 22. Model shapes in the world by building them from sticks, clay balls, or other components and by drawing them. 23. Use simple shapes to compose larger shapes. *Example: Join two triangles with full sides touching to make a rectangle.*

Grade 1 Mathematics Overview

Grade 1 content is organized into five Alabama Content Areas as outlined in the table below: Operations and Algebraic Thinking; Operations with Numbers: Base Ten; Data Analysis; Measurement; and Geometry. Related standards are grouped into clusters, which are listed below each content area. Standards indicate what the student should know or be able to do by the end of the grade.

Alabama Content Areas	Operations and Algebraic Thinking	Operations with Numbers: Base Ten	Data Analysis	Measurement	Geometry
Clusters	• Represent and solve problems involving addition and subtraction. • Understand and apply properties of operations and the relationship between addition and subtraction. • Add and subtract within 20. • Work with addition and subtraction equations. • Understand simple patterns.	• Extend the counting sequence. • Understand place value. • Use place value understanding and properties of operations to add and subtract.	• Collect and analyze data and interpret results.	• Describe and compare measurable attributes. • Work with time and money.	• Reason with shapes and their attributes.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both in the classroom and in everyday life. **The Student Mathematical Practices are standards to be incorporated across all grades**.

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

Content Priorities

In Grade 1, instructional time should focus on four critical areas:

1. developing understanding of addition, subtraction, and strategies for addition and subtraction within 20;
2. developing understanding of whole number relationships and place value, including grouping in tens and ones;
3. developing understanding of linear measurement and measuring lengths as iterating length units; and
4. reasoning about attributes of and composing and decomposing geometric shapes.

Important information regarding these four critical areas of instruction follows.

1. Through their learning in the **Operations and Algebraic Thinking** Alabama Content Area, students
   - develop strategies for adding and subtracting whole numbers based on prior work with small numbers;
   - use a variety of models, including concrete objects and length-based models such as cubes connected to form lengths, to model *add-to, take-from, put-together, take-apart,* and *compare* situations as a means of developing meaning for the operations of addition and subtraction and developing strategies to solve arithmetic problems with these operations;
   - understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two);
   - use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties, such as "making tens," to solve addition and subtraction problems within 20;
   - build their understanding of the relationship between addition and subtraction by comparing a variety of solution strategies; and
   - reproduce, extend, and create patterns and sequences of numbers using a variety of materials.
     Note: Reproducing, extending, and creating patterns are important processes in thinking algebraically.

2. Through their learning in the **Operations with Numbers: Base Ten** Alabama Content Area, students
   - develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and to subtract multiples of 10;
   - compare whole numbers, at least to 100, to develop understanding of and solve problems involving their relative sizes;
   - think of whole numbers between 10 and 99 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones); and
   - understand the order of the counting numbers and their relative magnitudes through activities that build number sense.

3. Through their learning in the **Measurement** Alabama Content Area, students
   - develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement; and
   - work with time and money.

Note: Students should apply the principle of transitivity of measurement to make indirect comparisons, although they need not use this technical term.

4. Through their learning in the **Geometry** Alabama Content Area, students
   - compose and decompose plane or solid figures, including putting two triangles together to make a quadrilateral, and build understanding of part-whole relationships as well as the properties of the original and composite shapes; and
   - combine shapes, recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and initial understandings of properties such as congruence and symmetry for use in later grades.

NOTE: Although not all content areas in the grade level have been included in the overview, all standards should be included in instruction.

Grade 1 Content Standards

Each content standard completes the stem *"Students will…"*

Operations and Algebraic Thinking	
Represent and solve problems involving addition and subtraction. *Note: Students use properties of operations and different strategies to find the sum of three whole numbers, such as counting on, making tens, decomposing numbers, doubles, and near doubles.*	1. Use addition and subtraction to solve word problems within 20 by using concrete objects, drawings, and equations with a symbol for the unknown number to represent the problem. a. Add to with change unknown to solve word problems within 20. b. Take from with change unknown to solve word problems within 20. c. Put together/take apart with addend unknown to solve word problems within 20. d. Compare quantities, with difference unknown, bigger unknown, and smaller unknown while solving word problems within 20. 2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20 by using concrete objects, drawings, or equations with a symbol for the unknown number to represent the problem.

Understand and apply properties of operations and the relationship between addition and subtraction. *Note: Students need not use formal terms for these properties.*	3. Apply properties of operations as strategies to add and subtract. *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known (commutative property of addition).* *To add 2 + 6 + 4, the second and third numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12 (associative property of addition).* *When adding 0 to a number, the result is the same number (identity property of zero for addition).* 4. Explain subtraction as an unknown-addend problem. *Example: subtracting 10 - 8 by finding the number that makes 10 when added to 8*
Add and subtract within 20. *Note: Fluency involves a mixture of "just knowing" answers, knowing answers from patterns, and knowing answers from the use of strategies. The word* fluently *is used in the standards to mean accurately, efficiently, and flexibly.*	5. Relate counting to addition and subtraction. *Example: counting on 2 to add 2* 6. Add and subtract within 20. a. Demonstrate fluency with addition and subtraction facts with sums or differences to 10 by counting on. b. Demonstrate fluency with addition and subtraction facts with sums or differences to 10 by making ten. c. Demonstrate fluency with addition and subtraction facts with sums or differences to 10 by decomposing a number leading to a ten. *Example: 13 - 4 = 13 - 3 - 1 = 10 - 1 = 9* d. Demonstrate fluency with addition and subtraction facts with sums or differences to 10 by using the relationship between addition and subtraction. *Example: Knowing that 8 + 4 = 12, one knows 12 - 8 = 4.* e. Demonstrate fluency with addition and subtraction facts with sums or differences to 10 by creating equivalent but easier or known sums. *Example: adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13*
Work with addition and subtraction equations.	7. Explain that the equal sign means "the same as." Determine whether equations involving addition and subtraction are true or false. *Example: determining which of the following equations are true and which are false: 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2* 8. Solve for the unknown whole number in various positions in an addition or subtraction equation, relating three whole numbers that would make it true. *Example: determining the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ? – 3, and 6 + 6 = ?*

Understand simple patterns.	9. Reproduce, extend, and create patterns and sequences of numbers using a variety of materials.

Operations with Numbers: Base Ten	
Extend the counting sequence.	10. Extend the number sequence from 0 to 120. a. Count forward and backward by ones, starting at any number less than 120. b. Read numerals from 0 to 120. c. Write numerals from 0 to 120. d. Represent a number of objects from 0 to 120 with a written numeral.
Understand place value.	11. Explain that the two digits of a two-digit number represent amounts of tens and ones. a. Identify a bundle of ten ones as a "ten." b. Identify the numbers from 11 to 19 as composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. Identify the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 as one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). 12. Compare pairs of two-digit numbers based on the values of the tens and ones digits, recording the results of comparisons with the symbols >, =, and < and orally with the words "is greater than," "is equal to," and "is less than."
Use place value understanding and properties of operations to add and subtract.	13. Add within 100, using concrete models or drawings and strategies based on place value. a. Add a two-digit number and a one-digit number. b. Add a two-digit number and a multiple of 10. c. Demonstrate that in adding two-digit numbers, tens are added to tens, ones are added to ones, and sometimes it is necessary to compose a ten. d. Relate the strategy for adding a two-digit number and a one-digit number to a written method and explain the reasoning used. 14. Given a two-digit number, mentally find 10 more or 10 less than the number without having to count, and explain the reasoning used. 15. Subtract multiples of 10 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. Relate the strategy to a written method and explain the reasoning used.

Data Analysis	
Collect and analyze data and interpret results.	16. Organize, represent, and interpret data with up to three categories. a. Ask and answer questions about the total number of data points in organized data. b. Summarize data on Venn diagrams, pictographs, and "yes-no" charts using real objects, symbolic representations, or pictorial representations. c. Determine “how many” in each category using up to three categories of data. d. Determine “how many more” or “how many less” are in one category than in another using data organized into two or three categories.

Measurement	
Describe and compare measurable attributes.	17. Order three objects by length; compare the lengths of two objects indirectly by using a third object. 18. Determine the length of an object using non-standard units with no gaps or overlaps, expressing the length of the object with a whole number.
Work with time and money.	19. Tell and write time to the hours and half hours using analog and digital clocks. 20. Identify pennies and dimes by name and value.

Geometry	
Reason with shapes and their attributes. *Note: Students do not need to learn formal names such as “right rectangular prism.”*	21. Build and draw shapes which have defining attributes. a. Distinguish between defining attributes and non-defining attributes. *Examples: Triangles are closed and three- sided, which are defining attributes; color, orientation, and overall size are non-defining attributes.* 22. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.

	23. Partition circles and rectangles into two and four equal shares and describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of, fourth of*, and *quarter of*. a. Describe "the whole" as two of or four of the shares of circles and rectangles partitioned into two or four equal shares. b. Explain that decomposing into more equal shares creates smaller shares of circles and rectangles.

Grade 2 Mathematics Overview

Grade 2 content is organized into five Alabama Content Areas as outlined in the table below: Operations and Algebraic Thinking; Operations with Numbers: Base Ten; Data Analysis; Measurement; and Geometry. Related standards are grouped into clusters, which are listed below each content area. Standards indicate what the student should know or be able to do by the end of the grade.

Alabama Content Areas	Operations and Algebraic Thinking	Operations with Numbers: Base Ten	Data Analysis	Measurement	Geometry
Clusters	• Represent and solve problems involving addition and subtraction. • Add and subtract within 20. • Work with equal groups of objects to gain foundations for multiplication. • Understand simple patterns.	• Understand place value. • Use place value understanding and properties of operations to add and subtract.	• Collect and analyze data and interpret results.	• Measure and estimate lengths in standard units. • Relate addition and subtraction to length. • Work with time and money.	• Reason with shapes and their attributes.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics in the classroom and in everyday life. **The Student Mathematical Practices are standards which should be incorporated across all grades**.

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

Content Priorities

In Grade 2, instructional time should focus on four critical areas:

1. building fluency with addition and subtraction;
2. extending understanding of base-ten notation;
3. using standard units of measure; and
4. describing and analyzing shapes.

Important information regarding these four critical areas of instruction follows.

1. Through their learning in the **Operations and Algebraic Thinking** Alabama Content Area, students
   - use their understanding of addition to develop fluency with addition and subtraction within 100, including ability to state automatically the sums of all one-digit numbers by the end of the grade;
   - solve problems within 1000 by applying their understanding of models for addition and subtraction, and develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations;
   - select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds; and
   - reproduce, extend, create, and describe patterns and sequences using a variety of materials.
     Note: Reproducing, extending, creating, and describing patterns are important processes in thinking algebraically.

2. Through their learning in the **Operations with Numbers: Base Ten** Alabama Content Area, students
   - extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing; and
   - understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

3. Through their learning in the **Measurement** Alabama Content Area, students
   - recognize the need for standard units of measure, including centimeter and inch, and use rulers and other measurement tools with the understanding that linear measure involves an iteration of units; and
   - recognize that the smaller the unit, the more iterations are needed to cover a given length.

4. Through their learning in the **Geometry** Alabama Content Area, students
   - describe and analyze shapes by examining their sides and angles;
   - investigate, describe, and reason about decomposing and combining shapes to make other shapes; and
   - draw, partition, and analyze two- and three-dimensional shapes to develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

When standards indicate that drawings may be used, the drawings need not be detailed but should show the mathematics in the problem.

NOTE: Although not all content areas in the grade level have been included in the overview, all standards should be included in instruction.

***Note: fluency vs. automaticity.** Fluency involves a mixture of "just knowing" answers, knowing answers from patterns, and knowing answers from the use of strategies. The word *fluently* is used in the standards to mean accurately, efficiently and flexibly. Automaticity of facts becomes evident when a student no longer uses a pattern or mental algorithm to determine the answer.

Grade 2 Content Standards

Each content standard completes the stem *"Students will…"*

Operations and Algebraic Thinking	
Represent and solve problems involving addition and subtraction. *Note: Second grade problem types include adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions.*	1. Use addition and subtraction within 100 to solve one- and two-step word problems by using drawings and equations with a symbol for the unknown number to represent the problem.
Add and subtract within 20. *See note regarding fluency vs. automaticity in the Overview.*	2. Fluently add and subtract within 20 using mental strategies such as counting on, making ten, decomposing a number leading to ten, using the relationship between addition and subtraction, and creating equivalent but easier or known sums. a. State automatically all sums of two one-digit numbers.
Work with equal groups of objects to gain foundations for multiplication.	3. Use concrete objects to determine whether a group of up to 20 objects is even or odd. a. Write an equation to express an even number as a sum of two equal addends. 4. Using concrete and pictorial representations and repeated addition, determine the total number of objects in a rectangular array with up to 5 rows and up to 5 columns. a. Write an equation to express the total number of objects in a rectangular array with up to 5 rows and up to 5 columns as a sum of equal addends.
Understand simple patterns.	5. Reproduce, extend, create, and describe patterns and sequences using a variety of materials.

Operations with Numbers: Base Ten	
Understand place value.	6. Explain that the three digits of a three-digit number represent amounts of hundreds, tens, and ones. a. Explain the following three-digit numbers as special cases: 100 can be thought of as a bundle of ten tens, called a "hundred," and the numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). 7. Count within 1000 by ones, fives, tens, and hundreds. 8. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. 9. Compare two three-digit numbers based on the value of the hundreds, tens, and ones digits, recording the results of comparisons with the symbols >, =, and < and orally with the words "is greater than," "is equal to," and "is less than."
Use place value understanding and properties of operations to add and subtract.	10. Fluently add and subtract within 100, using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. 11. Use a variety of strategies to add up to four two-digit numbers. 12. Add and subtract within 1000 using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. a. Explain that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. 13. Mentally add and subtract 10 or 100 to a given number between 100 and 900. 14. Explain why addition and subtraction strategies work, using place value and the properties of operations. ***Note:*** *Explanations may be supported by drawings or objects.*

Data Analysis	
Collect and analyze data and interpret results.	15. Measure lengths of several objects to the nearest whole unit. a. Create a line plot where the horizontal scale is marked off in whole-number units to show the lengths of several measured objects. 16. Create a picture graph and bar graph to represent data with up to four categories. a. Using information presented in a bar graph, solve simple "put-together," "take-apart," and "compare" problems. b. Using Venn diagrams, pictographs, and "yes-no" charts, analyze data to predict an outcome.

Measurement	
Measure and estimate lengths in standard units.	17. Measure the length of an object by selecting and using standard units of measurement shown on rulers, yardsticks, meter sticks, or measuring tapes. 18. Measure objects with two different units, and describe how the two measurements relate to each other and the size of the unit chosen. 19. Estimate lengths using the following standard units of measurement: inches, feet, centimeters, and meters. 20. Measure to determine how much longer one object is than another, expressing the length difference of the two objects using standard units of length.
Relate addition and subtraction to length.	21. Use addition and subtraction within 100 to solve word problems involving same units of length, representing the problem with drawings (such as drawings of rulers) and/or equations with a symbol for the unknown number. 22. Create a number line diagram using whole numbers and use it to represent whole-number sums and differences within 100.
Work with time and money.	23. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. a. Express an understanding of common terms such as, but not limited to, *quarter past, half past*, and *quarter to.*

	24. Solve problems with money. a. Identify nickels and quarters by name and value. b. Find the value of a collection of quarters, dimes, nickels, and pennies. c. Solve word problems by adding and subtracting within one dollar, using the $ and ¢ symbols appropriately (not including decimal notation). *Example: 24¢ + 26¢ = 50¢*

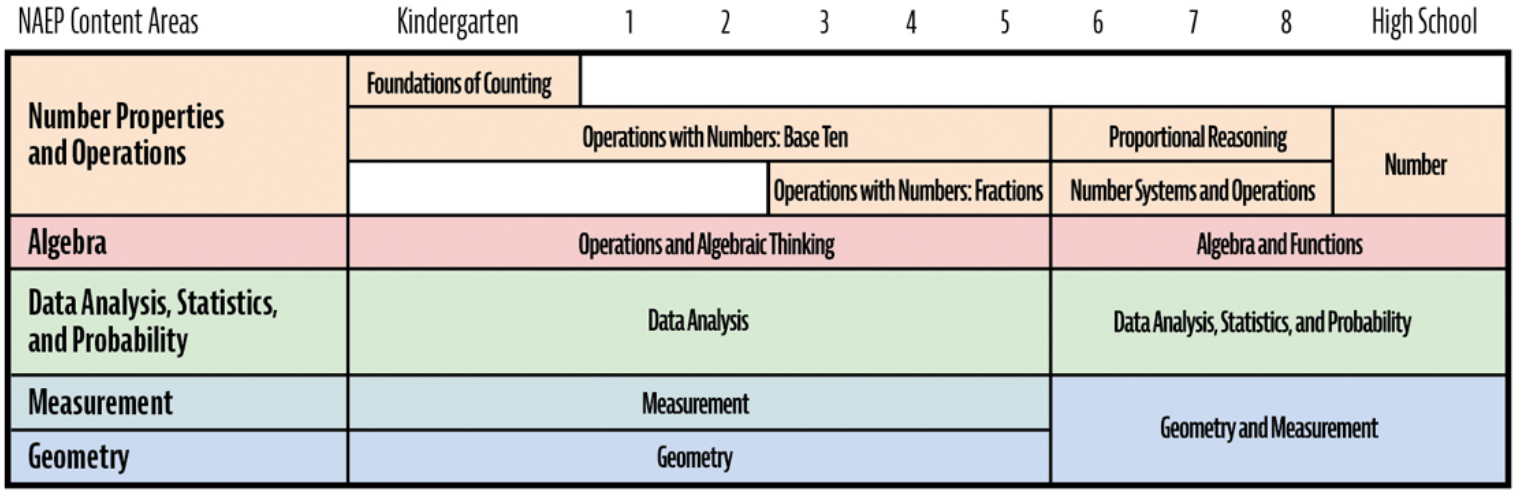
Geometry	
Reason with shapes and their attributes.	25. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. a. Recognize and draw shapes having specified attributes. *Examples: a given number of angles or a given number of equal faces* 26. Partition a rectangle into rows and columns of same-size squares, and count to find the total number of squares. 27. Partition circles and rectangles into two, three, or four equal shares. Describe the shares using such terms as *halves*, *thirds*, *half of*, or *a third of*, and describe the whole as *two halves, three thirds*, or *four fourths*. a. Explain that equal shares of identical wholes need not have the same shape.

GRADES 3-5 OVERVIEW

The Grades 3-5 course of study focuses on strengthening the foundations of mathematics, empowering students for middle school mathematics, and developing their understanding of mathematics in relation to everyday life. To ensure that all students receive the preparation they deserve, instruction will focus on building conceptual understanding of the mathematics needed for a lifetime. Students in Grades 3-5 will extend their learning through content areas of Operations with Numbers: Base Ten; Operations with Numbers: Fractions; Operations and Algebraic Thinking; Data Analysis; Measurement; and Geometry. In order to achieve the necessary focus on Grades 3-5 content, Student Mathematical Practices are integrated with instruction to foster habits of mind as students engage in critical areas for each grade level.

The Alabama Content Areas shown below illustrate a progression designed to ensure that all students are equitably prepared to develop conceptual understanding of mathematics. The NAEP (National Assessment of Educational Progress) content areas reflect an emphasis on the importance of mathematical reasoning throughout the full spectrum of mathematical content. Alabama Content Areas explicitly define the framework needed for students to develop a comprehensive understanding of underlying mathematics concepts.

Overview of Alabama Mathematics Content Areas



Grade 3 Overview

Grade 3 content is organized into six Alabama Content Areas of study as outlined in the table below: Operations and Algebraic Thinking; Operations with Numbers: Base Ten; Operations with Numbers: Fractions; Data Analysis; Measurement; and Geometry. Related standards are grouped into clusters, which are listed below each content area. Standards indicate what the student should know or be able to do by the end of the grade.

Alabama Content Areas	Operations and Algebraic Thinking	Operations with Numbers: Base Ten	Operations with Numbers: Fractions	Data Analysis	Measurement	Geometry
Clusters	• Represent and solve problems involving multiplication and division. • Understand properties of multiplication and the relationship between multiplication and division. • Multiply and divide within 100. • Solve problems involving the four operations, and identify and explain patterns in arithmetic.	• Use place value understanding and properties of operations to perform multi-digit arithmetic.	• Develop understanding of fractions as numbers.	• Represent and interpret data.	• Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. • Geometric measurement: understand concepts of area and relate area to multiplication and addition. • Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	• Reason with shapes and their attributes

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both in the classroom and in everyday life. **The Student Mathematical Practices should be regarded as standards to be incorporated across all grades.**

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

Content Priorities

In Grade 3, instructional time should focus on four critical areas:

1. developing understanding of multiplication and division and strategies for multiplication and division within 100;
2. developing understanding of fractions, especially unit fractions (fractions with numerator 1);
3. developing understanding of the structure of rectangular arrays and of area; and
4. describing and analyzing two-dimensional shapes.

1. Through their learning in the **Operations and Algebraic Thinking** Alabama Content Area, students
   - develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size;
   - use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors; and
   - compare a variety of solution strategies, to learn the relationship between multiplication and division.

2. Through their learning in the **Operations with Numbers: Fractions** Alabama Content Area, students
   - develop an understanding of fractions, beginning with unit fractions;
   - view fractions in general as being composed of unit fractions, and use fractions along with visual fraction models such as area models, fraction strips, and number lines to represent parts of a whole;
   - understand that the size of a fractional part is relative to the size of the whole, and use fractions to represent numbers equal to, less than, and greater than one; and
   - solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

3. Through their learning in the **Measurement** Alabama Content Area, students
   - recognize area as an attribute of two-dimensional regions;
   - measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area; and
   - understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication and justify using multiplication to determine the area of a rectangle.

4. Through their learning in the **Geometry** Alabama Content Area, students
   - extend knowledge of polygons to describe, analyze, and compare properties of two-dimensional shapes; and
   - recognize shapes that are/are not quadrilaterals by using informal language to classify shapes by sides and angles, and connect these with the names of the shapes.

NOTE: Although not all content areas in the grade level have been included in the overview, all standards should be included in instruction.

***Note: fluency vs. automaticity.** Fluency involves a mixture of "just knowing" answers, knowing answers from patterns, and knowing answers from the use of strategies. The word *fluently* is used in the standards to mean accurately, efficiently and flexibly. Automaticity of facts becomes evident when a student no longer uses a pattern or mental algorithm to determine the answer.

Grade 3 Content Standards

Each content standard completes the stem *"Students will…"*

Operations and Algebraic Thinking	
Represent and solve problems involving multiplication and division.	1. Illustrate the product of two whole numbers as equal groups by identifying the number of groups and the number in each group and represent as a written expression. 2. Illustrate and interpret the quotient of two whole numbers as the number of objects in each group or the number of groups when the whole is partitioned into equal shares. 3. Solve word situations using multiplication and division within 100 involving equal groups, arrays, and measurement quantities; represent the situation using models, drawings, and equations with a symbol for the unknown number. 4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

Understand properties of multiplication and the relationship between multiplication and division. *Note: Students need not use formal terms for these properties.*	5. Develop and apply properties of operations as strategies to multiply and divide. 6. Use the relationship between multiplication and division to represent division as an equation with an unknown factor.
Multiply and divide within 100.	7. Use strategies based on properties and patterns of multiplication to demonstrate fluency with multiplication and division within 100. a. Fluently determine all products obtained by multiplying two one-digit numbers. b. State automatically all products of two one-digit numbers by the end of third grade.
Solve problems involving the four operations and identify and explain patterns in arithmetic.	8. Determine and justify solutions for two-step word problems using the four operations and write an equation with a letter standing for the unknown quantity. Determine reasonableness of answers using number sense, context, mental computation, and estimation strategies including rounding. 9. Recognize and explain arithmetic patterns using properties of operations.

Operations with Numbers: Base Ten	
Use place value understanding and properties of operations to perform multi-digit arithmetic.	10. Identify the nearest 10 or 100 when rounding whole numbers, using place value understanding. 11. Use various strategies to add and subtract fluently within 1000. 12. Use concrete materials and pictorial models based on place value and properties of operations to find the product of a one-digit whole number by a multiple of ten (from 10 to 90).

Operations with Numbers: Fractions	
Develop understanding of fractions as numbers. *Denominators are limited to 2, 3, 4, 6, and 8.*	13. Demonstrate that a unit fraction represents one part of an area model or length model of a whole that has been equally partitioned; explain that a numerator greater than one indicates the number of unit pieces represented by the fraction. 14. Interpret a fraction as a number on the number line; locate or represent fractions on a number line diagram. a. Represent a unit fraction ($\frac{1}{b}$) on a number line by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts as specified by the denominator. b. Represent a fraction ($\frac{a}{b}$) on a number line by marking off *a* lengths of size ($\frac{1}{b}$) from zero. 15. Explain equivalence and compare fractions by reasoning about their size using visual fraction models and number lines. a. Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. b. Compare two fractions with the same numerator or with the same denominator by reasoning about their size (recognizing that fractions must refer to the same whole for the comparison to be valid). Record comparisons using < , >, or = and justify conclusions.

Data Analysis	
Represent and interpret data.	16. For a given or collected set of data, create a scaled (one-to-many) picture graph and scaled bar graph to represent a data set with several categories. a. Determine a simple probability from a context that includes a picture. b. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled graphs. 17. Measure lengths using rulers marked with halves and fourths of an inch to generate data and create a line plot marked off in appropriate units to display the data.

Measurement	
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	18. Tell and write time to the nearest minute; measure time intervals in minutes (within 90 minutes.) a. Solve real-world problems involving addition and subtraction of time intervals in minutes by representing the problem on a number line diagram. 19. Estimate and measure liquid volumes and masses of objects using liters (l), grams (g), and kilograms (kg). a. Use the four operations to solve one-step word problems involving masses or volumes given in the same metric units.
Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	20. Find the area of a rectangle with whole number side lengths by tiling without gaps or overlays and counting unit squares. 21. Count unit squares (square cm, square m, square in, square ft, and improvised or non-standard units) to determine area. 22. Relate area to the operations of multiplication using real-world problems, concrete materials, mathematical reasoning, and the distributive property. 23. Decompose rectilinear figures into smaller rectangles to find the area, using concrete materials.
Geometric measurement: Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	24. Construct rectangles with the same perimeter and different areas or the same area and different perimeters. 25. Solve real-world problems involving perimeters of polygons, including finding the perimeter given the side lengths and finding an unknown side length of rectangles.

Geometry	
Reason with shapes and their attributes.	26. Recognize and describe polygons (up to 8 sides), triangles, and quadrilaterals (rhombuses, rectangles, and squares) based on the number of sides and the presence or absence of square corners. a. Draw examples of quadrilaterals that are and are not rhombuses, rectangles, and squares.

Grade 4 Overview

Grade 4 content is organized into six Alabama Content Areas outlined in the table below: Operations and Algebraic Thinking; Operations with Numbers: Base Ten; Operations with Numbers: Fractions; Data Analysis; Measurement; and Geometry. Related standards are grouped into clusters, which are listed below each content area. Standards indicate what the student should know or be able to do by the end of the grade.

Alabama Content Areas	Operations and Algebraic Thinking	Operations with Numbers: Base Ten	Operations with Numbers: Fractions	Data Analysis	Measurement	Geometry
Clusters	• Gain familiarity with factors and multiples. • Solve problems with whole numbers using the four operations. • Generate and analyze patterns.	• Generalize place value understanding for multi-digit whole numbers. • Use place value understanding and properties of operations to perform multi-digit arithmetic with whole numbers.	• Extend understanding of fraction equivalence and ordering. • Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. • Understand decimal notation for fractions, and compare decimal fractions.	• Represent and interpret data.	• Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. • Geometric measurement: understand concepts of angles and measure angles.	• Draw and identify lines and angles, and identify shapes by properties of their lines and angles.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both within the classroom and in life. **The Student Mathematical Practices are as standards which should be incorporated across all grades.**

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

Content Priorities

In Grade 4, instructional time should focus on three areas:

1. developing understanding and fluency with multi-digit multiplication, and understanding of division to find quotients involving multi-digit dividends;
2. developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; and
3. understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, or symmetry.

1. Through their learning in the **Operations with Numbers: Base Ten** Alabama Content Area, students
   - generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place;
   - apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operation, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers;
   - select and accurately apply appropriate methods to estimate or mentally calculate products, depending on the numbers and the context;
   - develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems;
   - apply their understanding of models for division, place value, properties of operations, and the relationship between division and multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends; and
   - select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

2. Through their learning in the **Operations with Numbers: Fractions** Alabama Content Area, students
   - develop understanding of fraction equivalence and operations with fractions;
   - recognize that two different fractions can be equal (e.g., 15/9 = 5/3), and develop methods for generating and recognizing equivalent fractions; and
   - extend previous understandings about how fractions are built from unit fractions to compose fractions from unit fractions, decompose fractions into unit fractions, and use the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

3. Through their learning in the **Geometry** Alabama Content Area, students
   - describe, analyze, compare, and identify two-dimensional shapes using formal language based on the definition of the shapes;
   - deepen their understanding of properties of two-dimensional shapes (e.g., angles, parallelism, or symmetry); and
   - use properties of two-dimensional objects to solve problems involving symmetry.

NOTE: Although not all content areas in the grade level have been included in the overview, all standards should be included in instruction.

***NOTE: fluency vs. automaticity.** Fluency involves a mixture of "just knowing" answers, knowing answers from patterns, and knowing answers from the use of strategies. The word *fluently* is used in the standards to mean accurately, efficiently and flexibly. Automaticity of facts becomes evident when a student no longer uses a pattern or mental algorithm to determine the answer.

Grade 4 Content Standards

Each content standard completes the stem *"Students will…"*

Operations and Algebraic Thinking	
Solve problems with whole numbers using the four operations.	1. Interpret and write equations for multiplicative comparisons. 2. Solve word problems involving multiplicative comparison using drawings and write equations to represent the problem, using a symbol for the unknown number. 3. Determine and justify solutions for multi-step word problems, including problems where remainders must be interpreted. a. Write equations to show solutions for multi-step word problems with a letter standing for the unknown quantity. b. Determine reasonableness of answers for multi-step word problems, using mental computation and estimation strategies including rounding.
Gain familiarity with factors and multiples.	4. For whole numbers in the range 1 to 100, find all factor pairs, identifying a number as a multiple of each of its factors. a. Determine whether a whole number in the range 1 to 100 is a multiple of a given one-digit number. b. Determine whether a whole number in the range 1 to 100 is prime or composite.

Generate and analyze patterns.	5. Generate and analyze a number or shape pattern that follows a given rule.

Operations with Numbers: Base Ten	
Generalize place value understanding for multi-digit whole numbers.	6. Using models and quantitative reasoning, explain that in a multi-digit whole number, a digit in any place represents ten times what it represents in the place to its right. 7. Read and write multi-digit whole numbers using standard form, word form, and expanded form. 8. Use place value understanding to compare two multi-digit numbers using >, =, and < symbols. 9. Round multi-digit whole numbers to any place using place value understanding.
Use place value understanding and properties of operations to perform multi-digit arithmetic with whole numbers.	10. Use place value strategies to fluently add and subtract multi-digit whole numbers and connect strategies to the standard algorithm. 11. Find the product of two factors (up to four digits by a one-digit number and two two-digit numbers), using strategies based on place value and the properties of operations. a. Illustrate and explain the product of two factors using equations, rectangular arrays, and area models. 12. Use strategies based on place value, properties of operations, and/or the relationship between multiplication and division to find whole-number quotients and remainders with one-digit divisors and up to four-digit dividends. a. Illustrate and/or explain quotients using equations, rectangular arrays, and/or area models.

Operations with Numbers: Fractions	
Extend understanding of fraction equivalence and ordering. *Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100.*	13. Using area and length fraction models, explain why one fraction is equivalent to another, taking into account that the number and size of the parts differ even though the two fractions themselves are the same size. a. Apply principles of fraction equivalence to recognize and generate equivalent fractions. *Example:* $\frac{a}{b}$ *is equivalent to* $\frac{n \times a}{n \times b}$.

	14. Compare two fractions with different numerators and different denominators using concrete models, benchmarks (0, ½, 1), common denominators, and/or common numerators, recording the comparisons with symbols >, =, or <, and justifying the conclusions. a. Explain that comparison of two fractions is valid only when the two fractions refer to the same whole.
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	15. Model and justify decompositions of fractions and explain addition and subtraction of fractions as joining or separating parts referring to the same whole. a. Decompose a fraction as a sum of unit fractions and as a sum of fractions with the same denominator in more than one way using area models, length models, and equations. b. Add and subtract fractions and mixed numbers with like denominators using fraction equivalence, properties of operations, and the relationship between addition and subtraction. c. Solve word problems involving addition and subtraction of fractions and mixed numbers having like denominators, using drawings, visual fraction models, and equations to represent the problem. 16. Apply and extend previous understandings of multiplication to multiply a whole number times a fraction. a. Model and explain how a non-unit fraction can be represented by a whole number times the unit fraction. *Example:* $\frac{9}{8} = 9 \times \frac{1}{8}$ b. Extend previous understanding of multiplication to multiply a whole number times any fraction less than one. *Example:* $4 \times \frac{2}{3} = \frac{4 \times 2}{3} = \frac{8}{3}$ c. Solve word problems involving multiplying a whole number times a fraction using visual fraction models and equations to represent the problem. *Examples:* $3 \times \frac{1}{2}$, $6 \times \frac{1}{8}$
Understand decimal notation for fractions, and compare decimal fractions. *Denominators are limited to 10 and 100.*	17. Express, model, and explain the equivalence between fractions with denominators of 10 and 100. a. Use fraction equivalency to add two fractions with denominators of 10 and 100. 18. Use models and decimal notation to represent fractions with denominators of 10 and 100. 19. Use visual models and reasoning to compare two decimals to hundredths (referring to the same whole), recording comparisons using symbols >, =, or <, and justifying the conclusions.

Data Analysis	
Represent and interpret data.	20. Interpret data in graphs (picture, bar, and line plots) to solve problems using numbers and operations. a. Create a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$). b. Solve problems involving addition and subtraction of fractions using information presented in line plots.

Measurement	
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	21. Select and use an appropriate unit of measurement for a given attribute (length, mass, liquid volume, time) within one system of units: metric - km, m, cm; kg, g, l, ml; customary - lb, oz; time - hr, min, sec. a. Within one system of units, express measurements of a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. 22. Use the four operations to solve measurement word problems with distance, intervals of time, liquid volume, mass of objects, and money. a. Solve measurement problems involving simple fractions or decimals. b. Solve measurement problems that require expressing measurements given in a larger unit in terms of a smaller unit. c. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. 23. Apply area and perimeter formulas for rectangles in real-world and mathematical situations.
Geometric measurement: understand concepts of angle and measure angles.	24. Identify an angle as a geometric shape formed wherever two rays share a common endpoint. 25. Use a protractor to measure angles in whole-number degrees and sketch angles of specified measure. 26. Decompose an angle into non-overlapping parts to demonstrate that the angle measure of the whole is the sum of the angle measures of the parts. a. Solve addition and subtraction problems on a diagram to find unknown angles in real-world or mathematical problems.

Geometry	
Draw and identify lines and angles, and identify shapes by properties of their lines and angles.	27. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines, and identify these in two-dimensional figures. 28. Identify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. a. Describe right triangles as a category, and identify right triangles. 29. Define a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. a. Identify line-symmetric figures and draw lines of symmetry.

Grade 5 Mathematics Overview

Grade 5 content is organized into six Alabama Content Areas as outlined in the table below: Operations and Algebraic Thinking; Operations with Numbers: Base Ten; Operations with Numbers: Fractions; Data Analysis; Measurement; and Geometry. Related standards are grouped into clusters, which are listed below each content area. Standards indicate what the student should know or be able to do by the end of the grade.

Alabama Content Areas	Operations and Algebraic Thinking	Operations with Numbers: Base Ten	Operations with Numbers: Fractions	Data Analysis	Measurement	Geometry
Clusters	• Write and interpret numerical expressions. • Analyze patterns and relationships.	• Understand the place value system. • Perform operations with multi-digit whole numbers and decimals to hundredths.	• Use equivalent fractions as a strategy to add and subtract fractions. • Apply and extend previous under-standings of multiplication and division to multiply and divide fractions.	• Represent and interpret data.	• Convert like measurement units within a given measurement system. • Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	• Graph points on the coordinate plane to solve real-world and mathematical problems. • Classify two-dimensional figures into categories based on their properties.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both in the classroom and in everyday life. **The Student Mathematical Practices are standards which should be incorporated across all grades.**

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

Content Priorities

In Grade 5, instructional time should focus on three critical areas:

1. developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions);
2. extending division to 2-digit divisors, integrating decimals into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and
3. developing understanding of volume.

1. Through their learning in the **Operations with Numbers: Fractions** Alabama Content Area, students
   - apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators;
   - develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them; and
   - use the meaning of fractions, multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense.

2. Through their learning in the **Operations with Numbers: Base Ten** Alabama Content Area, students
   - develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations;
   - apply understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths;
   - develop fluency with decimal computations and make reasonable estimates of their results;
   - use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense; and
   - compute products and quotients of decimals to hundredths efficiently and accurately.

3. Through their learning in the **Measurement** Alabama Content Area, students
   - recognize volume as an attribute of three-dimensional space;
   - understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps;
   - understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume;
   - select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume;
   - decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes; and
   - measure necessary attributes of shapes in order to determine volumes to solve real-world and mathematical problems.

NOTE: Although not all content areas in the grade level have been included in the overview, all standards should be included in instruction.

NOTE: fluency vs. automaticity. Fluency involves a mixture of "just knowing" answers, knowing answers from patterns, and knowing answers from the use of strategies. The word *fluently* is used in the standards to mean accurately, efficiently and flexibly. Automaticity of facts becomes evident when a student no longer uses a pattern or mental algorithm to determine the answer.

Grade 5 Content Standards

Each content standard completes the sentence stem *"Students will…"*

Operations and Algebraic Thinking	
Write and interpret numerical expressions.	1. Write, explain, and evaluate simple numerical expressions involving the four operations to solve up to two-step problems. Include expressions involving parentheses, brackets, or braces, using commutative, associative, and distributive properties.
Analyze patterns and relationships.	2. Generate two numerical patterns using two given rules and complete an input/output table for the data. a. Use data from an input/output table to identify apparent relationships between corresponding terms. b. Form ordered pairs from values in an input/output table. c. Graph ordered pairs from an input/output table on a coordinate plane.

Operations with Numbers: Base Ten	
Understand the place value system.	3. Using models and quantitative reasoning, explain that in a multi-digit number, including decimals, a digit in any place represents ten times what it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left. a. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, using whole-number exponents to denote powers of 10. b. Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10, using whole-number exponents to denote powers of 10.

	4. Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form. *Example*: $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (\frac{1}{10}) + 9 \times (\frac{1}{100}) + 2 \times (\frac{1}{1000})$. b. Compare two decimals to thousandths based on the meaning of the digits in each place, using >, =, and < to record the results of comparisons. 5. Use place value understanding to round decimals to thousandths.
Perform operations with multi-digit whole numbers and decimals to hundredths.	6. Fluently multiply multi-digit whole numbers using the standard algorithm. 7. Use strategies based on place value, properties of operations, and/or the relationship between multiplication and division to find whole-number quotients and remainders with up to four-digit dividends and two-digit divisors. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. 8. Add, subtract, multiply, and divide decimals to hundredths using strategies based on place value, properties of operations, and/or the relationships between addition/subtraction and multiplication/division; relate the strategy to a written method, and explain the reasoning used. a. Use concrete models and drawings to solve problems with decimals to hundredths. b. Solve problems in a real-world context with decimals to hundredths.

Operations with Numbers: Fractions	
Use equivalent fractions as a strategy to add and subtract fractions.	9. Model and solve real-word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally, and assess the reasonableness of answers. *Example: Recognize an incorrect result* $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$ *by observing that* $\frac{3}{7} < \frac{1}{2}$. 10. Add and subtract fractions and mixed numbers with unlike denominators, using fraction equivalence to calculate a sum or difference of fractions or mixed numbers with like denominators.

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	11. Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. a. Model and interpret a fraction as division of the numerator by the denominator ($\frac{a}{b} = a \div b$) b. Use visual fraction models, drawings, or equations to represent word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers 12. Apply and extend previous understandings of multiplication to find the product of a fraction times a whole number or a fraction times a fraction. a. Use a visual fraction model (area model, set model, or linear model) to show $(\frac{a}{b}) \times q$ and create a story context for this equation to interpret the product as a parts of a partition of q into b equal parts. b. Use a visual fraction model (area model, set model, or linear model) to show $(\frac{a}{b}) \times (\frac{c}{d})$ and create a story context for this equation to interpret the product. c. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. d. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths to show that the area is the same as would be found by multiplying the side lengths. 13. Interpret multiplication as scaling (resizing). a. Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. *Example: Use reasoning to determine which expression is greater? 225 or* $\frac{3}{4} \times 225$; $\frac{11}{50}$ *or* $\frac{3}{2} \times \frac{11}{50}$ b. Explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number and relate the principle of fraction equivalence. c. Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number and relate the principle of fraction equivalence. 14. Model and solve real-world problems involving multiplication of fractions and mixed numbers using visual fraction models, drawings, or equations to represent the problem.

	15. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a. Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions and illustrate using visual fraction models, drawings, and equations to represent the problem. b. Create a story context for a unit fraction divided by a whole number, and use a visual fraction model to show the quotient. c. Create a story context for a whole number divided by a unit fraction, and use a visual fraction model to show the quotient.

Data Analysis	
Represent and interpret data.	16. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$). a. Add, subtract, multiply, and divide fractions to solve problems involving information presented in line plots. *Note: Division is limited to unit fractions by whole numbers and whole numbers by unit fractions.*

Measurement	
Convert like measurement units within a given measurement system.	17. Convert among different-sized standard measurement units within a given measurement system and use these conversions in solving multi-step, real-world problems.
Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	18. Identify volume as an attribute of solid figures, and measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised (non-standard) units. a. Pack a solid figure without gaps or overlaps using *n* unit cubes to demonstrate volume as *n* cubic units.

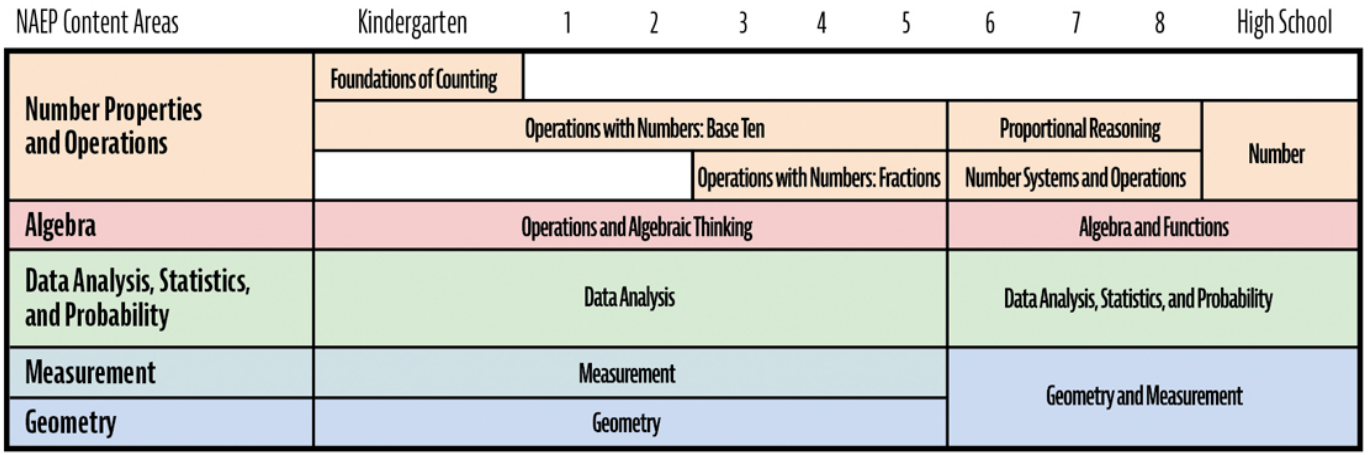
	19. Relate volume to the operations of multiplication and addition, and solve real-world and mathematical problems involving volume. a. Use the associative property of multiplication to find the volume of a right rectangular prism and relate it to packing the prism with unit cubes. Show that the volume can be determined by multiplying the three edge lengths or by multiplying the height by the area of the base. b. Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems. c. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the two parts, applying this technique to solve real-world problems.

Geometry	
Graph points on the coordinate plane to solve real-world and mathematical problems.	20. Graph points in the first quadrant of the coordinate plane, and interpret coordinate values of points to represent real-world and mathematical problems.
Classify two-dimensional figures into categories based on their properties.	21. Classify triangles according to side length (isosceles, equilateral, scalene) and angle measure (acute, obtuse, right, equiangular). 22. Classify quadrilaterals in a hierarchy based on properties. 23. Explain that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *Example: All rectangles have four right angles, and squares have four right angles, so squares are rectangles.*

GRADES 6 - 8 OVERVIEW

The course of study for Grades 6-8 Mathematics focuses on solidifying the foundations of mathematics, empowering students for high school mathematics, and broadening their understanding of mathematics in relation to everyday life. Ensuring that each and every student receives the preparation they deserve will require focus on developing conceptual understanding of the mathematics they will need for a lifetime. These standards build on critical areas of focus for each grade level. Resources supporting the standards for Grades 6-8 are in Appendix D.

Overview of Alabama Mathematics Content Areas



Note: Proportional reasoning is not listed as an 8th grade content area because it has been incorporated into Algebra and Functions.

Pathways to Student Success

The Grades 6-8 course of study offers two flexible pathways with five courses: Grade 6, Grade 7, Grade 7 Accelerated, Grade 8, and Grade 8 Accelerated. All middle school students begin at a shared starting point with Grade 6 Mathematics, and all will complete Grade 8 prepared for *Geometry with Data Analysis* in Grade 9, regardless of which middle school pathway they complete.

The standard middle school pathway is challenging and rigorous. It meets the needs of all middle school students, giving them a solid mathematical foundation and preparing them for success in later mathematics courses.

Middle school students who are especially interested and strongly motivated to study mathematics have the option of moving a little faster by choosing an accelerated pathway which combines standards from three courses into two years of study: Grade 7, Grade 8, and *Algebra I with Probability* (otherwise offered in Grade 10). Students who successfully complete this middle school accelerated pathway will be prepared to enter directly into *Algebra II with Statistics* after completing *Geometry with Data Analysis* in Grade 9. These students will be required to take two additional courses in Grades 11 and 12 to earn the mandatory four credits in mathematics, since neither of the accelerated middle school courses (nor their combination) is equivalent to a high school mathematics credit. Taking two more courses gives them the opportunity to make additional progress toward their postsecondary goals.

The accelerated middle school pathway is designed to challenge the most proficient and motivated students. Some who start out on this pathway may find it was not the best choice for them. Students who are not making adequate progress in Grade 7 Accelerated are not locked into the accelerated pathway; they may exit the accelerated pathway and take the Grade 8 Mathematics course without any loss of progress.

Students have a second opportunity to accelerate in Grade 9 by taking *Geometry with Data Analysis* and *Algebra I with Probability* at the same time. These opportunities to accelerate allow students to make additional progress toward their postsecondary goals.

Students and their parents should receive ongoing feedback and information about available options as students decide whether or not to pursue, or continue pursuing, an accelerated pathway. That decision should not be made for them without consultation. It is critical that all students be afforded the opportunity to pursue a pathway that supports their interests and goals.

The rows of the following table provide examples of pathways that students may follow across Grades 6-8. Note that students should be enrolled in a mathematics class every year of middle and high school.

Grade 6	Grade 7	Grade 8	Grade 9
Grade 6 Mathematics	*Grade 7 Mathematics*	*Grade 8 Mathematics*	*Geometry with Data Analysis*
Grade 6 Mathematics	*Grade 7 Accelerated Mathematics*	*Accelerated Grade 8 Mathematics*	*Geometry with Data Analysis*
Grade 6 Mathematics	*Grade 7 Mathematics*	*Grade 8 Mathematics*	*Geometry with Data Analysis* **and** *Algebra I with Probability*
Grade 6 Mathematics	*Grade 7 Accelerated Mathematics*	*Grade 8 Mathematics*	*Geometry with Data Analysis*
Grade 6 Mathematics	*Grade 7 Accelerated Mathematics*	*Grade 8 Mathematics*	*Geometry with Data Analysis* **and** *Algebra I with Probability*
Grade 6 Mathematics	*Grade 7 Accelerated Mathematics*	*Accelerated Grade 8 Mathematics*	*Geometry with Data Analysis* **and** *Algebra I with Probability*

Refer to the Course of Study Grades 9-12 Overview for a full description of the pathways through the end of high school and how they connect to the postsecondary study of mathematics.

Grade 6 Overview

Grade 6 content is organized into five Alabama Content Areas as outlined below: Proportional Reasoning; Number Systems and Operations; Algebra and Functions; Data Analysis, Statistics, and Probability; and Geometry and Measurement. Related standards are grouped into clusters, which are listed below each content area. Resources to support the Grades 6-8 standards are in Appendix D. Standards indicate what students should know and be able to do by the end of the course.

Alabama Content Areas	Proportional Reasoning	Number Systems and Operations	Algebra and Functions	Data Analysis, Statistics, and Probability	Geometry and Measurement
Clusters	• Develop an understanding of ratio concepts and use reasoning about ratios to solve problems.	• Use prior knowledge of multiplication and division to divide fractions. • Compute multi-digit numbers fluently and determine common factors and multiples. • Apply knowledge of the number system to represent and use rational numbers in a variety of forms.	• Apply knowledge of arithmetic to read, write, and evaluate algebraic expressions. • Use equations and inequalities to represent and solve real-world or mathematical problems. • Identify and analyze relationships between independent and dependent variables.	• Use real-world and mathematical problems to analyze data and demonstrate an understanding of statistical variability and measures of center.	• Graph polygons in the coordinate plane to solve real-world and mathematical problems. • Solve real-world and mathematical problems to determine area, surface area, and volume.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both in the classroom and in everyday life. **The Student Mathematical Practices are standards to be incorporated across all grades**.

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

Content Priorities

In Grade 6, instructional time should focus on five essential areas:

1. **Connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems.**
   Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from and extending pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope and variety of problems in which they use proportional reasoning to connect ratios and fractions.

2. **Completing understanding of division of fractions and extending the understanding of number sense to the system of rational numbers, including signed numbers.**
   Students connect the meaning of fractions, multiplication and division, and the relationship between multiplication and division to understand and explain procedures for dividing fractions. Students use these operations to solve problems. Students extend previous understanding of the magnitude and ordering of numbers to the rational number system, including signed rational numbers, and particularly integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.

3. **Writing, interpreting, and using expressions and equations.**
   Students use variables in mathematical expressions to represent quantities. They write expressions and equations that correspond to real-world situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know the solutions of an equation are the values of the variables that make the equation true. They use properties of operations and the idea of maintaining the equality of both sides of an equation to solve one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = y$) to describe relationships between dependent and independent variables.

4. **Developing understanding of statistical thinking.**
   Students build on and reinforce their number sense to develop the ability to think about statistical measures. They recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in that it is roughly the middle value. The mean measures center in that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in that it is a balance point. Students recognize that a measure of variability (range and interquartile range) can also be useful for summarizing data because two very different sets of data may have the same mean and median

yet be distinguished by their variability. Students create and use a variety of graphs to represent and interpret data. They learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.

5. **Developing understanding of geometrical reasoning and thinking.**
   Students apply previous understanding about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students use nets to find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms to extend formulas for the volume of a right rectangular prism to those with fractional side lengths. As students develop an understanding of formulas in mathematical and real-world contexts, the goal is not simply to memorize but to have a deep understanding of why each formula works and how it relates to the measure of various figures. Students draw polygons in the coordinate plane to prepare for work on scale drawings and constructions in Grade 7.

Grade 6 Content Standards

Each content standard completes the stem *"Students will…"*

Proportional Reasoning	
Develop an understanding of ratio concepts and use reasoning about ratios to solve problems.	1. Use appropriate notations [*a/b, a to b, a:b*] to represent a proportional relationship between quantities and use ratio language to describe the relationship between quantities. 2. Use unit rates to represent and describe ratio relationships. 3. Use ratio and rate reasoning to solve mathematical and real-world problems (including but not limited to percent, measurement conversion, and equivalent ratios) using a variety of models, including tables of equivalent ratios, tape diagrams, double number lines, and equations.

Number Systems and Operations	
Use prior knowledge of multiplication and division to divide fractions.	4. Interpret and compute quotients of fractions using visual models and equations to represent problems. a. Use quotients of fractions to analyze and solve problems.
Compute multi-digit numbers fluently and determine common factors and multiples.	5. Fluently divide multi-digit whole numbers using a standard algorithm to solve real-world and mathematical problems. 6. Add, subtract, multiply, and divide decimals using a standard algorithm. 7. Use the distributive property to express the sum of two whole numbers with a common factor as a multiple of a sum of two whole numbers with no common factor. 8. Find the greatest common factor (GCF) and least common multiple (LCM) of two or more whole numbers. a. Use factors and multiples to determine prime factorization.
Apply knowledge of the number system to represent and use rational numbers in a variety of forms.	9. Use signed numbers to describe quantities that have opposite directions or values and to represent quantities in real-world contexts. 10. Locate integers and other rational numbers on a horizontal or vertical line diagram. a. Define *opposites* as numbers located on opposite sides of 0 and the same distance from 0 on a number line. b. Use rational numbers in real-world and mathematical situations, explaining the meaning of 0 in each situation. 11. Find the position of pairs of integers and other rational numbers on the coordinate plane. a. Identify quadrant locations of ordered pairs on the coordinate plane based on the signs of the x and y coordinates. b. Identify (a,b) and $(a,-b)$ as reflections across the x-axis. c. Identify (a,b) and $(-a,b)$ as reflections across the y-axis. d. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane, including finding distances between points with the same first or second coordinate. 12. Explain the meaning of absolute value and determine the absolute value of rational numbers in real-world contexts.

	13. Compare and order rational numbers and absolute value of rational numbers with and without a number line in order to solve real-world and mathematical problems.

Algebra and Functions	
Apply knowledge of arithmetic to read, write, and evaluate algebraic expressions.	14. Write, evaluate, and compare expressions involving whole number exponents. 15. Write, read, and evaluate expressions in which letters represent numbers in real-world contexts. a. Interpret a variable as an unknown value for any number in a specified set, depending on the context. b. Write expressions to represent verbal statements and real-world scenarios. c. Identify parts of an expression using mathematical terms such as *sum, term, product, factor, quotient,* and *coefficient.* d. Evaluate expressions (which may include absolute value and whole number exponents) with respect to order of operations. 16. Generate equivalent algebraic expressions using the properties of operations, including inverse, identity, commutative, associative, and distributive. 17. Determine whether two expressions are equivalent and justify the reasoning.
Use equations and inequalities to represent and solve real-world or mathematical problems.	18. Determine whether a value is a solution to an equation or inequality by using substitution to conclude whether a given value makes the equation or inequality true. 19. Write and solve an equation in the form of $x+p=q$ or $px=q$ for cases in which p, q, and x are all non-negative rational numbers to solve real-world and mathematical problems. a. Interpret the solution of an equation in the context of the problem. 20. Write and solve inequalities in the form of $x>c$, $x<c$, $x\geq c$, or $x \leq c$ to represent a constraint or condition in a real-world or mathematical problem. a. Interpret the solution of an inequality in the context of a problem. b. Represent the solutions of inequalities on a number line and explain that the solution set may contain infinitely many solutions.

Identify and analyze relationships between independent and dependent variables.	21. Identify, represent, and analyze two quantities that change in relationship to one another in real-world or mathematical situations. a. Use tables, graphs, and equations to represent the relationship between independent and dependent variables.

Data Analysis, Statistics, and Probability	
Use real-world and mathematical problems to analyze data and demonstrate an understanding of statistical variability and measures of center.	22. Write examples and non-examples of statistical questions, explaining that a statistical question anticipates variability in the data related to the question. 23. Calculate, interpret, and compare measures of center (mean, median, mode) and variability (range and interquartile range) in real-world data sets. a. Determine which measure of center best represents a real-world data set. b. Interpret the measures of center and variability in the context of a problem. 24. Represent numerical data graphically, using dot plots, line plots, histograms, stem and leaf plots, and box plots. a. Analyze the graphical representation of data by describing the center, spread, shape (including approximately symmetric or skewed), and unusual features (including gaps, peaks, clusters, and extreme values). b. Use graphical representations of real-world data to describe the context from which they were collected.

Geometry and Measurement	
Graph polygons in the coordinate plane to solve real-world and mathematical problems.	25. Graph polygons in the coordinate plane given coordinates of the vertices to solve real-world and mathematical problems. a. Determine missing vertices of a rectangle with the same *x*-coordinate or the same *y*-coordinate when graphed in the coordinate plane. b. Use coordinates to find the length of a side between points having the same *x*-coordinate or the same *y*-coordinate. c. Calculate perimeter and area of a polygon graphed in the coordinate plane (limiting to polygons in which consecutive vertices have the same *x*-coordinate or the same *y*-coordinate).

Solve real-world and mathematical problems to determine area, surface area, and volume. *Note: Students must select and use the appropriate unit for the attribute being measured when determining length, area, angle, time, or volume.*	26. Calculate the area of triangles, special quadrilaterals, and other polygons by composing and decomposing them into known shapes. a. Apply the techniques of composing and decomposing polygons to find area in the context of solving real-world and mathematical problems. 27. Determine the surface area of three-dimensional figures by representing them with nets composed of rectangles and triangles to solve real-world and mathematical problems. 28. Apply previous understanding of volume of right rectangular prisms to those with fractional edge lengths to solve real-world and mathematical problems. a. Use models (cubes or drawings) and the volume formulas (V = *lwh* and V = *Bh*) to find and compare volumes of right rectangular prisms.

Grade 7 Mathematics Overview

In Grade 7, content is organized into five Alabama Content Areas as outlined below: Proportional Reasoning; Number Systems and Operations; Algebra and Functions; Data Analysis, Statistics and Probability; and Geometry and Measurement. Related standards are grouped into clusters, which are listed below each content area. Resources to support the Grade 7 mathematical standards are in Appendix D. Standards indicate what students should know or be able to do by the end of the course.

Alabama Content Areas	Proportional Reasoning	Number Systems and Operations	Algebra and Functions	Data Analysis, Statistics, and Probability	Geometry and Measurement
Clusters	• Analyze proportional relationships and use them to solve real-world and mathematical problems.	• Apply and extend prior knowledge of addition, subtraction, multiplication, and division to operations with rational numbers.	• Create equivalent expressions using the properties of operations. • Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.	• Make inferences about a population using random sampling. • Make inferences from an informal comparison of two populations. • Investigate probability models.	• Construct and describe geometric figures, analyzing relationships among them. • Solve real-world and mathematical problems involving angle measure, circumference, area, surface area, and volume.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both in the classroom and in everyday life. **The Student Mathematical Practices are standards to be incorporated across all grades**.

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

Content Priorities

In Grade 7, instructional time should focus on four essential areas, all of which have equal importance:

1. **Developing understanding of and applying proportional relationships**.
   Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students solve a wide variety of percent problems (including those involving discounts, interest, taxes, tips, percent increase or decrease), and solve problems about scale drawings by relating corresponding lengths between the objects, or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

2. **Developing understanding of operations with rational numbers and working with expressions and linear equations**.
   Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percentages as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, recognizing the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.

3. **Solving problems involving scale drawings and informal geometric construction, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume**.
   Students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle as well as surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8, they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructs, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

4. **Drawing inferences about populations based on samples**.
   Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.

Grade 7 Content Standards

Each content standard completes the stem *"Students will…"*

Proportional Reasoning	
Analyze proportional relationships and use them to solve real-world and mathematical problems.	1. Calculate unit rates of length, area, and other quantities measured in like or different units that include ratios or fractions. 2. Represent a relationship between two quantities and determine whether the two quantities are related proportionally. a. Use equivalent ratios displayed in a table or in a graph of the relationship in the coordinate plane to determine whether a relationship between two quantities is proportional. b. Identify the constant of proportionality (unit rate) and express the proportional relationship using multiple representations including tables, graphs, equations, diagrams, and verbal descriptions. c. Explain in context the meaning of a point (x,y) on the graph of a proportional relationship, with special attention to the points (0,0) and (1, r) where r is the unit rate. 3. Solve multi-step percent problems in context using proportional reasoning, including simple interest, tax, gratuities, commissions, fees, markups and markdowns, percent increase, and percent decrease.

Number Systems and Operations	
Apply and extend prior knowledge of addition, subtraction, multiplication, and division to operations with rational numbers.	4. Apply and extend knowledge of operations of whole numbers, fractions, and decimals to add, subtract, multiply, and divide rational numbers including integers, signed fractions, and decimals. a. Identify and explain situations where the sum of opposite quantities is 0 and opposite quantities are defined as additive inverses. b. Interpret the sum of two or more rational numbers, by using a number line and in real-world contexts. c. Explain subtraction of rational numbers as addition of additive inverses. d. Use a number line to demonstrate that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. e. Extend strategies of multiplication to rational numbers to develop rules for multiplying signed numbers, showing that the properties of the operations are preserved. f. Divide integers and explain that division by zero is undefined. Interpret the quotient of integers (with a non-zero divisor) as a rational number. g. Convert a rational number to a decimal using long division, explaining that the decimal form of a rational number terminates or eventually repeats. 5. Solve real-world and mathematical problems involving the four operations of rational numbers, including complex fractions. Apply properties of operations as strategies where applicable.

Algebra and Functions	
Create equivalent expressions using the properties of operations.	6. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. 7. Generate expressions in equivalent forms based on context and explain how the quantities are related.

Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.	8. Solve multi-step real-world and mathematical problems involving rational numbers (integers, signed fractions and decimals), converting between forms as needed. Assess the reasonableness of answers using mental computation and estimation strategies. 9. Use variables to represent quantities in real-world or mathematical problems and construct algebraic expressions, equations, and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality, and interpret it in the context of the problem.

Data Analysis, Statistics, and Probability	
Make inferences about a population using random sampling.	10. Examine a sample of a population to generalize information about the population. a. Differentiate between a sample and a population. b. Compare sampling techniques to determine whether a sample is random and thus representative of a population, explaining that random sampling tends to produce representative samples and support valid inferences. c. Determine whether conclusions and generalizations can be made about a population based on a sample. d. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest, generating multiple samples to gauge variation and making predictions or conclusions about the population. e. Informally explain situations in which statistical bias may exist.
Make inferences from an informal comparison of two populations.	11. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. 12. Make informal comparative inferences about two populations using measures of center and variability and/or mean absolute deviation in context.

Investigate probability models.	13. Use a number from 0 to 1 to represent the probability of a chance event occurring, explaining that larger numbers indicate greater likelihood of the event occurring, while a number near zero indicates an unlikely event. 14. Define and develop a probability model, including models that may or may not be uniform, where uniform models assign equal probability to all outcomes and non-uniform models involve events that are not equally likely. a. Collect and use data to predict probabilities of events. b. Compare probabilities from a model to observed frequencies, explaining possible sources of discrepancy. 15. Approximate the probability of an event using data generated by a simulation (experimental probability) and compare it to the theoretical probability. a. Observe the relative frequency of an event over the long run, using simulation or technology, and use those results to predict approximate relative frequency. 16. Find probabilities of simple and compound events through experimentation or simulation and by analyzing the sample space, representing the probabilities as percents, decimals, or fractions. a. Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams, and determine the probability of an event by finding the fraction of outcomes in the sample space for which the compound event occurred. b. Design and use a simulation to generate frequencies for compound events. c. Represent events described in everyday language in terms of outcomes in the sample space which composed the event.

Geometry and Measurement	
Construct and describe geometric figures, analyzing relationships among them.	17. Solve problems involving scale drawings of geometric figures, including computation of actual lengths and areas from a scale drawing and reproduction of a scale drawing at a different scale. 18. Construct geometric shapes (freehand, using a ruler and a protractor, and using technology), given a written description or measurement constraints with an emphasis on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. 19. Describe the two-dimensional figures created by slicing three-dimensional figures into plane sections.

Solve real-world and mathematical problems involving angle measure, circumference, area, surface area, and volume. *Note: Students must select and use the appropriate unit for the attribute being measured when determining length, area, angle, time, or volume.*	20. Explain the relationships among circumference, diameter, area, and radius of a circle to demonstrate understanding of formulas for the area and circumference of a circle. a. Informally derive the formula for area of a circle. b. Solve area and circumference problems in real-world and mathematical situations involving circles. 21. Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to write and solve simple equations for an unknown angle in a figure. 22. Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right rectangular prisms.

Grade 8 Mathematics Overview

In Grade 8, content is organized into four Alabama Content Areas outlined below: Number Systems and Operations; Algebra and Functions; Data Analysis, Statistics, and Probability; and Geometry and Measurement. Related standards are grouped into clusters, which are listed below each content area. Resources to support the Grade 8 mathematical standards are in Appendix D. Standards indicate what students should know or be able to do by the end of the course.

Alabama Content Areas	Number Systems and Operations	Algebra and Functions	Data Analysis, Statistics, and Probability	Geometry and Measurement
Clusters	• Understand that the real number system is composed of rational and irrational numbers.	• Apply concepts of rational and integer exponents. • Analyze the relationship between proportional and non-proportional situations. • Analyze and solve linear equations and systems of two linear equations. • Explain, evaluate, and compare functions. • Use functions to model relationships between quantities.	• Investigate patterns of association in bivariate data.	• Understand congruence and similarity using physical models or technology. • Analyze parallel lines cut by a transversal. • Understand and apply the Pythagorean Theorem. • Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both in the classroom and in everyday life. **The Student Mathematical Practices are standards to be incorporated across all grades**.

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

Content Priorities

In Grade 8, instructional time should focus on three critical areas, all of which have equal importance:

1. **Construct and reason about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations.**
   Students use linear equations and systems of linear equations to represent, analyze, and solve a variety of problems. Students recognize equations for proportions ($y/x = k$ or $y = kx$) as special linear equations ($y = mx + b$), understanding that the constant of proportionality (k) is the slope, and the graphs are lines through the origin. They understand that the slope (m) of a line is a constant rate of change. Students also use a linear equation to describe the association between two quantities in bivariate data. At this grade level, fitting the model to the data and assessing its fit are done informally. Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question and to interpret components of the relationship (such as slope and y-intercept) in terms of the situation. Students choose and implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality, they maintain the solutions of the original equation. Students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line. Students use linear equations, systems of linear equations, linear functions, and their understanding of slope of a line to analyze situations and solve problems.

2. **Describe the concept of a function and use functions to interpret quantitative relationships.**
   Students grasp the concept of a function as a rule that assigns to each input exactly one output. They understand that functions describe situations where one quantity determines another. They describe how aspects of the function are reflected in the different representations.

3. **Analyze two- and three-dimensional figures and understand and apply the Pythagorean Theorem.**
   Students use ideas about distance and angles and how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to analyze and describe two-dimensional figures and to solve problems. Students show that the sum of the angles in a triangle is the angle formed by a straight line. Students understand and can explain the Pythagorean Theorem and its converse. They apply the Pythagorean Theorem to find distances between points on the coordinate plane, to find lengths, and to analyze polygons. Students understand and apply properties of parallel lines cut by a transversal in order to solve problems. Students conclude their study on volume by solving problems involving cones, cylinders, and spheres.

Grade 8 Mathematics Content Standards

Each content standard completes the stem *"Students will…"*

Number Systems and Operations	
Understand that the real number system is composed of rational and irrational numbers.	1. Define the real number system as composed of rational and irrational numbers. a. Explain that every number has a decimal expansion; for rational numbers, the decimal expansion repeats or terminates. b. Convert a decimal expansion that repeats into a rational number. 2. Locate rational approximations of irrational numbers on a number line, compare their sizes, and estimate the values of the irrational numbers.

Algebra and Functions	
Apply concepts of integer exponents and radicals.	3. Develop and apply properties of integer exponents to generate equivalent numerical and algebraic expressions. 4. Use square root and cube root symbols to represent solutions to equations. a. Evaluate square roots of perfect squares (less than or equal to 225) and cube roots of perfect cubes (less than or equal to 1000). b. Explain that the square root of a non-perfect square is irrational. 5. Estimate and compare very large or very small numbers in scientific notation. 6. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. a. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. b. Interpret scientific notation that has been generated by technology.

Analyze the relationship between proportional and non-proportional situations.	7. Determine whether a relationship between two variables is proportional or non-proportional. 8. Graph proportional relationships. a. Interpret the unit rate of a proportional relationship, describing the constant of proportionality as the slope of the graph which goes through the origin and has the equation $y = mx$ where m is the slope. 9. Interpret $y = mx + b$ as defining a linear equation whose graph is a line with m as the slope and b as the y-intercept. a. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in a coordinate plane. b. Given two distinct points in a coordinate plane, find the slope of the line containing the two points and explain why it will be the same for any two distinct points on the line. c. Graph linear relationships, interpreting the slope as the rate of change of the graph and the y-intercept as the initial value. d. Given that the slopes for two different sets of points are equal, demonstrate that the linear equations that include those two sets of points may have different y-intercepts. 10. Compare proportional and non-proportional linear relationships represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions) to solve real-world problems.
Analyze and solve linear equations and systems of two linear equations.	11. Solve multi-step linear equations in one variable, including rational number coefficients, and equations that require using the distributive property and combining like terms. a. Determine whether linear equations in one variable have one solution, no solution, or infinitely many solutions of the form $x = a$, $a = a$, or $a = b$ (where a and b are different numbers). b. Represent and solve real-world and mathematical problems with equations and interpret each solution in the context of the problem. 12. Solve systems of two linear equations in two variables by graphing and substitution. a. Explain that the solution(s) of systems of two linear equations in two variables corresponds to points of intersection on their graphs because points of intersection satisfy both equations simultaneously. b. Interpret and justify the results of systems of two linear equations in two variables (one solution, no solution, or infinitely many solutions) when applied to real-world and mathematical problems.

Explain, evaluate, and compare functions.	13. Determine whether a relation is a function, defining a function as a rule that assigns to each input (independent value) exactly one output (dependent value), and given a graph, table, mapping, or set of ordered pairs. 14. Evaluate functions defined by a rule or an equation, given values for the independent variable. 15. Compare properties of functions represented algebraically, graphically, numerically in tables, or by verbal descriptions. a. Distinguish between linear and non-linear functions.
Use functions to model relationships between quantities.	16. Construct a function to model a linear relationship between two variables. a. Interpret the rate of change (slope) and initial value of the linear function from a description of a relationship or from two points in a table or graph. 17. Analyze the relationship (increasing or decreasing, linear or non-linear) between two quantities represented in a graph.

Data Analysis, Statistics, and Probability	
Investigate patterns of association in bivariate data.	18. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities, describing patterns in terms of positive, negative, or no association, linear and non-linear association, clustering, and outliers. 19. Given a scatter plot that suggests a linear association, informally draw a line to fit the data, and assess the model fit by judging the closeness of the data points to the line. 20. Use a linear model of a real-world situation to solve problems and make predictions. a. Describe the rate of change and *y*-intercept in the context of a problem using a linear model of a real-world situation. 21. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects, using relative frequencies calculated for rows or columns to describe possible associations between the two variables.

Geometry and Measurement	
Understand congruence and similarity using physical models or technology.	22. Verify experimentally the properties of rigid motions (rotations, reflections, and translations): lines are taken to lines, and line segments are taken to line segments of the same length; angles are taken to angles of the same measure; and parallel lines are taken to parallel lines. a. Given a pair of two-dimensional figures, determine if a series of rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are congruent; describe the transformation sequence that verifies a congruence relationship. 23. Use coordinates to describe the effect of transformations (dilations, translations, rotations, and reflections) on two-dimensional figures. 24. Given a pair of two-dimensional figures, determine if a series of dilations and rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are similar; describe the transformation sequence that exhibits the similarity between them.
Analyze parallel lines cut by a transversal.	25. Analyze and apply properties of parallel lines cut by a transversal to determine missing angle measures. a. Use informal arguments to establish that the sum of the interior angles of a triangle is 180 degrees.
Understand and apply the Pythagorean Theorem.	26. Informally justify the Pythagorean Theorem and its converse. 27. Apply the Pythagorean Theorem to find the distance between two points in a coordinate plane. 28. Apply the Pythagorean Theorem to determine unknown side lengths of right triangles, including real-world applications

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres. *Note: Students must select and use the appropriate unit for the attribute being measured when determining length, area, angle, time, or volume.*	29. Informally derive the formulas for the volume of cones and spheres by experimentally comparing the volumes of cones and spheres with the same radius and height to a cylinder with the same dimensions. 30. Use formulas to calculate the volumes of three-dimensional figures (cylinders, cones, and spheres) to solve real-world problems.

Grade 7 Accelerated and Grade 8 Accelerated Overview

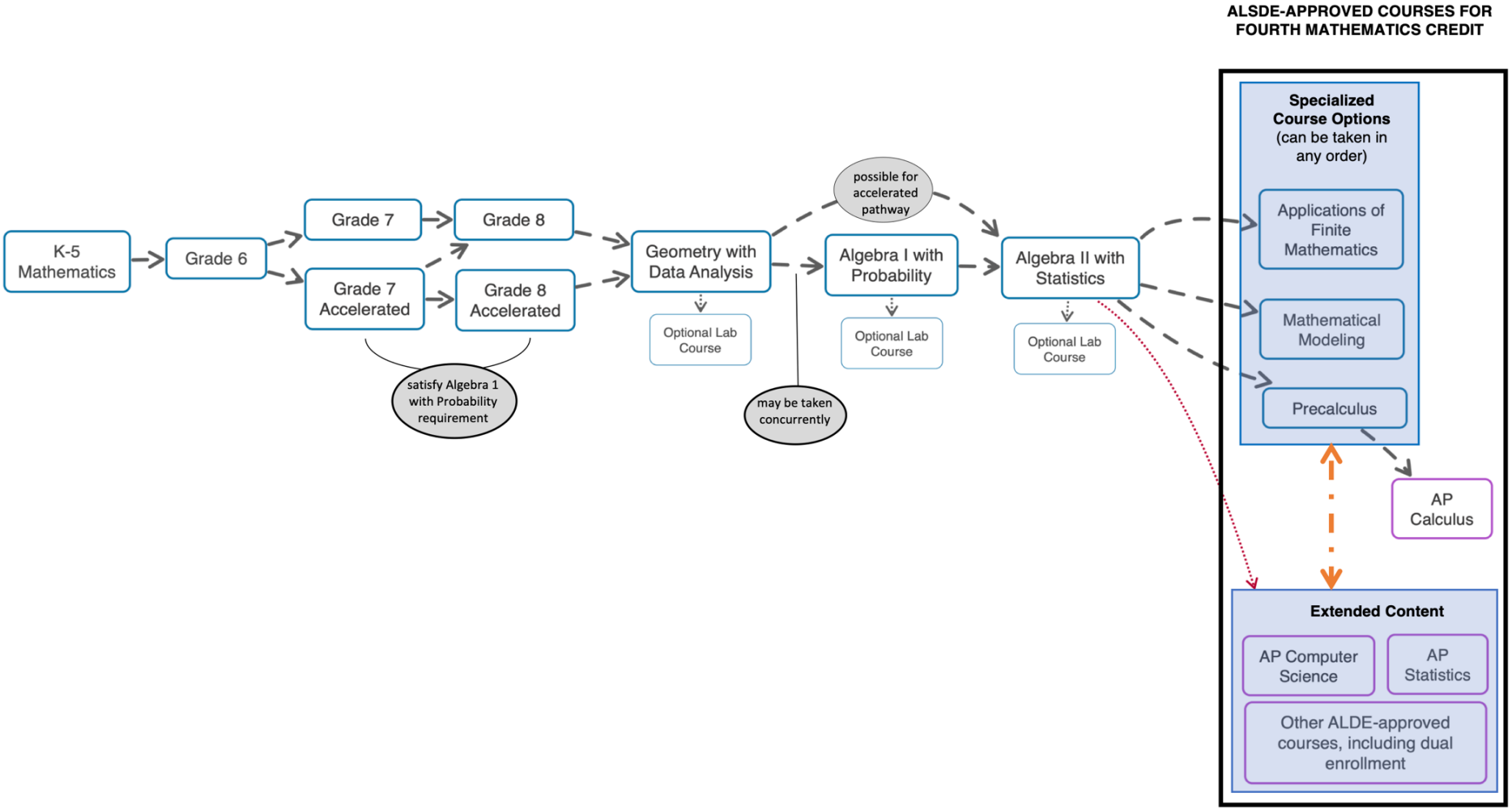
Accelerated courses have been carefully aligned and designed for middle school students who show particular motivation and interest in mathematics. In this pathway, students meet all the standards of Grade 7, Grade 8, and *Algebra I with Probability* within the Grade 7 Accelerated and Grade 8 Accelerated courses, thus merging all the standards from three years of mathematics into two years. This enables students to move through the content more quickly. Students who complete this pathway will be prepared to enter *Geometry with Data Analysis* in Grade 9 and then accelerate directly into *Algebra II with Statistics* in Grade 10, thus providing them with an opportunity to take additional, specialized mathematics coursework in Grades 11 and 12, such as *AP Calculus*, *AP Statistics,* or college dual enrollment classes. Clearly, this pathway will be challenging and should be reserved for Grade 7 students who demonstrate a high level of motivation and interest in studying mathematics.

The Alabama Mathematics Content Areas shown below illustrate a progression designed to ensure that all students are equitably prepared to develop conceptual understanding of mathematics. The NAEP (National Assessment of Educational Progress) content areas reflect an emphasis on the importance of mathematical reasoning through the full spectrum of mathematical content. Alabama Mathematics Content Areas explicitly define the framework needed for students to develop a comprehensive understanding of underlying mathematics concepts.

Overview of Alabama Mathematics Content Areas

<table>
<tr><th>NAEP Content Areas</th><th>Kindergarten</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>High School</th></tr>
<tr><td rowspan="3">Number Properties and Operations</td><td>Foundations of Counting</td><td colspan="9"></td></tr>
<tr><td colspan="6">Operations with Numbers: Base Ten</td><td colspan="2">Proportional Reasoning</td><td rowspan="2">Number</td></tr>
<tr><td colspan="4"></td><td colspan="2">Operations with Numbers: Fractions</td><td colspan="2">Number Systems and Operations</td></tr>
<tr><td>Algebra</td><td colspan="6">Operations and Algebraic Thinking</td><td colspan="4">Algebra and Functions</td></tr>
<tr><td>Data Analysis, Statistics, and Probability</td><td colspan="6">Data Analysis</td><td colspan="4">Data Analysis, Statistics, and Probability</td></tr>
<tr><td>Measurement</td><td colspan="6">Measurement</td><td colspan="4" rowspan="2">Geometry and Measurement</td></tr>
<tr><td>Geometry</td><td colspan="6">Geometry</td></tr>
</table>

In the graphic below, the accelerated pathway from *Geometry with Data Analysis* is shown. This pathway is acceptable for students who have completed both Grade 7 Accelerated and Grade 8 Accelerated mathematics in middle school.



Grade 7 Accelerated
Overview

The Grade 7 Accelerated course has been carefully aligned and designed for middle school students who show particular motivation and interest in mathematics. In Grade 7 Accelerated, the content is organized into five Alabama Content Areas: Proportional Reasoning; Number Systems and Operations; Algebra and Functions; Data Analysis, Statistics, and Probability; and Geometry and Measurement. Related standards are grouped into clusters which are listed below each content area.

Standards are labeled to indicate whether they come from Grade 7 Mathematics, Grade 8 Mathematics, or *Algebra I with Probability*. Resources to support Grade 7 Accelerated mathematical standards are in Appendices D and E. Standards indicate what students should know and be able to do by the end of the course.

While the word *function* is referenced in the standards for Grade 7 Accelerated, function notation is reserved for Grade 8 Accelerated.

Alabama Content Areas	Proportional Reasoning	Number Systems and Operations	Algebra and Functions	Data Analysis, Statistics, and Probability	Geometry and Measurement
Clusters	• Analyze proportional relationships and use them to solve real-world problems and mathematical problems. • Analyze the relationship between proportional and non-proportional situations.	• Apply and extend prior knowledge of addition, subtraction, multiplication, and division to operations with rational numbers. • Understand that the real number system is composed of rational and irrational numbers.	• Create equivalent expressions using the properties of operations. • Apply concepts of rational and integer exponents. • Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities. • Explain, evaluate, and compare functions.	• Make inferences about a population using random sampling. • Make inferences from an informal comparison of two populations. • Investigate probability models.	• Construct and describe geometrical figures, analyzing relationships among them. • Solve real-world and mathematical problems involving angle measure, area, surface area, and volume. • Understand congruence and similarity using physical models or technology.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both in the classroom and in everyday life. **The Student Mathematical Practices are standards to be incorporated across all grades**.

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

Statements in **bold print** indicate the scope of the standard and align the standard to related content in other courses. The full scope of every standard should be addressed during instruction.

Grade 7 Accelerated Content Standards

Each content standard completes the stem *"Students will…"*

Proportional Reasoning	
Analyze proportional relationships and use them to solve real-world problems and mathematical problems.	1. Calculate unit rates of length, area, and other quantities measured in like or different units that include ratios or fractions. [*Grade 7, 1*] 2. Represent a relationship between two quantities and determine whether the two quantities are related proportionally. a. Use equivalent ratios displayed in a table or in a graph of the relationship in the coordinate plane to determine whether a relationship between two quantities is proportional. b. Identify the constant of proportionality (unit rate) and express the proportional relationship using multiple representations including tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Explain in context the meaning of a point (x,y) on the graph of a proportional relationship, with special attention to the points (0,0) and (1, r) where r is the unit rate. [*Grade 7, 2*]

	3. Solve multi-step percent problems in context using proportional reasoning, including simple interest, tax, gratuities, commissions, fees, markups and markdowns, percent increase, and percent decrease. [*Grade 7, 3*]
Analyze the relationship between proportional and non-proportional situations.	4. Determine whether a relationship between two variables is proportional or non-proportional. [*Grade 8, 7*] 5. Graph proportional relationships. a. Interpret the unit rate of a proportional relationship, describing the constant of proportionality as the slope of the graph which goes through the origin and has the equation $y = mx$ where m is the slope. [*Grade 8, 8*] 6. Interpret $y = mx + b$ as defining a linear equation whose graph is a line with m as the slope and b as the y-intercept. a. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in a coordinate plane. b. Given two distinct points in a coordinate plane, find the slope of the line containing the two points and explain why it will be the same for any two distinct points on the line. c. Graph linear relationships, interpreting the slope as the rate of change of the graph and the y-intercept as the initial value. d. Given that the slopes for two different sets of points are equal, demonstrate that the linear equations that include those two sets of points may have different y-intercepts. [*Grade 8, 9*] 7. Compare proportional and non-proportional linear relationships represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions) to solve real-world problems. [*Grade 8, 10*]

Number Systems and Operations	
Apply and extend prior knowledge of addition, subtraction, multiplication, and division to operations with rational numbers.	8. Apply and extend knowledge of operations of whole numbers, fractions, and decimals to add, subtract, multiply, and divide rational numbers including integers, signed fractions, and decimals. a. Identify and explain situations where the sum of opposite quantities is 0 and opposite quantities are defined as additive inverses. b. Interpret the sum of two or more rational numbers, by using a number line and in real-world contexts. c. Explain subtraction of rational numbers as addition of additive inverses. d. Use a number line to demonstrate that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. e. Extend strategies of multiplication to rational numbers to develop rules for multiplying signed numbers, showing that the properties of the operations are preserved. f. Divide integers and explain that division by zero is undefined. Interpret the quotient of integers (with a non-zero divisor) as a rational number. g. Convert a rational number to a decimal using long division, explaining that the decimal form of a rational number terminates or eventually repeats. [*Grade 7, 4*] 9. Solve real-world and mathematical problems involving the four operations of rational numbers, including complex fractions. Apply properties of operations as strategies where applicable. [*Grade 7, 5*]
Understand that the real number system is composed of rational and irrational numbers.	10. Define the real number system as composed of rational and irrational numbers. a. Explain that every number has a decimal expansion; for rational numbers, the decimal expansion repeats in a pattern or terminates. b. Convert a decimal expansion that repeats in a pattern into a rational number. [*Grade 8, 1*] 11. Locate rational approximations of irrational numbers on a number line, compare their sizes, and estimate the values of irrational numbers. [*Grade 8, 2*]

Algebra and Functions	
Create equivalent expressions using the properties of operations.	12. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. [*Grade 7, 6*] 13. Generate expressions in equivalent forms based on context and explain how the quantities are related. [*Grade 7, 7*]
Apply concepts of rational and integer exponents	14. Develop and apply properties of integer exponents to generate equivalent numerical and algebraic expressions. [*Grade 8, 3*] 15. Use square root and cube root symbols to represent solutions to equations. a. Evaluate square roots of perfect squares (less than or equal to 225) and cube roots of perfect cubes (less than or equal to 1000). b. Explain that the square root of a non-perfect square is irrational. [*Grade 8, 4*] 16. Express and compare very large or very small numbers in scientific notation. [*Grade 8, 5*] a. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used, expressing answers in scientific notation. [*Grade 8, 6*] b. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. [*Grade 8, 6a*] c. Interpret scientific notation that has been generated by technology. [*Grade 8, 6b*]

Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.	17. Solve multi-step real-world and mathematical problems involving rational numbers (integers, signed fractions, and decimals), converting between forms as needed. Assess the reasonableness of answers using mental computation and estimation strategies. [*Grade 7, 8*] 18. Use variables to represent quantities in a real-world or mathematical problem and construct algebraic expressions, equations, and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. [*Grade 7, 9, and linear portion of Algebra I with Probability, 11*] 19. Create equations in two variables to represent relationships between quantities in context; graph equations on coordinate axes with labels and scales and use them to make predictions. **Limit to contexts arising from linear functions.** [*Algebra I with Probability, 12 partial*] 20. Represent constraints by equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. **Limit to contexts arising from linear.** [*Algebra I with Probability, 13 partial*] 21. Solve multi-step linear equations in one variable, including rational number coefficients, and equations that require using the distributive property and combining like terms. a. Determine whether linear equations in one variable have one solution, no solution, or infinitely many solutions of the form $x = a$, $a = a$, or $a = b$ (where a and b are different numbers). b. Represent and solve real-world and mathematical problems with equations and interpret each solution in the context of the problem. [*Grade 8, 11*]
Explain, evaluate, and compare functions.	22. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and explain the effects on the graph using technology, where appropriate. **Limit to linear functions.** [*Algebra I with Probability, 23*]

	23. Construct a function to model the linear relationship between two variables. a. Interpret the rate of change (slope) and initial value of the linear function from a description of a relationship from two points in a table or graph. [*Grade 8, 16*] 24. Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$. **Limit to linear equations.** [*Algebra I with Probability, 19*] 25. Find approximate solutions by graphing the functions, making tables of values, or finding successive approximations, using technology where appropriate. *Note: Include cases where* f(x) *is linear and* g(x) *is constant or linear.* [*Algebra I with Probability, 19 edited*]

Data Analysis, Statistics, and Probability	
Make inferences about a population using random sampling.	26. Examine a sample of a population to generalize information about the population. a. Differentiate between a sample and a population. b. Compare sampling techniques to determine whether a sample is random and thus representative of a population, explaining that random sampling tends to produce representative samples and support valid inferences. c. Determine whether conclusions and generalizations can be made about a population based on a sample. d. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest, generating multiple samples to gauge variation and make predictions or conclusions about the population. e. Informally explain situations in which statistical bias may exist. [*Grade 7, 10*]
Make inferences from an informal comparison of two populations.	27. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. [*Grade 7, 11*] 28. Make informal comparative inferences about two populations using measures of center and variability and/or mean absolute deviation in context. *[Grade 7, 12]*
Investigate probability models.	29. Use a number between 0 and 1 to represent the probability of a chance event occurring, explaining that larger numbers indicate greater likelihood of the event occurring, while a number near zero indicates an unlikely event. [*Grade 7, 13*]

	30. Define and develop a probability model, including models that may or may not be uniform, where uniform models assign equal probability to all outcomes and non-uniform models involve events that are not equally likely. a. Collect and use data to predict probabilities of events. b. Compare probabilities from a model to observe frequencies, explaining possible sources of discrepancy. [*Grade 7, 14*] 31. Approximate the probability of an event by using data generated by a simulation (experimental probability) and compare it to theoretical probability. a. Observe the relative frequency of an event over the long run, using simulation or technology, and use those results to predict approximate relative frequency. [*Grade 7, 15*] 32. Find probabilities of simple and compound events through experimentation or simulation and by analyzing the sample space, representing the probabilities as percents, decimals, or fractions. a. Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams, and determine the probability of an event by finding the fraction of outcomes in the sample space for which the compound event occurred. b. Design and use a simulation to generate frequencies for compound events. c. Represent events described in everyday language in terms of outcomes in the sample space which composed the event. [*Grade 7, 16*]

Geometry and Measurement	
Construct and describe geometrical figures, analyzing relationships among them.	33. Solve problems involving scale drawings of geometric figures including computation of actual lengths and areas from a scale drawing and reproduction of a scale drawing at a different scale. [*Grade 7, 17*] 34. Construct geometric shapes (freehand, using a ruler and a protractor, and using technology) given measurement constraints with an emphasis on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. [*Grade 7, 18*] 35. Describe the two-dimensional figures created by slicing three-dimensional figures into plane sections. [*Grade 7, 19*]

Solve real-world and mathematical problems involving angle measure, area, surface area, and volume.	36. Explain the relationships among circumference, diameter, area, and radius of a circle to demonstrate understanding of formulas for the area and circumference of a circle. a. Informally derive the formula for area of a circle. b. Solve area and circumference problems in real-world and mathematical situations involving circles. [*Grade 7, 20*] 37. Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to write and solve simple equations for an unknown angle in a figure. [*Grade 7, 21*] 38. Analyze and apply properties of parallel lines cut by a transversal to determine missing angle measures. a. Use informal arguments to establish that the sum of the interior angles of a triangle is 180 degrees. [*Grade 8, 25*] 39. Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right rectangular prisms. [*Grade 7, 22*] 40. Informally derive the formulas for the volume of cones and spheres by experimentally comparing the volumes of cones and spheres with the same radius and height to a cylinder with the same dimensions. [*Grade 8, 29*] 41. Use formulas to calculate the volumes of three-dimensional figures to solve real-world problems. [*Grade 8, 30*]
Understand congruence and similarity using physical models or technology.	42. Verify experimentally the properties of rigid motions (rotations, reflections, and translations): lines are taken to lines, and line segments are taken to line segments of the same length; angles are taken to angles of the same measure; and parallel lines are taken to parallel lines. a. Given a pair of two-dimensional figures, determine if a series of rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are congruent; describe the transformation sequence that verifies a congruence relationship. [*Grade 8, 22*] 43. Use coordinates to describe the effect of transformations (dilations, translations, rotations, and reflections) on two-dimensional figures. [*Grade 8, 23*] 44. Given a pair of two-dimensional figures, determine if a series of dilations and rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are similar; describe the transformation sequence that exhibits the similarity between them. [Grade *8, 24*]

Grade 8 Accelerated
Overview

The Grade 8 Accelerated course has been carefully aligned and designed for middle school students who have completed the Grade 7 Accelerated course and show particular motivation and interest in mathematics. In Grade 8 Accelerated, there are four content areas: Number Systems and Operations; Algebra and Functions; Data Analysis, Statistics, and Probability; and Geometry and Measurement. The algebra focus is on quadratic relationships.

Students who successfully complete this course will be prepared to enter *Geometry with Data Analysis* in Grade 9 and then accelerate directly into *Algebra II with Statistics* in Grade 10, thus providing them with an opportunity to take additional, specialized mathematics coursework, such as *AP Calculus* or *AP Statistics*, in Grades 11 and 12.

Standards have been labeled to indicate whether they come from Grade 8 Mathematics or *Algebra I with Probability.* Resources to support Grade 8 Accelerated mathematical standards are in Appendices D and E.

While the word *function* is referenced in the standards for Grade 7 Accelerated, function notation is reserved for Grade 8 Accelerated.

Alabama Content Areas	Number Systems and Operations	Algebra and Functions	Data Analysis, Statistics, and Probability	Geometry and Measurement
Clusters	• Together, irrational numbers and rational numbers complete the real number system, representing all points on the number line, while there exist numbers beyond the real numbers called complex numbers.	• Expressions can be rewritten in equivalent forms by using algebraic properties, including properties of addition, multiplication, and exponentiation, to make different characteristics or features visible. • Analyze and solve linear equations and systems of two linear equations. • Finding solutions to an equation, inequality, or system of equations or inequalities requires the checking of candidate solutions, whether generated analytically or graphically, to ensure that solutions are found and that those found are not extraneous. • The structure of an equation or inequality (including, but not limited to, one-variable linear and quadratic equations, inequalities, and systems of linear equations in two variables) can be purposefully analyzed (with and without technology) to determine an efficient strategy to find a solution, if one exists, and then to justify the solution. • Expressions, equations, and inequalities can be used to analyze and make predictions, both within mathematics and as mathematics is applied in different contexts – in particular, contexts that arise in relation to linear, quadratic, and exponential situations. • Functions shift the emphasis from a point-by-point relationship between two variables (input/output) to considering an entire set of ordered pairs (where each first element is paired with exactly one second element) as an entity with its own features and characteristics. • Graphs can be used to obtain exact or approximate solutions of equations, inequalities, and systems of equations and inequalities – including systems of linear equations in two variables and systems of linear and quadratic equations (given or obtained by using technology). • Functions can be described by using a variety of representations: mapping diagrams, function notation (e.g., $f(x) = x^2$), recursive definitions, tables, and graphs. • Functions that are members of the same family have distinguishing attributes (structure) common to all functions within that family. • Functions can be represented graphically and key features of the graphs, including zeros, intercepts, and, when relevant, rate of change and maximum/minimum values, can be associated with and interpreted in terms of the equivalent symbolic representation. • Functions model a wide variety of real situations and can help students understand the processes of making and changing assumptions, assigning variables, and finding solutions to contextual problems.	• Investigate patterns of association in bivariate data. • Data arise from a context and come in two types: quantitative (continuous or discrete) and categorical. Technology can be used to "clean" and organize data, including very large data sets, into a useful and manageable structure – a first step in any analysis of data. • The association between two categorical variables is typically represented by using two-way tables and segmented bar graphs. • Data analysis techniques can be used to develop models of contextual situations and to generate and evaluate possible solutions to real problems involving those contexts. • Mathematical and statistical reasoning about data can be used to evaluate conclusions and assess risks. • Making and defending informed, data-based decisions is a characteristic of a quantitatively literate person. • Two events are independent if the occurrence of one event does not affect the probability of the other event. Determining whether two events are independent can be used for finding and understanding probabilities. • Conditional probabilities – that is, those probabilities that are "conditioned" by some known information – can be computed from data organized in contingency tables. Conditions or assumptions may affect the computation of a probability.	• Understand and apply the Pythagorean Theorem.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both within the classroom and in life. **The Student Mathematical Practices are standards to be incorporated across all grades**.

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

Statements in **bold print** indicate the scope of the standard and align the standard to related content in other courses. The full scope of every standard should be addressed during instruction.

Grade 8 Accelerated Content Standards

Each content standard completes the stem *"Students will…"*

Number Systems and Operations	
Together, irrational numbers and rational numbers complete the real number system, representing all points on the number line, while there exist numbers beyond the real numbers called complex numbers.	1. Explain how the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for an additional notation for radicals in terms of rational exponents. [*Algebra I with Probability, 1*] 2. Rewrite expressions involving radicals and rational exponents using the properties of exponents. [*Algebra I with Probability, 2*] 3. Define the imaginary number i such that $i^2 = -1$. [*Algebra I with Probability, 3*]

Algebra and Functions	
Expressions can be rewritten in equivalent forms by using algebraic properties, including properties of addition, multiplication, and exponentiation, to make different characteristics or features visible.	4. Interpret linear, quadratic, and exponential expressions in terms of a context by viewing one or more of their parts as a single entity. [*Algebra I with Probability, 4*] *Example: Interpret the accrued amount of investment* $P(1 + r)^t$ *, where* P *is the principal and* r *is the interest rate, as the product of* P *and a factor depending on time* t. 5. Use the structure of an expression to identify ways to rewrite it. [*Algebra I with Probability, 5*] *Example: See* $x^4 - y^4$ *as* $(x^2)^2 - (y^2)^2$*, thus recognizing it as a difference of squares that can be factored as* $(x^2 - y^2)(x^2 + y^2)$. 6. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. a. Factor quadratic expressions with leading coefficients of one, and use the factored form to reveal the zeros of the function it defines. b. Use the vertex form of a quadratic expression to reveal the maximum or minimum value and the axis of symmetry of the function it defines; complete the square to find the vertex form of quadratics with a leading coefficient of one. c. Use the properties of exponents to transform expressions for exponential functions. [*Algebra I with Probability, 6*] *Example: Identify percent rate of change in functions such as* $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$*, or* $y = (1.2)^{t/10}$*, and classify them as representing exponential growth or decay.* 7. Add, subtract, and multiply polynomials, showing that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication. [*Algebra I with Probability, 7*] 8. Analyze the relationship (increasing or decreasing, linear or non-linear) between two quantities represented in a graph. [*Grade 8, 17*]

Analyze and solve linear equations and systems of two linear equations.	9. Solve systems of two linear equations in two variables by graphing and substitution. a. Explain that the solution(s) of systems of two linear equations in two variables corresponds to points of intersection on their graphs because points of intersection satisfy both equations simultaneously. b. Interpret and justify the results of systems of two linear equations in two variables (one solution, no solution, or infinitely many solutions) when applied to real-world and mathematical problems. [*Grade 8, 12*]
Finding solutions to an equation, inequality, or system of equations or inequalities requires the checking of candidate solutions, whether generated analytically or graphically, to ensure that solutions are found and that those found are not extraneous.	10. Explain why extraneous solutions to an equation involving absolute values may arise and how to check to be sure that a candidate solution satisfies an equation. [*Algebra I with Probability, 8*]
The structure of an equation or inequality (including, but not limited to, one-variable linear and quadratic equations, inequalities, and systems of linear equations in two variables) can be purposefully analyzed (with and without technology) to determine an efficient strategy to find a solution, if one exists, and then to justify the solution.	11. Select an appropriate method to solve a quadratic equation in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Explain how the quadratic formula is derived from this form. b. Solve quadratic equations by inspection (such as $x^2 = 49$), taking square roots, completing the square, the quadratic formula, and factoring, as appropriate to the initial form of the equation, and recognize that some solutions may not be real. [*Algebra I with Probability, 9*] 12. Select an appropriate method to solve a system of two linear equations in two variables. a. Solve a system of two equations in two variables by using linear combinations; contrast situations in which use of linear combinations is more efficient with those in which substitution is more efficient. b. Contrast solutions to a system of two linear equations in two variables produced by algebraic methods with graphical and tabular methods. [*Algebra I with Probability, 10*]

Expressions, equations, and inequalities can be used to analyze and make predictions, both within mathematics and as mathematics is applied in different contexts – in particular, contexts that arise in relation to linear, quadratic, and exponential situations.	13. Create equations and inequalities in one variable and use them to solve problems in context, either exactly or approximately. **Extend from contexts arising from linear functions to those involving quadratic, exponential, and absolute value functions.** [*Algebra I with Probability, 11*] 14. Create equations in two or more variables to represent relationships between quantities in context; graph equations on coordinate axes with labels and scales and use them to make predictions. **Limit to contexts arising from linear, quadratic, exponential, absolute value, and linear piecewise functions.** [*Algebra I with Probability, 12*] 15. Represent constraints by equations and/or inequalities, and solve systems of equations and/or inequalities, interpreting solutions as viable or nonviable options in a modeling context. **Limit to contexts arising from linear, quadratic, exponential, absolute value, and linear piecewise functions.** [*Algebra I with Probability, 13*]
Functions shift the emphasis from a point-by-point relationship between two variables (input/output) to considering an entire set of ordered pairs (where each first element is paired with exactly one second element) as an entity with its own features and characteristics.	16. Define a function as a mapping from one set (called the domain) to another set (called the range) that assigns to each element of the domain exactly one element of the range. [*Grade 8, 13, edited for added content*] a. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. [*Grade 8, 14, edited for added content*] *Note: If* f *is a function and* x *is an element of its domain, then* f(x) *denotes the output of* f *corresponding to the input* x. b. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. **Limit to linear, quadratic, exponential, and absolute value functions.** [*Algebra I with Probability, 15*] 17. Given a relation defined by an equation in two variables, identify the graph of the relation as the set of all its solutions plotted in the coordinate plane. [*Algebra I with Probability, 14*] *Note: The graph of a relation often forms a curve (which could be a line).* 18. Compare and contrast relations and functions represented by equations, graphs, or tables that show related values; determine whether a relation is a function. Identify that a function *f* is a special kind of relation defined by the equation $y = f(x)$. [*Algebra I with Probability, 16*]

<table>
<tr>
<td></td>
<td>
19. Combine different types of standard functions to write, evaluate, and interpret functions in context. Limit to linear, quadratic, exponential, and absolute value functions.
a. Use arithmetic operations to combine different types of standard functions to write and evaluate functions. Example: Given two functions, one representing flow rate of water and the other representing evaporation of that water, combine the two functions to determine the amount of water in the container at a given time.
b. Use function composition to combine different types of standard functions to write and evaluate functions. [Algebra I with Probability, 17]
Example: Given the following relationships, determine what the expression S(T(t)) represents.
<table>
<tr><td>Function</td><td>Input</td><td>Output</td></tr>
<tr><td>G</td><td>Amount of studying: s</td><td>Grade in course: G(s)</td></tr>
<tr><td>S</td><td>Grade in course: g</td><td>Amount of screen time: S(g)</td></tr>
<tr><td>T</td><td>Amount of screen time: t</td><td>Number of followers: T(t)</td></tr>
</table>
</td>
</tr>
<tr>
<td>Graphs can be used to obtain exact or approximate solutions of equations, inequalities, and systems of equations and inequalities – including systems of linear equations in two variables and systems of linear and quadratic equations (given or obtained by using technology).</td>
<td>
20. Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$.
a. Find the approximate solutions of an equation graphically, using tables of values, or finding successive approximations, using technology where appropriate. [Algebra I with Probability, 19]
Note: Include cases where f(x) is linear, quadratic, exponential, or absolute value functions and g(x) is constant or linear.

21. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes, using technology where appropriate. [Algebra I with Probability, 20]

22. Solve systems consisting of linear and/or quadratic equations in two variables graphically, using technology where appropriate. [Algebra I with Probability, 18]
</td>
</tr>
</table>

Functions can be described by using a variety of representations: mapping diagrams, function notation (e.g., $f(x) = x^2$), recursive definitions, tables, and graphs.	23. Compare properties of two functions, each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). **Include linear, quadratic, exponential, absolute value, and linear piecewise.** [*Algebra I with Probability, 21, edited*] a. Distinguish between linear and non-linear functions. [*Grade 8, 15a*] 24. Define sequences as functions, including recursive definitions, whose domain is a subset of the integers. a. Write explicit and recursive formulas for arithmetic and geometric sequences and connect them to linear and exponential functions. [*Algebra I with Probability, 22*] *Example: A sequence with constant growth will be a linear function, while a sequence with proportional growth will be an exponential function.*
Functions that are members of the same family have distinguishing attributes (structure) common to all functions within that family.	25. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and explain the effects on the graph, using technology as appropriate. **Extend from linear to quadratic, exponential, absolute value, and linear piecewise functions.** [*Algebra I with Probability, 23, edited*] 26. Distinguish between situations that can be modeled with linear functions and those that can be modeled with exponential functions. a. Show that linear functions grow by equal differences over equal intervals, while exponential functions grow by equal factors over equal intervals. b. Define linear functions to represent situations in which one quantity changes at a constant rate per unit interval relative to another. c. Define exponential functions to represent situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. [*Algebra I with Probability, 24*] 27. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). [*Algebra I with Probability, 25]* 28. Use graphs and tables to show that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically. [*Algebra I with Probability, 26*]

	29. Interpret the parameters of functions in terms of a context. **Extend from linear functions, written in the form $mx + b$, to exponential functions, written in the form ab^x.** [*Algebra I with Probability*, *27*] *Example: If the function* $V(t) = 19885(0.75)^t$ *describes the value of a car after it has been owned for* t *years, 19885 represents the purchase price of the car when* $t = 0$*, and 0.75 represents the annual rate at which its value decreases.*
Functions can be represented graphically and key features of the graphs, including zeros, intercepts, and, when relevant, rate of change and maximum/minimum values, can be associated with and interpreted in terms of the equivalent symbolic representation.	30. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Note: Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries; and end behavior.* **Extend from relationships that can be represented by linear functions to quadratic, exponential, absolute value, and general piecewise functions.** [*Algebra I with Probability, 28*] 31. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph**. Limit to linear, quadratic, exponential, and absolute value functions.** [*Algebra I with Probability, 29*] 32. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph piecewise-defined functions, including step functions and absolute value functions. c. Graph exponential functions, showing intercepts and end behavior. [*Algebra I with Probability*, *30*]
Functions model a wide variety of real situations and can help students understand the processes of making and changing assumptions, assigning variables, and finding solutions to contextual problems.	33. Use the mathematical modeling cycle to solve real-world problems involving linear, quadratic, exponential, absolute value, and linear piecewise functions. [*Algebra I with Probability*, *31*]

Data Analysis, Statistics, and Probability	
Investigate patterns of association in bivariate data.	34. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities, describing patterns in terms of positive, negative, or no association, linear and non-linear association, clustering, and outliers. [*Grade 8, 18*] 35. Given a scatter plot that suggests a linear association, informally draw a line to fit the data, and assess the model fit by judging the closeness of the data points to the line. [*Grade 8, 19*] 36. Use a linear model of a real-world situation to solve problems and make predictions. a. Describe the rate of change and *y*-intercept in the context of a problem using a linear model of a real-world situation. [*Grade 8, 20*] 37. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects, using relative frequencies calculated for rows or columns to describe possible associations between the two variables. [*Grade 8, 21*]
Data arise from a context and come in two types: quantitative (continuous or discrete) and categorical. Technology can be used to "clean" and organize data, including very large data sets, into a useful and manageable structure – a first step in any analysis of data.	38. Distinguish between quantitative and categorical data and between the techniques that may be used for analyzing data of these two types. [*Algebra I with Probability*, *34*] *Example: The color of cars is categorical and so is summarized by frequency and proportion for each color category, while the mileage on each car's odometer is quantitative and can be summarized by the mean.*
The association between two categorical variables is typically represented by using two-way tables and segmented bar graphs.	39. Analyze the possible association between two categorical variables. a. Summarize categorical data for two categories in two-way frequency tables and represent using segmented bar graphs. b. Interpret relative frequencies in the context of categorical data (including joint, marginal, and conditional relative frequencies). c. Identify possible associations and trends in categorical data. [*Algebra I with Probability*, *35*]

<table>
<tr>
<td>Data analysis techniques can be used to develop models of contextual situations and to generate and evaluate possible solutions to real problems involving those contexts.</td>
<td>40. Generate a two-way categorical table in order to find and evaluate solutions to real-world problems.
a. Aggregate data from several groups to find an overall association between two categorical variables.
b. Recognize and explore situations where the association between two categorical variables is reversed when a third variable is considered (Simpson's Paradox). [Algebra I with Probability, 36]
Example: In a certain city, Hospital 1 has a higher fatality rate than Hospital 2. But when considering mildly-injured patients and severely-injured patients as separate groups, Hospital 1 has a lower fatality rate among both groups than Hospital 2, since Hospital 1 is a Level 1 Trauma Center. Thus, Hospital 1 receives most of the severely-injured patients who are less likely to survive overall but have a better chance of surviving in Hospital 1 than they would in Hospital 2.</td>
</tr>
<tr>
<td>Mathematical and statistical reasoning about data can be used to evaluate conclusions and assess risks.</td>
<td>41. Use mathematical and statistical reasoning with bivariate categorical data in order to draw conclusions and assess risk. [Algebra I with Probability, 32]
Example: In a clinical trial comparing the effectiveness of flu shots A and B, 21 subjects in treatment group A avoided getting the flu while 29 contracted it. In group B, 12 avoided the flu while 13 contracted it. Discuss which flu shot appears to be more effective in reducing the chances of contracting the flu.
Possible answer: Even though more people in group A avoided the flu than in group B, the proportion of people avoiding the flu in group B is greater than the proportion in group A, which suggests that treatment B may be more effective in lowering the risk of getting the flu.
<table>
<tr><th></th><th>Contracted Flu</th><th>Did Not Contract Flu</th></tr>
<tr><td>Flu Shot A</td><td>29</td><td>21</td></tr>
<tr><td>Flu Shot B</td><td>13</td><td>12</td></tr>
<tr><td>Total</td><td>42</td><td>33</td></tr>
</table>
</td>
</tr>
<tr>
<td>Making and defending informed, data-based decisions is a characteristic of a quantitatively literate person.</td>
<td>42. Design and carry out an investigation to determine whether there appears to be an association between two categorical variables, and write a persuasive argument based on the results of the investigation. [Algebra I with Probability, 33]
Example: Investigate whether there appears to be an association between successfully completing a task in a given length of time and listening to music while attempting to complete the task. Randomly assign some students to listen to music while attempting to complete the task and others to complete the task without listening to music. Discuss whether students should listen to music while studying, based on that analysis.</td>
</tr>
</table>

Two events are independent if the occurrence of one event does not affect the probability of the other event. Determining whether two events are independent can be used for finding and understanding probabilities.	43. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not"). [*Algebra I with Probability*, *37*] 44. Explain whether two events, A and B, are independent, using two-way tables or tree diagrams. [*Algebra I with Probability*, *38*]
Conditional probabilities – that is, those probabilities that are "conditioned" by some known information – can be computed from data organized in contingency tables. Conditions or assumptions may affect the computation of a probability.	45. Compute the conditional probability of event A given event B, using two-way tables or tree diagrams. [*Algebra I with Probability*, *39*] 46. Recognize and describe the concepts of conditional probability and independence in everyday situations and explain them using everyday language. [*Algebra I with Probability*, *40*] *Example: Contrast the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.* 47. Explain why the conditional probability of A given B is the fraction of B's outcomes that also belong to A, and interpret the answer in context. [*Algebra I with Probability*, *41*] *Example: the probability of drawing a king from a deck of cards, given that it is a face card, is* $\frac{4/52}{12/52}$*, which is* $\frac{1}{3}$.

Geometry and Measurement	
Understand and apply the Pythagorean Theorem.	48. Informally justify the Pythagorean Theorem and its converse. [*Grade 8, 26*] 49. Apply the Pythagorean Theorem to find the distance between two points in a coordinate plane. [*Grade 8, 27*] 50. Apply the Pythagorean Theorem to determine unknown side lengths of right triangles, including real-world applications. [*Grade 8, 28*]

GRADES 9-12 OVERVIEW

The high school mathematics course of study in this document focuses on empowering students in three areas:

- meeting their postsecondary goals, whether they pursue additional study or enter the workforce;
- functioning as effective citizens who can use mathematics to make responsible decisions about their own lives and about society as a whole; and
- recognizing mathematics as an inspiring, enjoyable, and significant human achievement.

Meeting these goals requires students to understand that "mathematics is more than finding answers; mathematics requires reasoning and problem-solving in order to solve real-world and mathematical problems." (see Teaching and Learning Mathematics Position Statement on p. 7). Thus, students must be consistently engaged in the Student Mathematical Practices, which are listed as standards for every course. At the high school level, it is particularly important that students consistently use technology and other appropriate mathematical tools to explore and develop a deep understanding of the mathematics they are studying. A particular emphasis on mathematical modeling (using mathematics to solve real world problems) is also incorporated throughout the courses.

Ensuring that all students receive the preparation they deserve requires unrelenting focus on developing their deep understanding of the most critical content that they will need not simply to pass the next test or course, but also to function effectively throughout their lives. In order to ensure the necessary focus on this critical content, these standards build on "essential concepts" for high school mathematics described by the National Council of Teachers of Mathematics (NCTM) in *Catalyzing Change in High School Mathematics: Initiating Critical Conversations* (2018). These essential concepts are designed to be achieved by all students within the first three years of high school mathematics, and they form the foundation for additional coursework designed to meet students' specific post-high school needs and interests. Note in particular the emphasis on statistics and probability, which are increasingly important in today's world. See the complete list of essential concepts below.

Pathways to Student Success

In order to be mathematically well-prepared upon graduation, students need to complete four credits in high school mathematics. The high school program builds on students' preparation in Grades 6-8 with a shared pathway of three required courses taken by all students, followed by additional "specialized courses" that prepare students for life and study after high school, including specific educational and career options. Note that decisions on what pathway a student pursues should be based on his or her interests and motivation to pursue the pathway, not on prejudgments about what he or she may or may not be able to achieve. Students and parents

should receive full information on the different pathways and their consequences so that they can make informed decisions, rather than having decisions made for them. Students should also be encouraged to expand their horizons by taking a pathway that provides options beyond what they may currently be considering in order to accommodate the broadest range of future interests.

Placing *Geometry with Data Analysis* before *Algebra I with Probability.* Following a recommendation in *Catalyzing Change* (NCTM, 2018), *Geometry with Data Analysis* is the first required high school course, followed by *Algebra I with Probability* and *Algebra II with Statistics.* Placing *Geometry with Data Analysis* before *Algebra I with Probability* serves three major purposes. First, having two consecutive high school mathematics courses focusing on algebra, without a geometry course in between, means there is no gap in algebra content, which should increase students' retention of algebraic concepts and decrease the need for reteaching. Second, this arrangement allows all students, no matter what pathway they followed in the middle grades, to enter *Geometry with Data Analysis* in Grade 9, providing them with a common mathematics experience at the beginning of high school. Students who did not complete the accelerated middle grades curriculum can then take *Algebra I with Probability*, while students who have taken the accelerated middle grades curriculum and have made sufficient progress can move on to *Algebra II with Statistics*. Third, *Geometry with Data Analysis* develops mathematical knowledge and skills through visual representations prior to the more abstract development of algebra. Beginning high school mathematics with *Geometry with Data Analysis* in Grade 9 offers students the opportunity to build their reasoning and sense-making skills, see the applicability of mathematics, and prepare more effectively for further studies in algebra.

Geometry with Data Analysis has been carefully designed so that its use of algebra in geometric contexts follows directly from and extends the algebraic knowledge and skills developed in *Grade 8 Mathematics*, while reinforcing concepts included in the *Grade 8 Accelerated Mathematics* for students who have completed that course.

Support for students who are struggling. School systems may not offer any of the three required courses as "A" and "B" courses in which the content is spread over two courses. Instead, all school systems should offer lab courses to be taken concurrently with the required content courses to meet the needs of all students. These lab courses might review prior knowledge needed for upcoming lessons, reinforce content from previous lessons, or preview upcoming content to ensure that students can fully participate in the required content classes. Since lab courses do not cover additional mathematical standards, students can receive only an elective credit for each of them, not a mathematics credit.

No specific scheduling structure for the lab courses is prescribed in the course of study document. Many schools and districts have intervention schedules which can be used or modified to accommodate the lab courses. Students must receive the support they need for success, in whatever form is possible, without slowing down their progress through the curriculum, which would limit their options for further study of mathematics. Care should be taken to ensure that informed choices, based on solid data, are made about which students are assigned to lab classes or other supports. Assignment to lab courses should be fluid, based on frequent scrutiny of student progress, rather than being a foregone conclusion based on the support they have received in the past.

Support for students who are particularly motivated and interested. While offering *Geometry with Data Analysis* before Grade 9 is not allowed, an option is provided for middle school students who show particular motivation and interest in mathematics—"accelerated" courses for Grade 7 and Grade 8 that incorporate the standards from *Algebra I with Probability* with the standards of Grade 7 and Grade 8. Students completing this pathway and showing adequate progress by the end of *Geometry with Data Analysis* in Grade 9 may move directly to *Algebra II with Statistics*. These students will be required to take two additional courses beyond *Algebra II with Statistics* to earn the mandatory four credits in mathematics, since neither of the accelerated middle grades courses (nor their combination) is equivalent to a high school mathematics course. This provides them the opportunity to make additional progress towards their postsecondary goals.

The accelerated pathway is not the default for a large number of students; it should be reserved for those students entering the seventh grade who are highly motivated to study mathematics very intensively. However, even highly motivated students may not excel in these courses. Students who are not making adequate progress in Grade 7 Accelerated may elect to take the non-accelerated Grade 8 Mathematics course without any loss of progress. Likewise, even if students have completed the accelerated pathway, they may elect to take the *Algebra I with Probability* course after *Geometry with Data Analysis* if they are not adequately prepared for *Algebra II with Statistics*.

Finally, provision is made for Grade 9 students who did not complete the accelerated middle school pathway but who wish to take additional specialized mathematics courses in high school. These students may take *Geometry with Data Analysis* and *Algebra I with Probability* concurrently in Grade 9 and then take *Algebra II with Statistics* in Grade 10. They should, however, also take a mathematics course in both Grade 11 and Grade 12, meaning that they earn a fifth mathematics credit in Grade 12. Continuing to study mathematics every year preserves student gains and is a key recommendation of *Catalyzing Change* (NCTM, 2018).

Students and parents should receive ongoing feedback and information on options as they decide whether or not to pursue, or continue pursuing, an accelerated pathway, rather than having that decision made for them without consultation. It is critical that all students are afforded the opportunity to pursue a pathway that supports their interests and goals.

Specialized mathematics courses. Following *Algebra II with Statistics*, students choose among three specialized mathematics classes that are designed to prepare them for future success in the postsecondary study of mathematics, in careers, and in their lifelong use and enjoyment of mathematics. Again, students and parents should receive full information on the different courses and the opportunities their completion will afford so that they can make informed decisions, rather than having decisions made for them.

- *Precalculus* is designed for students who intend to enter mathematics-intensive majors or other majors or careers for which calculus is required. These include a broad range of scientific and engineering fields, as well as business and finance.
- *Mathematical Modeling* builds on the mathematics students have encountered in previous courses, allowing them to explore real-world phenomena and engage in mathematical decision-making. This course provides a solid foundation for students who are entering a range of

fields involving quantitative reasoning, whether or not they may ultimately need calculus. This course may be particularly appropriate for students who need precalculus in college.

- *Applications of Finite Mathematics* provides an introduction to mathematical thinking for solving problems that are frequently encountered in today's complex society but are not commonly encountered in the high school curriculum. This course is appropriate for a broad range of students who are entering fields for which calculus is not required or who want to broaden their mathematical understanding.

Note, however, that all of these courses are designed to allow students to progress to further studies in mathematics. No course should be seen as a dead end but rather as an invitation to students to continue their journey in mathematics.

Students requiring two credits of mathematics after *Algebra II with Statistics* may take any two of the three specialized mathematics courses, as their content does not substantially overlap, and they may be completed in any order. AP Calculus may also be taken following *Precalculus* in school systems where it is offered. AP Calculus can provide a head start for students intending a major or career requiring calculus.

Extended courses. AP Statistics and AP Computer Science courses are extended courses approved by ALSDE for a fourth mathematics credit. These courses will supplement students' mathematical preparation in high school but are not designed to prepare students for their initial credit-bearing post-secondary course in mathematics. Students who intend to pursue a technical field may consider taking an AP Computer Science course along with either *Applications of Finite Mathematics* or *Mathematical Modeling*. Students who intend to pursue a field with extensive use of statistics may consider taking AP Statistics along with either *Applications of Finite Mathematics* or *Mathematical Modeling*. However, to provide students with an adequate background for future mathematical endeavors, it is recommended that AP Statistics and AP Computer Science courses be completed in addition to one of the specialized courses. The ALSDE has approved other options for a fourth mathematics credit, including dual enrollment courses; see table at the end of Appendix B.

Examples of Pathways. The rows of the following table provide examples of pathways which students may experience across Grades 7-12. Note that students should be enrolled in a mathematics course every year of middle and high school.

<table>
<tr><th>Grade 7</th><th>Grade 8</th><th>Grade 9</th><th>Grade 10</th><th>Grade 11</th><th>Grade 12</th></tr>
<tr><td>Grade 7 Mathematics</td><td>Grade 8 Mathematics</td><td>Geometry with Data Analysis</td><td>Algebra I with Probability</td><td>Algebra II with Statistics</td><td>Specialized course</td></tr>
<tr><td rowspan="2">Grade 7 Mathematics
OR
Accelerated Grade 7 Mathematics</td><td rowspan="2">Grade 8 Mathematics</td><td rowspan="2">Geometry with Data Analysis
AND Algebra I with Probability
(concurrently)</td><td rowspan="2">Algebra II with Statistics</td><td>Precalculus</td><td>AP Calculus
OR Additional specialized course</td></tr>
<tr><td>Mathematical Modeling
OR Applications of Finite Mathematics</td><td>Precalculus
OR Other additional specialized course</td></tr>
<tr><td rowspan="2">Accelerated Grade 7 Mathematics</td><td rowspan="2">Accelerated Grade 8 Mathematics</td><td rowspan="2">Geometry with Data Analysis</td><td rowspan="2">Algebra II with Statistics</td><td>Precalculus</td><td>AP Calculus
OR Additional specialized course</td></tr>
<tr><td>Mathematical Modeling
OR Applications of Finite Mathematics</td><td>Precalculus
OR Other additional specialized course</td></tr>
<tr><td>Accelerated Grade 7 Mathematics</td><td>Grade 8 Mathematics
OR Accelerated Grade 8 Mathematics</td><td>Geometry with Data Analysis</td><td>Algebra I with Probability</td><td>Algebra II with Statistics</td><td>Specialized course</td></tr>
</table>

See Appendix E for an exhaustive list of course pathways. In addition, see the figure in Appendix B which shows how each pathway connects with postsecondary options.

Organization of Standards

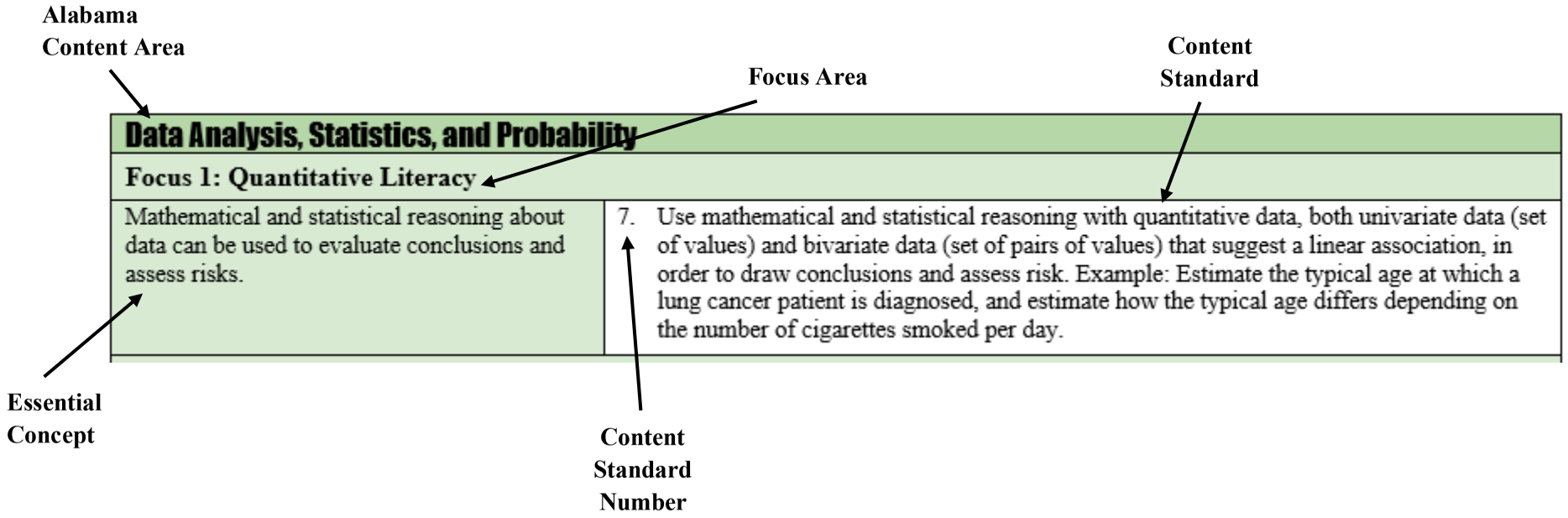
1. A set of **essential concepts** is used to organize the standards in the required courses in the high school section of the course of study. These essential concepts build on those described by the National Council of Teachers of Mathematics (2018) in *Catalyzing Change in High School Mathematics*, with some additional concepts reflecting that all Alabama students must take three courses rather than 2.5. These essential concepts include the concepts and skills that all students need to build the mathematical foundation required for the continued study of mathematics and for other future mathematical needs.
2. Essential concepts are given for four **content areas**, as shown in the table below: Number and Quantity; Algebra and Functions; Data Analysis, Statistics, and Probability; and Geometry and Measurement. A table for applicable content areas appears in each course. (The order of the content areas follows *Catalyzing Change*, whereas K-8 follows the order given in the table below.) A table for applicable content areas appears in each course. Each content area (other than Number and Quantity) is further organized into several **focus areas** which appear as subheadings in the table. Focus areas in Grades 9-12 are similar to clusters in K-8, groups of related essential concepts and standards within the specific content area. Not every focus area appears in every course. Finally, the essential concepts are listed in the left column of each table, alongside a list of content standards that support attainment of each. The standards are collectively designed as the mathematical content of a shared pathway for **all** students.

Overview of Alabama Mathematics Content Areas

<table>
<tr><th>NAEP Content Areas</th><th>Kindergarten</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>High School</th></tr>
<tr><td rowspan="3">Number Properties and Operations</td><td>Foundations of Counting</td><td colspan="9"></td></tr>
<tr><td colspan="6">Operations with Numbers: Base Ten</td><td colspan="2">Proportional Reasoning</td><td rowspan="2">Number</td></tr>
<tr><td colspan="4"></td><td colspan="2">Operations with Numbers: Fractions</td><td colspan="2">Number Systems and Operations</td></tr>
<tr><td>Algebra</td><td colspan="6">Operations and Algebraic Thinking</td><td colspan="4">Algebra and Functions</td></tr>
<tr><td>Data Analysis, Statistics, and Probability</td><td colspan="6">Data Analysis</td><td colspan="4">Data Analysis, Statistics, and Probability</td></tr>
<tr><td>Measurement</td><td colspan="6">Measurement</td><td colspan="4" rowspan="2">Geometry and Measurement</td></tr>
<tr><td>Geometry</td><td colspan="6">Geometry</td></tr>
</table>

3. **Content standards** are written in the right column of each content area table and numbered as shown in the illustration below. The content standards support the attainment of the essential concepts listed on the left. Standards define what students should understand (know) and be able to do at the conclusion of a course or grade. Content standards in this document contain minimum required content. Some have sub-standards**,** indicated with *a, b, c, d,* which are extensions of the content standards and are also required. Some standards include examples, which are not required to be taught. The order in which standards are listed within a course or grade is not intended to convey a sequence for instruction. Each content standard completes the stem "*Students will...*"

4. Some related standards appear across multiple high school courses. In many cases, there is a bold-print statement to indicate the scope of the standard to align the content that is taught across the courses. The full scope of every standard should be addressed during instruction.
5. The specialized courses taken after *Algebra II with Statistics* are organized in ways related to their specific subject matter, which extend beyond the essential concepts and directly support students' professional and personal goals. The standards indicating what students should know or be able to do are listed in the right columns of the content area tables. Important concepts within these content areas are described in the left columns, and focus areas within the tables are indicated.



Data Analysis, Statistics, and Probability	
Focus 1: Quantitative Literacy	
Mathematical and statistical reasoning about data can be used to evaluate conclusions and assess risks.	7. Use mathematical and statistical reasoning with quantitative data, both univariate data (set of values) and bivariate data (set of pairs of values) that suggest a linear association, in order to draw conclusions and assess risk. Example: Estimate the typical age at which a lung cancer patient is diagnosed, and estimate how the typical age differs depending on the number of cigarettes smoked per day.

Essential Concepts

All essential concepts used in the high school course of study are listed below. The required courses in which the essential concepts appear are noted in the column on the right.

Number and Quantity	
• Together, irrational numbers and rational numbers complete the real number system, representing all points on the number line, while there exist numbers beyond the real numbers called complex numbers.	Geometry with Data Analysis Algebra I with Probability Algebra II with Statistics
• Quantitative reasoning includes, and mathematical modeling requires attention to units of measurement.	Geometry with Data Analysis
• Matrices are a useful way to represent information.	Algebra II with Statistics
Algebra and Functions	
Focus 1: Algebra	
• Expressions can be rewritten in equivalent forms by using algebraic properties, including properties of addition, multiplication, and exponentiation, to make different characteristics or features visible.	Algebra I with Probability Algebra II with Statistics
• Finding solutions to an equation, inequality, or system of equations or inequalities requires the checking of candidate solutions, whether generated analytically or graphically, to ensure that solutions are found and that those found are not extraneous.	Algebra I with Probability Algebra II with Statistics
• The structure of an equation or inequality (including, but not limited to, one-variable linear and quadratic equations, inequalities, and systems of linear equations in two variables) can be purposefully analyzed (with and without technology) to determine an efficient strategy to find a solution, if one exists, and then to justify the solution.	Geometry with Data Analysis Algebra I with Probability Algebra II with Statistics

• Expressions, equations, and inequalities can be used to analyze and make predictions, both within mathematics and as mathematics is applied in different contexts – in particular, contexts that arise in relation to linear, quadratic, and exponential situations.	Geometry with Data Analysis Algebra I with Probability Algebra II with Statistics
Focus 2: Connecting Algebra to Functions	
• Functions shift the emphasis from a point-by-point relationship between two variables (input/output) to considering an entire set of ordered pairs (where each first element is paired with exactly one second element) as an entity with its own features and characteristics.	Algebra I with Probability
• Graphs can be used to obtain exact or approximate solutions of equations, inequalities, and systems of equations and inequalities – including systems of linear equations in two variables and systems of linear and quadratic equations (given or obtained by using technology).	Geometry with Data Analysis Algebra I with Probability Algebra II with Statistics
Focus 3: Functions	
• Functions can be described by using a variety of representations: mapping diagrams, function notation (e.g., $f(x) = x^2$), recursive definitions, tables, and graphs.	Algebra I with Probability Algebra II with Statistics
• Functions that are members of the same family have distinguishing attributes (structure) common to all functions within that family.	Algebra I with Probability Algebra II with Statistics
• Functions can be represented graphically, and key features of the graphs, including zeros, intercepts, and, when relevant, rate of change and maximum/minimum values, can be associated with and interpreted in terms of the equivalent symbolic representation.	Algebra I with Probability Algebra II with Statistics
• Functions model a wide variety of real situations and can help students understand the processes of making and changing assumptions, assigning variables, and finding solutions to contextual problems.	Algebra I with Probability Algebra II with Statistics

Data Analysis, Statistics, and Probability	
Focus 1: Quantitative Literacy	
• Mathematical and statistical reasoning about data can be used to evaluate conclusions and assess risks.	Geometry with Data Analysis Algebra I with Probability Algebra II with Statistics
• Making and defending informed data-based decisions is a characteristic of a quantitatively literate person.	Algebra I with Probability Algebra II with Statistics
Focus 2: Visualizing and Summarizing Data	
• Data arise from a context and come in two types: quantitative (continuous or discrete) and categorical. Technology can be used to "clean" and organize data, including very large data sets, into a useful and manageable structure – a first step in any analysis of data.	Geometry with Data Analysis Algebra I with Probability
• Distributions of quantitative data (continuous or discrete) in one variable should be described in the context of the data with respect to what is typical (the shape, with appropriate measures of center and variability, including standard deviation) and what is not (outliers), and these characteristics can be used to compare two or more subgroups with respect to a variable.	Geometry with Data Analysis Algebra II with Statistics
• The association between two categorical variables is typically represented by using two-way tables and segmented bar graphs.	Algebra I with Probability
• Scatterplots, including plots over time, can reveal patterns, trends, clusters, and gaps that are useful in analyzing the association between two contextual variables.	Geometry with Data Analysis
• Analyzing the association between two quantitative variables should involve statistical procedures, such as examining (with technology) the sum of squared deviations in fitting a linear model, analyzing residuals for patterns, generating a least-squares regression line and finding a correlation coefficient, and differentiating between correlation and causation.	Geometry with Data Analysis
• Data-analysis techniques can be used to develop models of contextual situations and to generate and evaluate possible solutions to real problems involving those contexts.	Geometry with Data Analysis Algebra II with Statistics

Focus 3: Statistical Inference	
• Study designs are of three main types: sample survey, experiment, and observational study.	Algebra II with Statistics
• The role of randomization is different in randomly selecting samples and in randomly assigning subjects to experimental treatment groups.	Algebra II with Statistics
• The scope and validity of statistical inferences are dependent on the role of randomization in the study design.	Algebra II with Statistics
• Bias, such as sampling, response, or nonresponse bias, may occur in surveys, yielding results that are not representative of the population of interest.	Algebra II with Statistics
• The larger the sample size, the less the expected variability in the sampling distribution of a sample statistic.	Algebra II with Statistics
• The sampling distribution of a sample statistic formed from repeated samples for a given sample size drawn from a population can be used to identify typical behavior for that statistic. Examining several such sampling distributions leads to estimating a set of plausible values for the population parameter, using the margin of error as a measure that describes the sampling variability.	Algebra II with Statistics
Focus 4: Probability	
• Two events are independent if the occurrence of one event does not affect the probability of the other event. Determining whether two events are independent can be used for finding and understanding probabilities.	Algebra I with Probability
• Conditional probabilities – that is, those probabilities that are "conditioned" by some known information – can be computed from data organized in contingency tables. Conditions or assumptions may affect the computation of a probability.	Algebra I with Probability

Geometry and Measurement	
Focus 1: Measurement	
• Areas and volumes of figures can be computed by determining how the figure might be obtained from simpler figures by dissection and recombination.	Geometry with Data Analysis
• Constructing approximations of measurements with different tools, including technology, can support an understanding of measurement.	Geometry with Data Analysis
• When an object is the image of a known object under a similarity transformation, a length, area, or volume on the image can be computed by using proportional relationships.	Geometry with Data Analysis Algebra II with Statistics
Focus 2: Transformations	
• Applying geometric transformations to figures provides opportunities for describing the attributes of the figures preserved by the transformation and for describing symmetries by examining when a figure can be mapped onto itself.	Geometry with Data Analysis
• Showing that two figures are congruent involves showing that there is a rigid motion (translation, rotation, reflection, or glide reflection) or, equivalently, a sequence of rigid motions that maps one figure to the other.	Geometry with Data Analysis
• Showing that two figures are similar involves finding a similarity transformation (dilation or composite of a dilation with a rigid motion) or, equivalently, a sequence of similarity transformations that maps one figure onto the other.	Geometry with Data Analysis
• Transformations in geometry serve as a connection with algebra, both through the concept of functions and through the analysis of graphs of functions as geometric figures.	*This essential concept is not noted in any of the required courses. However, it is addressed within the Algebra and Functions Content Area.*

Focus 3: Geometric Arguments, Reasoning, and Proof	
• Proof is the means by which we demonstrate whether a statement is true or false mathematically, and proofs can be communicated in a variety of ways (e.g., two-column, paragraph).	Geometry with Data Analysis
• Using technology to construct and explore figures with constraints provides an opportunity to explore the independence and dependence of assumptions and conjectures.	Geometry with Data Analysis
• Proofs of theorems can sometimes be made with transformations, coordinates, or algebra; all approaches can be useful, and in some cases one may provide a more accessible or understandable argument than another.	Geometry with Data Analysis
Focus 4: Solving Applied Problems and Modeling in Geometry	
• Recognizing congruence, similarity, symmetry, measurement opportunities, and other geometric ideas, including right triangle trigonometry in real-world contexts, provides a means of building understanding of these concepts and is a powerful tool for solving problems related to the physical world in which we live.	Geometry with Data Analysis Algebra II with Statistics
• Experiencing the mathematical modeling cycle in problems involving geometric concepts, from the simplification of the real problem through the solving of the simplified problem, the interpretation of its solution, and the checking of the solution's feasibility, introduces geometric techniques, tools, and points of view that are valuable to problem solving.	Geometry with Data Analysis

Geometry with Data Analysis
Overview

Geometry with Data Analysis is a newly-designed course which builds on the students' experiences in the middle grades. It is the first of three required courses in high school mathematics, providing a common Grade 9 experience for all students entering high-school-level mathematics.

If students need additional support while taking *Geometry with Data Analysis*, schools are encouraged to offer a concurrent "lab course" to meet their specific needs. The lab course might review prior knowledge for upcoming lessons, reinforce content from previous lessons, or preview upcoming content to ensure that students can fully participate in the required class. Since the lab course does not cover additional mathematical standards, students can receive only an elective credit for each lab course, not a mathematics credit. See further details on the lab courses in the High School Overview. Note that school systems will not offer *Geometry with Data Analysis* as "A" and "B" courses in which the content is spread over two courses.

Geometry with Data Analysis builds essential concepts necessary for students to meet their postsecondary goals (whether they pursue additional study or enter the workforce), to function as effective citizens, and to recognize the wonder, joy, and beauty of mathematics (NCTM, 2018). It is important because it develops mathematical knowledge and skills through visual representations prior to the more abstract development of algebra. Beginning high school mathematics with *Geometry with Data Analysis* in Grade 9 offers students the opportunity to build their reasoning and sense-making skills, see the applicability of mathematics, and prepare more effectively for further studies in algebra. The course also focuses on data analysis, which provides students with tools to describe, show, and summarize data in the world around them.

In *Geometry with Data Analysis*, students incorporate knowledge and skills from several mathematics content areas, leading to a deeper understanding of fundamental relationships within the discipline and building a solid foundation for further study. In the content area of Geometry and Measurement, students build on and deepen prior understanding of transformations, congruence, similarity, and coordinate geometry concepts. Informal explorations of transformations provide a foundation for more formal considerations of congruence and similarity, including development of criteria for triangle congruence and similarity. An emphasis on reasoning and proof throughout the content area promotes exploration, conjecture testing, and informal and formal justification. Students extend their middle school work with conjecturing and creating informal arguments to more formal proofs in this course.

In the content area of Algebra and Functions, students perform algebraic calculations with specific application to geometry that build on foundations of algebra from Grades 7 and 8. In the Data Analysis, Statistics, and Probability content area, students build from earlier experiences in analyzing data and creating linear models to focus on univariate quantitative data on the real number line (shape, center, and variability) and bivariate quantitative data on a coordinate plane (creating linear models).

NOTE: Although not all content areas in the grade level have been included in the overview, all standards should be included in instruction.

A focus on mathematical modeling and real-world statistical problem-solving is included across the course; see Appendix E for more information on the modeling cycles for mathematics and statistics. It is essential for students to use technology and other mathematical tools to explore geometric shapes and their properties and to represent and analyze data.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both within the classroom and in life. **The Student Mathematical Practices are standards to be incorporated across all grades.**

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

The standards indicating what students should know or be able to do at the end of the course are listed in the right columns of the content standard tables. The essential concepts are listed in the left columns. In some cases, focus areas are indicated. Statements in **bold print** indicate the scope of the standard and align the standard to related content taught in other courses. The full scope of every standard should be addressed during instruction.

Geometry with Data Analysis Content Standards

Each content standard completes the stem *"Students will…"*

Number and Quantity	
Together, irrational numbers and rational numbers complete the real number system, representing all points on the number line, while there exist numbers beyond the real numbers called complex numbers.	1. Extend understanding of irrational and rational numbers by rewriting expressions involving radicals, including addition, subtraction, multiplication, and division, in order to recognize geometric patterns.

Quantitative reasoning includes, and mathematical modeling requires, attention to units of measurement.	2. Use units as a way to understand problems and to guide the solution of multi-step problems. a. Choose and interpret units consistently in formulas. b. Choose and interpret the scale and the origin in graphs and data displays. c. Define appropriate quantities for the purpose of descriptive modeling. d. Choose a level of accuracy appropriate to limitations of measurements when reporting quantities.

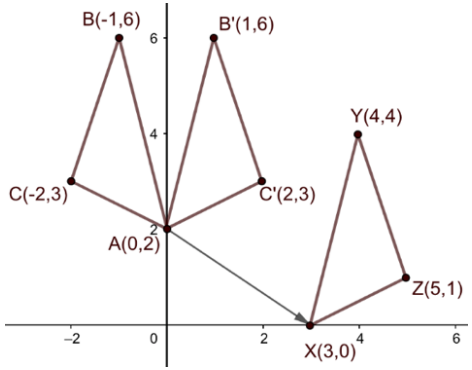
Algebra and Functions	
Focus 1: Algebra	
The structure of an equation or inequality (including, but not limited to, one-variable linear and quadratic equations, inequalities, and systems of linear equations in two variables) can be purposefully analyzed (with and without technology) to determine an efficient strategy to find a solution, if one exists, and then to justify the solution.	3. Find the coordinates of the vertices of a polygon determined by a set of lines, given their equations, by setting their function rules equal and solving, or by using their graphs.
Expressions, equations, and inequalities can be used to analyze and make predictions, both within mathematics and as mathematics is applied in different contexts – in particular, contexts that arise in relation to linear, quadratic, and exponential situations.	4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *Example*: *Rearrange the formula for the area of a trapezoid to highlight one of the bases.*
Focus 2: Connecting Algebra to Functions	
Graphs can be used to obtain exact or approximate solutions of equations, inequalities, and systems of equations and inequalities—including systems of linear equations in two variables and systems of linear and quadratic equations (given or obtained by using technology).	5. Verify that the graph of a linear equation in two variables is the set of all its solutions plotted in the coordinate plane, which forms a line. 6. Derive the equation of a circle of given center and radius using the Pythagorean Theorem. a. Given the endpoints of the diameter of a circle, use the midpoint formula to find its center and then use the Pythagorean Theorem to find its equation. b. Derive the distance formula from the Pythagorean Theorem.

Data Analysis, Statistics, and Probability	
Focus 1: Quantitative Literacy	
Mathematical and statistical reasoning about data can be used to evaluate conclusions and assess risks.	7. Use mathematical and statistical reasoning with quantitative data, both univariate data (set of values) and bivariate data (set of pairs of values) that suggest a linear association, in order to draw conclusions and assess risk. *Example*: *Estimate the typical age at which a lung cancer patient is diagnosed, and estimate how the typical age differs depending on the number of cigarettes smoked per day.*
Focus 2: Visualizing and Summarizing Data	
Data arise from a context and come in two types: quantitative (continuous or discrete) and categorical. Technology can be used to "clean" and organize data, including very large data sets, into a useful and manageable structure – a first step in any analysis of data	8. Use technology to organize data, including very large data sets, into a useful and manageable structure.
Distributions of quantitative data (continuous or discrete) in one variable should be described in the context of the data with respect to what is typical (the shape, with appropriate measures of center and variability, including standard deviation) and what is not (outliers), and these characteristics can be used to compare two or more subgroups with respect to a variable.	9. Represent the distribution of univariate quantitative data with plots on the real number line, choosing a format (dot plot, histogram, or box plot) most appropriate to the data set, and represent the distribution of bivariate quantitative data with a scatter plot. **Extend from simple cases by hand to more complex cases involving large data sets using technology.** 10. Use statistics appropriate to the shape of the data distribution to compare and contrast two or more data sets, utilizing the mean and median for center and the interquartile range and standard deviation for variability. a. Explain how standard deviation develops from mean absolute deviation. b. Calculate the standard deviation for a data set, using technology where appropriate. 11. Interpret differences in shape, center, and spread in the context of data sets, accounting for possible effects of extreme data points (outliers) on mean and standard deviation.

Scatter plots, including plots over time, can reveal patterns, trends, clusters, and gaps that are useful in analyzing the association between two contextual variables.	12. Represent data of two quantitative variables on a scatter plot, and describe how the variables are related. a. Find a linear function for a scatter plot that suggests a linear association and informally assess its fit by plotting and analyzing residuals, including the squares of the residuals, in order to improve its fit. b. Use technology to find the least-squares line of best fit for two quantitative variables.
Analyzing the association between two quantitative variables should involve statistical procedures, such as examining (with technology) the sum of squared deviations in fitting a linear model, analyzing residuals for patterns, generating a least-squares regression line and finding a correlation coefficient, and differentiating between correlation and causation.	13. Compute (using technology) and interpret the correlation coefficient of a linear relationship. 14. Distinguish between correlation and causation.
Data analysis techniques can be used to develop models of contextual situations and to generate and evaluate possible solutions to real problems involving those contexts.	15. Evaluate possible solutions to real-life problems by developing linear models of contextual situations and using them to predict unknown values. a. Use the linear model to solve problems in the context of the given data. b. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the given data.

Geometry and Measurement	
Focus 1: Measurement	
Areas and volumes of figures can be computed by determining how the figure might be obtained from simpler figures by dissection and recombination.	16. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

	17. Model and solve problems using surface area and volume of solids, including composite solids and solids with portions removed. a. Give an informal argument for the formulas for the surface area and volume of a sphere, cylinder, pyramid, and cone using dissection arguments, Cavalieri's Principle, and informal limit arguments. b. Apply geometric concepts to find missing dimensions to solve surface area or volume problems.
Constructing approximations of measurements with different tools, including technology, can support an understanding of measurement.	18. Given the coordinates of the vertices of a polygon, compute its perimeter and area using a variety of methods, including the distance formula and dynamic geometry software, and evaluate the accuracy of the results.
When an object is the image of a known object under a similarity transformation, a length, area, or volume on the image can be computed by using proportional relationships.	19. Derive and apply the relationships between the lengths, perimeters, areas, and volumes of similar figures in relation to their scale factor. 20. Derive and apply the formula for the length of an arc and the formula for the area of a sector.
Focus 2: Transformations	
Applying geometric transformations to figures provides opportunities for describing the attributes of the figures preserved by the transformation and for describing symmetries by examining when a figure can be mapped onto itself.	21. Represent transformations and compositions of transformations in the plane (coordinate and otherwise) using tools such as tracing paper and geometry software. a. Describe transformations and compositions of transformations as functions that take points in the plane as inputs and give other points as outputs, using informal and formal notation. b. Compare transformations which preserve distance and angle measure to those that do not. 22. Explore rotations, reflections, and translations using graph paper, tracing paper, and geometry software. a. Given a geometric figure and a rotation, reflection, or translation, draw the image of the transformed figure using graph paper, tracing paper, or geometry software. b. Specify a sequence of rotations, reflections, or translations that will carry a given figure onto another. c. Draw figures with different types of symmetries and describe their attributes.

	23. Develop definitions of rotation, reflection, and translation in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
Showing that two figures are congruent involves showing that there is a rigid motion (translation, rotation, reflection, or glide reflection) or, equivalently, a sequence of rigid motions that maps one figure to the other.	24. Define congruence of two figures in terms of rigid motions (a sequence of translations, rotations, and reflections); show that two figures are congruent by finding a sequence of rigid motions that maps one figure to the other. *Example: $\triangle ABC$ is congruent to $\triangle XYZ$ since a reflection followed by a translation maps $\triangle ABC$ onto $\triangle XYZ$.*  25. Verify criteria for showing triangles are congruent using a sequence of rigid motions that map one triangle to another. a. Verify that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent. b. Verify that two triangles are congruent if (but not only if) the following groups of corresponding parts are congruent: angle-side-angle (ASA), side-angle-side (SAS), side-side-side (SSS), and angle-angle-side (AAS). *Example: Given two triangles with two pairs of congruent corresponding sides and a pair of congruent included angles, show that there must be a sequence of rigid motions will map one onto the other.*

Showing that two figures are similar involves finding a similarity transformation (dilation or composite of a dilation with a rigid motion) or, equivalently, a sequence of similarity transformations that maps one figure onto the other.	26. Verify experimentally the properties of dilations given by a center and a scale factor. a. Verify that a dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. b. Verify that the dilation of a line segment is longer or shorter in the ratio given by the scale factor. 27. Given two figures, determine whether they are similar by identifying a similarity transformation (sequence of rigid motions and dilations) that maps one figure to the other. 28. Verify criteria for showing triangles are similar using a similarity transformation (sequence of rigid motions and dilations) that maps one triangle to another. a. Verify that two triangles are similar if and only if corresponding pairs of sides are proportional and corresponding pairs of angles are congruent. b. Verify that two triangles are similar if (but not only if) two pairs of corresponding angles are congruent (AA), the corresponding sides are proportional (SSS), or two pairs of corresponding sides are proportional and the pair of included angles is congruent (SAS). *Example: Given two triangles with two pairs of congruent corresponding sides and a pair of congruent included angles, show there must be a set of rigid motions that maps one onto the other.*
Focus 3: Geometric Arguments, Reasoning, and Proof	
Using technology to construct and explore figures with constraints provides an opportunity to explore the independence and dependence of assumptions and conjectures.	29. Find patterns and relationships in figures including lines, triangles, quadrilaterals, and circles, using technology and other tools. a. Construct figures, using technology and other tools, in order to make and test conjectures about their properties. b. Identify different sets of properties necessary to define and construct figures.
Proof is the means by which we demonstrate whether a statement is true or false mathematically, and proofs can be communicated in a variety of ways (e.g., two-column, paragraph).	30. Develop and use precise definitions of figures such as angle, circle, perpendicular lines, parallel lines, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

	31. Justify whether conjectures are true or false in order to prove theorems and then apply those theorems in solving problems, communicating proofs in a variety of ways, including flow chart, two-column, and paragraph formats. a. Investigate, prove, and apply theorems about lines and angles, including but not limited to: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; the points on the perpendicular bisector of a line segment are those equidistant from the segment's endpoints. b. Investigate, prove, and apply theorems about triangles, including but not limited to: the sum of the measures of the interior angles of a triangle is 180˚; the base angles of isosceles triangles are congruent; the segment joining the midpoints of two sides of a triangle is parallel to the third side and half the length; a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem using triangle similarity. c. Investigate, prove, and apply theorems about parallelograms and other quadrilaterals, including but not limited to both necessary and sufficient conditions for parallelograms and other quadrilaterals, as well as relationships among kinds of quadrilaterals. *Example*: *Prove that rectangles are parallelograms with congruent diagonals.*
Proofs of theorems can sometimes be made with transformations, coordinates, or algebra; all approaches can be useful, and in some cases one may provide a more accessible or understandable argument than another.	32. Use coordinates to prove simple geometric theorems algebraically. 33. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems. *Example*: *Find the equation of a line parallel or perpendicular to a given line that passes through a given point.*

Focus 4: Solving Applied Problems and Modeling in Geometry	
Recognizing congruence, similarity, symmetry, measurement opportunities, and other geometric ideas, including right triangle trigonometry, in real-world contexts provides a means of building understanding of these concepts and is a powerful tool for solving problems related to the physical world in which we live.	34. Use congruence and similarity criteria for triangles to solve problems in real-world contexts. 35. Discover and apply relationships in similar right triangles. a. Derive and apply the constant ratios of the sides in special right triangles (45˚-45˚-90˚ and 30˚-60˚-90˚). b. Use similarity to explore and define basic trigonometric ratios, including sine ratio, cosine ratio, and tangent ratio. c. Explain and use the relationship between the sine and cosine of complementary angles. d. Demonstrate the converse of the Pythagorean Theorem. e. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems, including finding areas of regular polygons. 36. Use geometric shapes, their measures, and their properties to model objects and use those models to solve problems. 37. Investigate and apply relationships among inscribed angles, radii, and chords, including but not limited to: the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.
Experiencing the mathematical modeling cycle in problems involving geometric concepts, from the simplification of the real problem through the solving of the simplified problem, the interpretation of its solution, and the checking of the solution's feasibility, introduces geometric techniques, tools, and points of view that are valuable to problem-solving.	38. Use the mathematical modeling cycle involving geometric methods to solve design problems. *Examples: Design an object or structure to satisfy physical constraints or minimize cost; work with typographic grid systems based on ratios; apply concepts of density based on area and volume.*

Algebra I with Probability
Overview

Algebra I with Probability is a newly-designed course which builds upon algebraic concepts studied in the middle grades. It provides students with the necessary knowledge of algebra and probability for use in everyday life and in the subsequent study of mathematics. This is one of three courses required for all students. Students can obtain the essential content from this course either by taking the course after completing *Geometry with Data Analysis* in Grade 9 or by completing the middle school accelerated pathway. Alternatively, students who did not take the accelerated pathway in middle school may choose to accelerate in high school by taking *Algebra I with Probability* in Grade 9 along with *Geometry with Data Analysis.*

If students need additional support while taking *Algebra I with Probability*, schools are encouraged to offer a concurrent "lab course" to meet their specific needs. The lab course might review prior knowledge needed for upcoming lessons, reinforce content from previous lessons, or preview upcoming content to ensure that students can fully participate in the required class. Since the lab course does not cover additional mathematical standards, students can receive only an elective credit for each lab course, not a mathematics credit. See further details on the lab courses in the High School Overview. School systems will not offer *Algebra I with Probability* as "A" and "B" courses in which the content is spread over two courses.

Algebra I with Probability builds essential concepts necessary for students to meet their postsecondary goals (whether they pursue additional study or enter the workforce), to function as effective citizens, and to recognize the wonder, joy, and beauty of mathematics (NCTM, 2018). Algebra is important and useful in most careers. It is one of the most common and malleable types of mathematics, because it is valuable in a range of activities from ordinary decision-making to advanced training in scientific and technological fields. The ability to understand and apply algebraic thinking is a crucial stepping stone on a successful journey in life.

Algebra is a collection of unifying concepts that enable one to solve problems flexibly. The study of algebra is inextricably linked to the study of functions, which are fundamental objects in mathematics that model many life situations involving change. This course provides experiences for students to see how mathematics can be used systematically to represent patterns and relationships among numbers and other objects, analyze change, and model everyday events and problems of life and society.

Algebra I with Probability emphasizes functions including linear (as introduced in Grades 7 and 8), absolute value, quadratic, and exponential; and functions as explicit (relation between input and output) and recursive (relation between successive values). Properties of algebra are applied to convert between forms of expressions and to solve equations (factoring, completing the square, rules of powers, and radicals).

Graphing is an important component of study in *Algebra I with Probability.* Graphs of equations and inequalities consist of all points (discrete or continuous) whose ordered pairs satisfy the relationship within the domain and range. Students find points of intersection between two graphed functions that correspond to the solutions of the equations of the two functions, and transform graphs of functions (through translation, reflection, rotation, and dilation) by performing operations on the input or output.

Probability is important because it educates one in the logic of uncertainty and randomness, which occur in almost every aspect of daily life. Therefore, studying probability structures will enhance students' ability to organize information and improve decision-making. The study of probability undergirds the understanding of ratio and proportion in algebra and encourages inferential reasoning about the likelihood of real-life events. Categorical data are represented as marginal and conditional distributions. Parallels are drawn between conditions and events in probability and inputs and outputs of functions.

A focus on mathematical modeling and real-world statistical problem-solving is included across the course; see Appendix E for more information on the modeling cycles for mathematics and statistics. It is essential for students to use technology and other mathematical tools such as graphing calculators, online graphing software, and spreadsheets to explore functions, equations, and probability.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both in the classroom and in everyday life. **The Student Mathematical Practices are standards to be incorporated across all grades.**

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

The standards indicating what students should know or be able to do are listed in the right columns of the content area tables. The essential concepts are described in the left columns of the content area tables. In some cases, focus areas are indicated within the tables. Only those focus areas which are appropriate for this course are included.

Statements in **bold print** indicate the scope of the standard and align the standard to related content in other courses. The full scope of every standard should be addressed during instruction.

Algebra I with Probability Content Standards

Each content standard completes the stem *"Students will…"*

Number and Quantity	
Together, irrational numbers and rational numbers complete the real number system, representing all points on the number line, while there exist numbers beyond the real numbers called complex numbers.	1. Explain how the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for an additional notation for radicals using rational exponents. 2. Rewrite expressions involving radicals and rational exponents using the properties of exponents. 3. Define the imaginary number i such that $i^2 = -1$.

Algebra and Functions	
Focus 1: Algebra	
Expressions can be rewritten in equivalent forms by using algebraic properties, including properties of addition, multiplication, and exponentiation, to make different characteristics or features visible.	4. Interpret linear, quadratic, and exponential expressions in terms of a context by viewing one or more of their parts as a single entity. *Example: Interpret the accrued amount of investment* $P(1 + r)^t$ *, where P is the principal and* r *is the interest rate, as the product of* P *and a factor depending on time* t. 5. Use the structure of an expression to identify ways to rewrite it. *Example: See* $x^4 - y^4$ *as* $(x^2)^2 - (y^2)^2$*, thus recognizing it as a difference of squares that can be factored as* $(x^2 - y^2)(x^2 + y^2)$.

	6. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. a. Factor quadratic expressions with leading coefficients of one, and use the factored form to reveal the zeros of the function it defines. b. Use the vertex form of a quadratic expression to reveal the maximum or minimum value and the axis of symmetry of the function it defines; complete the square to find the vertex form of quadratics with a leading coefficient of one. c. Use the properties of exponents to transform expressions for exponential functions. *Example: Identify percent rate of change in functions such as* $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, *and classify them as representing exponential growth or decay.* 7. Add, subtract, and multiply polynomials, showing that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication.
Finding solutions to an equation, inequality, or system of equations or inequalities requires the checking of candidate solutions, whether generated analytically or graphically, to ensure that solutions are found and that those found are not extraneous.	8. Explain why extraneous solutions to an equation involving absolute values may arise and how to check to be sure that a candidate solution satisfies an equation.
The structure of an equation or inequality (including, but not limited to, one-variable linear and quadratic equations, inequalities, and systems of linear equations in two variables) can be purposefully analyzed (with and without technology) to determine an efficient strategy to find a solution, if one exists, and then to justify the solution.	9. Select an appropriate method to solve a quadratic equation in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Explain how the quadratic formula is derived from this form. b. Solve quadratic equations by inspection (such as $x^2 = 49$), taking square roots, completing the square, the quadratic formula, and factoring, as appropriate to the initial form of the equation, and recognize that some solutions may not be real.

	10. Select an appropriate method to solve a system of two linear equations in two variables. a. Solve a system of two equations in two variables by using linear combinations; contrast situations in which use of linear combinations is more efficient with those in which substitution is more efficient. b. Contrast solutions to a system of two linear equations in two variables produced by algebraic methods with graphical and tabular methods.
Expressions, equations, and inequalities can be used to analyze and make predictions, both within mathematics and as mathematics is applied in different contexts – in particular, contexts that arise in relation to linear, quadratic, and exponential situations.	11. Create equations and inequalities in one variable and use them to solve problems in context, either exactly or approximately. **Extend from contexts arising from linear functions to those involving quadratic, exponential, and absolute value functions.** 12. Create equations in two or more variables to represent relationships between quantities in context; graph equations on coordinate axes with labels and scales and use them to make predictions. **Limit to contexts arising from linear, quadratic, exponential, absolute value, and linear piecewise functions.** 13. Represent constraints by equations and/or inequalities, and solve systems of equations and/or inequalities, interpreting solutions as viable or nonviable options in a modeling context. **Limit to contexts arising from linear, quadratic, exponential, absolute value, and linear piecewise functions.**
Focus 2: Connecting Algebra to Functions	
Functions shift the emphasis from a point-by-point relationship between two variables (input/output) to considering an entire set of ordered pairs (where each first element is paired with exactly one second element) as an entity with its own features and characteristics.	14. Given a relation defined by an equation in two variables, identify the graph of the relation as the set of all its solutions plotted in the coordinate plane. *Note: The graph of a relation often forms a curve (which could be a line).*

15. Define a function as a mapping from one set (called the domain) to another set (called the range) that assigns to each element of the domain exactly one element of the range.
    a. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. *Note: If* f *is a function and* x *is an element of its domain, then* f(x) *denotes the output of* f *corresponding to the input* x.
    b. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. **Limit to linear, quadratic, exponential, and absolute value functions.**

16. Compare and contrast relations and functions represented by equations, graphs, or tables that show related values; determine whether a relation is a function. Explain that a function *f* is a special kind of relation defined by the equation $y = f(x)$.

17. Combine different types of standard functions to write, evaluate, and interpret functions in context. **Limit to linear, quadratic, exponential, and absolute value functions.**
    a. Use arithmetic operations to combine different types of standard functions to write and evaluate functions.
    Example: Given two functions, one representing flow rate of water and the other representing evaporation of that water, combine the two functions to determine the amount of water in a container at a given time.
    b. Use function composition to combine different types of standard functions to write and evaluate functions.
    Example: Given the following relationships, determine what the expression S(T(t)) *represents.*

Function	Input	Output
G	Amount of studying: *s*	Grade in course: *G(s)*
S	Grade in course: *g*	Amount of screen time: *S(g)*
T	Amount of screen time: *t*	Number of followers: *T(t)*

Graphs can be used to obtain exact or approximate solutions of equations, inequalities, and systems of equations and inequalities – including systems of linear equations in two variables and systems of linear and quadratic equations (given or obtained by using technology).	18. Solve systems consisting of linear and/or quadratic equations in two variables graphically, using technology where appropriate. 19. Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$. a. Find the approximate solutions of an equation graphically, using tables of values, or finding successive approximations, using technology where appropriate. *Note: Include cases where* f(x) *is a linear, quadratic, exponential, or absolute value function and* g(x) *is constant or linear.* 20. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes, using technology where appropriate.
Focus 3: Functions	
Functions can be described by using a variety of representations: mapping diagrams, function notation (e.g., $f(x) = x^2$), recursive definitions, tables, and graphs.	21. Compare properties of two functions, each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). **Extend from linear to quadratic, exponential, absolute value, and general piecewise.** 22. Define sequences as functions, including recursive definitions, whose domain is a subset of the integers. a. Write explicit and recursive formulas for arithmetic and geometric sequences and connect them to linear and exponential functions. *Example: A sequence with constant growth will be a linear function, while a sequence with proportional growth will be an exponential function.*
Functions that are members of the same family have distinguishing attributes (structure) common to all functions within that family.	23. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k, k \cdot f(x), f(k \cdot x)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and explain the effects on the graph, using technology as appropriate. **Limit to linear, quadratic, exponential, absolute value, and linear piecewise functions.**

	24. Distinguish between situations that can be modeled with linear functions and those that can be modeled with exponential functions. a. Show that linear functions grow by equal differences over equal intervals, while exponential functions grow by equal factors over equal intervals. b. Define linear functions to represent situations in which one quantity changes at a constant rate per unit interval relative to another. c. Define exponential functions to represent situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. 25. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). 26. Use graphs and tables to show that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically. 27. Interpret the parameters of functions in terms of a context. **Extend from linear functions, written in the form $mx + b$, to exponential functions, written in the form ab^x.** *Example: If the function* $V(t) = 19885(0.75)^t$ *describes the value of a car after it has been owned for* t *years, 19885 represents the purchase price of the car when* $t = 0$*, and 0.75 represents the annual rate at which its value decreases.*
Functions can be represented graphically and key features of the graphs, including zeros, intercepts, and, when relevant, rate of change and maximum/minimum values, can be associated with and interpreted in terms of the equivalent symbolic representation.	28. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Note: Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries; and end behavior.* **Extend from relationships that can be represented by linear functions to quadratic, exponential, absolute value, and linear piecewise functions.** 29. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph**. Limit to linear, quadratic, exponential, and absolute value functions.**

	30. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph piecewise-defined functions, including step functions and absolute value functions. c. Graph exponential functions, showing intercepts and end behavior.
Functions model a wide variety of real situations and can help students understand the processes of making and changing assumptions, assigning variables, and finding solutions to contextual problems.	31. Use the mathematical modeling cycle to solve real-world problems involving linear, quadratic, exponential, absolute value, and linear piecewise functions.

Data Analysis, Statistics, and Probability

Focus 1: Quantitative Literacy

Mathematical and statistical reasoning about data can be used to evaluate conclusions and assess risks.

32. Use mathematical and statistical reasoning with bivariate categorical data in order to draw conclusions and assess risk.
Example: In a clinical trial comparing the effectiveness of flu shots A and B, 21 subjects in treatment group A avoided getting the flu while 29 contracted it. In group B, 12 avoided the flu while 13 contracted it. Discuss which flu shot appears to be more effective in reducing the chances of contracting the flu.
Possible answer: Even though more people in group A avoided the flu than in group B, the proportion of people avoiding the flu in group B is greater than the proportion in group A, which suggests that treatment B may be more effective in lowering the risk of getting the flu.

	Contracted Flu	Did Not Contract Flu
Flu Shot A	29	21
Flu Shot B	13	12
Total	42	33

Making and defending informed, data-based decisions is a characteristic of a quantitatively literate person.	33. Design and carry out an investigation to determine whether there appears to be an association between two categorical variables, and write a persuasive argument based on the results of the investigation. *Example: Investigate whether there appears to be an association between successfully completing a task in a given length of time and listening to music while attempting the task. Randomly assign some students to listen to music while attempting to complete the task and others to complete the task without listening to music. Discuss whether students should listen to music while studying, based on that analysis.*
Focus 2: Visualizing and Summarizing Data	
Data arise from a context and come in two types: quantitative (continuous or discrete) and categorical. Technology can be used to "clean" and organize data, including very large data sets, into a useful and manageable structure—a first step in any analysis of data.	34. Distinguish between quantitative and categorical data and between the techniques that may be used for analyzing data of these two types. *Example: The color of cars is categorical and so is summarized by frequency and proportion for each color category, while the mileage on each car's odometer is quantitative and can be summarized by the mean.*
The association between two categorical variables is typically represented by using two-way tables and segmented bar graphs.	35. Analyze the possible association between two categorical variables. a. Summarize categorical data for two categories in two-way frequency tables and represent using segmented bar graphs. b. Interpret relative frequencies in the context of categorical data (including joint, marginal, and conditional relative frequencies). c. Identify possible associations and trends in categorical data.

Data analysis techniques can be used to develop models of contextual situations and to generate and evaluate possible solutions to real problems involving those contexts.	36. Generate a two-way categorical table in order to find and evaluate solutions to real-world problems. a. Aggregate data from several groups to find an overall association between two categorical variables. b. Recognize and explore situations where the association between two categorical variables is reversed when a third variable is considered (Simpson's Paradox). *Example: In a certain city, Hospital 1 has a higher fatality rate than Hospital 2. But when considering mildly-injured patients and severely-injured patients as separate groups, Hospital 1 has a lower fatality rate among both groups than Hospital 2, since Hospital 1 is a Level 1 Trauma Center. Thus, Hospital 1 receives most of the severely injured patients who are less likely to survive overall but have a better chance of surviving in Hospital 1 than they would in Hospital 2.*
Focus 3: Statistical Inference (Note: There are no *Algebra I with Probability* standards in Focus 3)	
Focus 4: Probability	
Two events are independent if the occurrence of one event does not affect the probability of the other event. Determining whether two events are independent can be used for finding and understanding probabilities.	37. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not"). 38. Explain whether two events, A and B, are independent, using two-way tables or tree diagrams.
Conditional probabilities – that is, those probabilities that are "conditioned" by some known information – can be computed from data organized in contingency tables. Conditions or assumptions may affect the computation of a probability.	39. Compute the conditional probability of event A given event B, using two-way tables or tree diagrams. 40. Recognize and describe the concepts of conditional probability and independence in everyday situations and explain them using everyday language. *Example: Contrast the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.* 41. Explain why the conditional probability of A given B is the fraction of B's outcomes that also belong to A, and interpret the answer in context. *Example: the probability of drawing a king from a deck of cards, given that it is a face card, is* $\frac{4/52}{12/52}$*, which is* $\frac{1}{3}$*.*

Algebra II with Statistics
Overview

Algebra II with Statistics is a newly-designed course which builds on the students' experiences in previous mathematics coursework. It is the third of three required courses, and it is to be taken following the successful completion of *Geometry with Data Analysis* and either *Algebra I with Probability* or the middle school accelerated sequence. It is the culmination of the three years of required mathematics content and sets the stage for continued study of topics specific to the student's interests and plans beyond high school.

If students need additional support while taking *Algebra II with Statistics*, schools are encouraged to offer a concurrent "lab course" to meet their specific needs. The lab course might review prior knowledge needed for upcoming lessons, reinforce content from previous lessons, or preview upcoming content to ensure students can fully participate and succeed in the course. Since the lab course does not cover additional mathematical standards, students can receive only an elective credit for each lab course, not a mathematics credit. See further details on the lab courses in the High School Overview.

Algebra II with Statistics builds essential concepts necessary for students to meet their postsecondary goals (whether they pursue additional study or enter the workforce), function as effective citizens, and recognize the wonder, joy, and beauty of mathematics (NCTM, 2018). In particular, it builds foundational knowledge of algebra and functions needed for students to take the specialized courses which follow it. This course also focuses on inferential statistics, which allows students to draw conclusions about populations and cause-and-effect based on random samples and controlled experiments.

In *Algebra II with Statistics*, students incorporate knowledge and skills from several mathematics content areas, leading to a deeper understanding of fundamental relationships within the discipline and building a solid foundation for further study. In the content area of Algebra and Functions, students explore an expanded range of functions, including polynomial, trigonometric (specifically sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions. Students also solve equations associated with these classes of functions. In the content area of Data Analysis, Statistics, and Probability, students learn how to make inferences about a population from a random sample drawn from the population and how to analyze cause-and-effect by conducting randomized experiments. Students are introduced to the study of matrices in the Number and Quantity content area.

A focus on mathematical modeling and real-world statistical problem-solving is included across the course; see Appendix E for more information on the modeling cycles for mathematics and statistics. It is essential for students to use technology and other mathematical tools such as graphing calculators, online graphing software, and spreadsheets to explore functions, equations, and analyze data.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both within the classroom and in life. **The Student Mathematical Practices are standards to be incorporated across all grades.**

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

The standards indicating what students should know or be able to do by the end of the course are listed in the right columns of the content area tables. The essential concepts are described in the left columns of the content area tables. In some cases, focus areas are indicated within the tables. Only those focus areas which are appropriate for this course are included.

Statements in **bold print** indicate the scope of the standard and align the standard to related content in other courses. The full scope of every standard should be addressed during instruction.

Algebra II with Statistics Content Standards

Each content standard completes the stem *"Students will…"*

Number and Quantity	
Together, irrational numbers and rational numbers complete the real number system, representing all points on the number line, while there exist numbers beyond the real numbers called complex numbers.	1. Identify numbers written in the form $a + bi$, where a and b are real numbers and $i^2 = -1$, as complex numbers. a. Add, subtract, and multiply complex numbers using the commutative, associative, and distributive properties.
Matrices are a useful way to represent information.	2. Use matrices to represent and manipulate data. 3. Multiply matrices by scalars to produce new matrices. 4. Add, subtract, and multiply matrices of appropriate dimensions. 5. Describe the roles that zero and identity matrices play in matrix addition and multiplication, recognizing that they are similar to the roles of 0 and 1 in the real numbers. a. Find the additive and multiplicative inverses of square matrices, using technology as appropriate. b. Explain the role of the determinant in determining if a square matrix has a multiplicative inverse.

Algebra and Functions	
Focus 1: Algebra	
Expressions can be rewritten in equivalent forms by using algebraic properties, including properties of addition, multiplication, and exponentiation, to make different characteristics or features visible.	6. Factor polynomials using common factoring techniques, and use the factored form of a polynomial to reveal the zeros of the function it defines. 7. Prove polynomial identities and use them to describe numerical relationships. *Example: The polynomial identity* $1 - x^n = (1 - x)(1 + x + x^2 + x^3 + \ldots + x^{n-1} + x^n)$ *can be used to find the sum of the first* n *terms of a geometric sequence with common ratio* x *by dividing both sides of the identity by (1 -* x*).*
Finding solutions to an equation, inequality, or system of equations or inequalities requires the checking of candidate solutions, whether generated analytically or graphically, to ensure that solutions are found and that those found are not extraneous.	8. Explain why extraneous solutions to an equation may arise and how to check to be sure that a candidate solution satisfies an equation**. Extend to radical equations.**
The structure of an equation or inequality (including, but not limited to, one-variable linear and quadratic equations, inequalities, and systems of linear equations in two variables) can be purposefully analyzed (with and without technology) to determine an efficient strategy to find a solution, if one exists, and then to justify the solution.	9. For exponential models, express as a logarithm the solution to $ab^{ct} = d$, where a, c, and d are real numbers and the base b is 2 or 10; evaluate the logarithm using technology to solve an exponential equation.
Expressions, equations, and inequalities can be used to analyze and make predictions, both within mathematics and as mathematics is applied in different contexts—in particular, contexts that arise in relation to linear, quadratic, and exponential situations.	10. Create equations and inequalities in one variable and use them to solve problems**. Extend to equations arising from polynomial, trigonometric (sine and cosine), logarithmic, radical, and general piecewise functions.** 11. Solve quadratic equations with real coefficients that have complex solutions. 12. Solve simple equations involving exponential, radical, logarithmic, and trigonometric functions using inverse functions.

	13. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales and use them to make predictions. **Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.**
Focus 2: Connecting Algebra to Functions	
Graphs can be used to obtain exact or approximate solutions of equations, inequalities, and systems of equations and inequalities—including systems of linear equations in two variables and systems of linear and quadratic equations (given or obtained by using technology).	14. Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$. a. Find the approximate solutions of an equation graphically, using tables of values, or finding successive approximations, using technology where appropriate. **Extend to cases where *f(x)* and/or *g(x)* are polynomial, trigonometric (sine and cosine), logarithmic, radical, and general piecewise functions.**
Focus 3: Functions	
Functions can be described by using a variety of representations: mapping diagrams, function notation (e.g., $f(x) = x^2$), recursive definitions, tables, and graphs.	15. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). **Extend to polynomial, trigonometric (sine and cosine), logarithmic, radical, and general piecewise functions**.
Functions that are members of the same family have distinguishing attributes (structure) common to all functions within that family.	16. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k, k \cdot f(x)$, $f(k \cdot x)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. **Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.**

Functions can be represented graphically, and key features of the graphs, including zeros, intercepts, and, when relevant, rate of change and maximum/minimum values, can be associated with and interpreted in terms of the equivalent symbolic representation.	17. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Note: Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries (including even and odd); end behavior; and periodicity.* **Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.** 18. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. **Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.** 19. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. **Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.** 20. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.** a. Graph polynomial functions expressed symbolically, identifying zeros when suitable factorizations are available, and showing end behavior. b. Graph sine and cosine functions expressed symbolically, showing period, midline, and amplitude. c. Graph logarithmic functions expressed symbolically, showing intercepts and end behavior. d. Graph reciprocal functions expressed symbolically, identifying horizontal and vertical asymptotes. e. Graph square root and cube root functions expressed symbolically. f. Compare the graphs of inverse functions and the relationships between their key features, including but not limited to quadratic, square root, exponential, and logarithmic functions.

	21. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle, building on work with non-right triangle trigonometry.
Functions model a wide variety of real situations and can help students understand the processes of making and changing assumptions, assigning variables, and finding solutions to contextual problems.	22. Use the mathematical modeling cycle to solve real-world problems involving polynomial, trigonometric (sine and cosine), logarithmic, radical, and general piecewise functions, from the simplification of the problem through the solving of the simplified problem, the interpretation of its solution, and the checking of the solution's feasibility.

Data Analysis, Statistics, and Probability	
Focus 1: Quantitative Literacy	
Mathematical and statistical reasoning about data can be used to evaluate conclusions and assess risks.	23. Use mathematical and statistical reasoning about normal distributions to draw conclusions and assess risk; limit to informal arguments. *Example: If candidate A is leading candidate B by 2% in a poll which has a margin of error of less than 3%, should we be surprised if candidate B wins the election?*
Making and defending informed data-based decisions is a characteristic of a quantitatively literate person.	24. Design and carry out an experiment or survey to answer a question of interest, and write an informal persuasive argument based on the results. *Example: Use the statistical problem-solving cycle to answer the question, "Is there an association between playing a musical instrument and doing well in mathematics?"*

Focus 2: Visualizing and Summarizing Data	
Distributions of quantitative data (continuous or discrete) in one variable should be described in the context of the data with respect to what is typical (the shape, with appropriate measures of center and variability, including standard deviation) and what is not (outliers), and these characteristics can be used to compare two or more subgroups with respect to a variable.	25. From a normal distribution, use technology to find the mean and standard deviation and estimate population percentages by applying the empirical rule. a. Use technology to determine if a given set of data is normal by applying the empirical rule. b. Estimate areas under a normal curve to solve problems in context, using calculators, spreadsheets, and tables as appropriate.
Focus 3: Statistical Inference	
Study designs are of three main types: sample survey, experiment, and observational study.	26. Describe the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. *Examples: random assignment in experiments, random selection in surveys and observational studies*
The role of randomization is different in randomly selecting samples and in randomly assigning subjects to experimental treatment groups.	27. Distinguish between a statistic and a parameter and use statistical processes to make inferences about population parameters based on statistics from random samples from that population. 28. Describe differences between randomly selecting samples and randomly assigning subjects to experimental treatment groups in terms of inferences drawn regarding a population versus regarding cause and effect. *Example: Data from a group of plants randomly selected from a field allows inference regarding the rest of the plants in the field, while randomly assigning each plant to one of two treatments allows inference regarding differences in the effects of the two treatments. If the plants were both randomly selected and randomly assigned, we can infer that the difference in effects of the two treatments would also be observed when applied to the rest of the plants in the field.*

The scope and validity of statistical inferences are dependent on the role of randomization in the study design.	29. Explain the consequences, due to uncontrolled variables, of non-randomized assignment of subjects to groups in experiments. *Example: Students are studying whether or not listening to music while completing mathematics homework improves their quiz scores. Rather than assigning students to either listen to music or not at random, they simply observe what the students do on their own and find that the music-listening group has a higher mean quiz score. Can they conclude that listening to music while studying is likely to raise the quiz scores of students who do not already listen to music? What other factors may have been responsible for the observed difference in mean quiz scores?*
Bias, such as sampling, response, or nonresponse bias, may occur in surveys, yielding results that are not representative of the population of interest.	30. Evaluate where bias, including sampling, response, or nonresponse bias, may occur in surveys, and whether results are representative of the population of interest. *Example: Selecting students eating lunch in the cafeteria to participate in a survey may not accurately represent the student body, as students who do not eat in the cafeteria may not be accounted for and may have different opinions, or students may not respond honestly to questions that may be embarrassing, such as how much time they spend on homework.*
The larger the sample size, the less the expected variability in the sampling distribution of a sample statistic.	31. Evaluate the effect of sample size on the expected variability in the sampling distribution of a sample statistic. a. Simulate a sampling distribution of sample means from a population with a known distribution, observing the effect of the sample size on the variability. b. Demonstrate that the standard deviation of each simulated sampling distribution is the known standard deviation of the population divided by the square root of the sample size.
The sampling distribution of a sample statistic formed from repeated samples for a given sample size drawn from a population can be used to identify typical behavior for that statistic. Examining several such sampling distributions leads to estimating a set of plausible values for the population parameter, using the margin of error as a measure that describes the sampling variability.	32. Produce a sampling distribution by repeatedly selecting samples of the same size from a given population or from a population simulated by bootstrapping (resampling with replacement from an observed sample). Do initial examples by hand, then use technology to generate a large number of samples. a. Verify that a sampling distribution is centered at the population mean and approximately normal if the sample size is large enough. b. Verify that 95% of sample means are within two standard deviations of the sampling distribution from the population mean. c. Create and interpret a 95% confidence interval based on an observed mean from a sampling distribution.

	33. Use data from a randomized experiment to compare two treatments; limit to informal use of simulations to decide if an observed difference in the responses of the two treatment groups is unlikely to have occurred due to randomization alone, thus implying that the difference between the treatment groups is meaningful. *Example: Fifteen students are randomly assigned to a treatment group that listens to music while completing mathematics homework and another 15 are assigned to a control group that does not, and their means on the next quiz are found to be different. To test whether the differences seem significant, all the scores from the two groups are placed on index cards and repeatedly shuffled into two new groups of 15 each, each time recording the difference in the means of the two groups. The differences in means of the treatment and control groups are then compared to the differences in means of the mixed groups to see how likely it is to occur.*

Geometry and Measurement	
Focus 1: Measurement	
When an object is the image of a known object under a similarity transformation, a length, area, or volume on the image can be computed by using proportional relationships.	34. Define the radian measure of an angle as the constant of proportionality of the length of an arc it intercepts to the radius of the circle; in particular, it is the length of the arc intercepted on the unit circle.
Focus 2: Transformations (Note: There are no *Algebra II with Statistics* standards in Focus 2)	
Focus 3: Geometric Argument, Reasoning, and Proof (Note: There are no *Algebra II with Statistics* standards in Focus 3)	
Focus 4: Solving Applied Problems and Modeling in Geometry	
Recognizing congruence, similarity, symmetry, measurement opportunities, and other geometric ideas, including right triangle trigonometry in real-world contexts, provides a means of building understanding of these concepts and is a powerful tool for solving problems related to the physical world in which we live.	35. Choose trigonometric functions (sine and cosine) to model periodic phenomena with specified amplitude, frequency, and midline. 36. Prove the Pythagorean identity $sin^2(\theta) + cos^2(\theta) = 1$ and use it to calculate trigonometric ratios. 37. Derive and apply the formula $A = \frac{1}{2} \cdot ab \cdot sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side, extending the domain of sine to include right and obtuse angles.

	38. Derive and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles. **Extend the domain of sine and cosine to include right and obtuse angles.** *Examples: surveying problems, resultant forces*

Mathematical Modeling
Overview

Mathematical Modeling is a newly-designed, specialized mathematics course developed to expand on and reinforce the concepts introduced in *Geometry with Data Analysis, Algebra I with Probability,* and *Algebra II with Statistics* by applying them in the context of mathematical modeling to represent and analyze data and make predictions regarding real-world phenomena. *Mathematical Modeling* is designed to engage students in doing, thinking about, and discussing mathematics, statistics, and modeling in everyday life. It allows students to experience mathematics and its applications in a variety of ways that promote financial literacy and data-based decision-making skills. This course also provides a solid foundation for students who are entering a range of fields involving quantitative reasoning, whether or not they require calculus.

In this course, students explore decision-making for financial planning and management, design in three dimensions, interpreting statistical studies, and creating functions to model change in the environment and society. Measurements are taken from the real world, and technology is used extensively for computation, with an emphasis on students' interpretation and explanation of results in context. Students will develop and use both the Mathematical Modeling Cycle and the Statistical Problem-Solving Cycle, found in Appendix E, in this specialized course to further develop authentic decision-making skills.

It is essential for students to use technology and other mathematical tools such as graphing calculators, online graphing software, and spreadsheets to explore application-based, real-world problems; to develop their mathematical decision-making skills; and to increase precision in complex calculations throughout the mathematical modeling process.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both in the classroom and in everyday life. **The Student Mathematical Practices are standards to be incorporated across all grades.**

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

The standards in this course extend beyond the essential concepts described in the overview. The standards indicating what students should know or be able to do are listed in the right columns of the content area tables below. Important topics within these content areas are described in the left columns.

Mathematical Modeling Content Standards

Each content standard completes the stem *"Students will…"*

Modeling	
Mathematical modeling and statistical problem-solving are extensive, cyclical processes that can be used to answer significant real-world problems.	1. Use the full Mathematical Modeling Cycle or Statistical Problem-Solving Cycle to answer a real-world problem of particular student interest, incorporating standards from across the course. *Examples: Use a mathematical model to design a three-dimensional structure and determine whether particular design constraints are met; to decide under what conditions the purchase of an electric vehicle will save money; to predict the extent to which the level of the ocean will rise due to the melting polar ice caps; or to interpret the claims of a statistical study regarding the economy.*

Financial Planning and Management	
Mathematical models involving growth and decay are useful in solving real-world problems involving borrowing and investing; spreadsheets are a frequently-used and powerful tool to assist with modeling financial situations.	2. Use elements of the Mathematical Modeling Cycle to solve real-world problems involving finances. 3. Organize and display financial information using arithmetic sequences to represent simple interest and straight-line depreciation. 4. Organize and display financial information using geometric sequences to represent compound interest and proportional depreciation, including periodic (yearly, monthly, weekly) and continuous compounding. a. Explain the relationship between annual percentage yield (APY) and annual percentage rate (APR) as values for r in the formulas $A=P(1+r)^t$ and $A=Pe^{rt}$. 5. Compare simple and compound interest, and straight-line and proportional depreciation. 6. Investigate growth and reduction of credit card debt using spreadsheets, including variables such as beginning balance, payment structures, credits, interest rates, new purchases, finance charges, and fees.

	7. Compare and contrast housing finance options including renting, leasing to purchase, purchasing with a mortgage, and purchasing with cash. a. Research and evaluate various mortgage products available to consumers. b. Compare monthly mortgage payments for different terms, interest rates, and down payments. c. Analyze the financial consequence of buying a home (mortgage payments vs. potentially increasing resale value) versus investing the money saved when renting, assuming that renting is the less expensive option. 8. Investigate the advantages and disadvantages of various means of paying for an automobile, including leasing, purchasing by cash, and purchasing by loan.

Design in Three Dimensions	
Two- and three-dimensional representations, coordinates systems, geometric transformations, and scale models are useful tools in planning, designing, and constructing solutions to real-world problems.	9. Use the Mathematical Modeling Cycle to solve real-world problems involving the design of three-dimensional objects. 10. Construct a two-dimensional visual representation of a three-dimensional object or structure. a. Determine the level of precision and the appropriate tools for taking the measurements in constructing a two-dimensional visual representation of a three-dimensional object or structure. b. Create an elevation drawing to represent a given solid structure, using technology where appropriate. c. Determine which measurements cannot be taken directly and must be calculated based on other measurements when constructing a two-dimensional visual representation of a three-dimensional object or structure. d. Determine an appropriate means to visually represent an object or structure, such as drawings on paper or graphics on computer screens.

	11. Plot coordinates on a three-dimensional Cartesian coordinate system and use relationships between coordinates to solve design problems. a. Describe the features of a three-dimensional Cartesian coordinate system and use them to graph points. b. Graph a point in space as the vertex of a right prism drawn in the appropriate octant with edges along the *x*, *y*, and *z* axes. c. Find the distance between two objects in space given the coordinates of each. *Examples: Determine whether two aircraft are flying far enough apart to be safe; find how long a zipline cable would need to be to connect two platforms at different heights on two trees.* d. Find the midpoint between two objects in space given the coordinates of each. *Example: If two asteroids in space are traveling toward each other at the same speed, find where they will collide.* 12. Use technology and other tools to explore the results of simple transformations using three-dimensional coordinates, including translations in the *x, y*, and/or *z* directions; rotations of 90º, 180º, or 270º about the *x, y*, and *z* axes; reflections over the *xy, yz,* and *xy* planes; and dilations from the origin. *Example: Given the coordinates of the corners of a room in a house, find the coordinates of the same room facing a different direction.* 13. Create a scale model of a complex three-dimensional structure based on observed measurements and indirect measurements, using translations, reflections, rotations, and dilations of its components. *Example: Develop a plan for a bridge structure using geometric properties of its parts to determine unknown measures and represent the plan in three dimensions.*

Creating Functions to Model Change in the Environment and Society	
Functions can be used to represent general trends in conditions that change over time and to predict future conditions based on present observations.	14. Use elements of the Mathematical Modeling Cycle to make predictions based on measurements that change over time, including motion, growth, decay, and cycling. 15. Use regression with statistical graphing technology to determine an equation that best fits a set of bivariate data, including nonlinear patterns. *Examples: global temperatures, stock market values, hours of daylight, animal population, carbon dating measurements, online streaming viewership* a. Create a scatter plot with a sufficient number of data points to predict a pattern. b. Describe the overall relationship between two quantitative variables (increase, decrease, linearity, concavity, extrema, inflection) or pattern of change. c. Make a prediction based upon patterns. 16. Create a linear representation of non-linear data and interpret solutions, using technology and the process of linearization with logarithms.

Modeling to Interpret Statistical Studies	
Statistical studies allow a conclusion to be drawn about a population that is too large to survey completely or about cause and effect in an experiment.	17. Use the Statistical Problem Solving Cycle to answer real-world questions. 18. Construct a probability distribution based on empirical observations of a variable. *Example: Record the number of student absences in class each day and find the probability that each number of students will be absent on any future day.* a. Estimate the probability of each value for a random variable based on empirical observations or simulations, using technology. b. Represent a probability distribution by a relative frequency histogram and/or a cumulative relative frequency graph. c. Find the mean, standard deviation, median, and interquartile range of a probability distribution and make long-term predictions about future possibilities. Determine which measures are most appropriate based upon the shape of the distribution.

19. Construct a sampling distribution for a random event or random sample.
    Examples: How many times do we expect a fair coin to come up "heads" in 100 flips, and on average how far away from this expected value do we expect to be on a specific set of flips? What do we expect to be the average height for a random sample of students in a local high school given the mean and standard deviation of the heights of all students in the high school?
    a. Use the binomial theorem to construct the sampling distribution for the number of successes in a binary event or the number of positive responses to a yes/no question in a random sample.
    b. Use the normal approximation of a proportion from a random event or sample when conditions are met.
    c. Use the central limit theorem to construct a normal sampling distribution for the sample mean when conditions are met.
    d. Find the long-term probability of a given range of outcomes from a random event or random sample.

20. Perform inference procedures based on the results of samples and experiments.
    a. Use a point estimator and margin of error to construct a confidence interval for a proportion or mean.
    b. Interpret a confidence interval in context and use it to make strategic decisions.
    Example: short-term and long-term budget projections for a business
    c. Perform a significance test for null and alternative hypotheses.
    d. Interpret the significance level of a test in the context of error probabilities, and use the results to make strategic decisions.
    Example: How do you reduce the rate of human error on the floor of a manufacturing plant?

21. Critique the validity of reported conclusions from statistical studies in terms of bias and random error probabilities.

	22. Conduct a randomized study on a topic of student interest (sample or experiment) and draw conclusions based upon the results. *Example: Record the heights of thirty randomly selected students at your high school. Construct a confidence interval to estimate the true average height of students at your high school. Question whether or not this data provides significant evidence that your school's average height is higher than the known national average, and discuss error probabilities.*

Applications of Finite Mathematics

Overview

Applications of Finite Mathematics is a newly-designed, specialized course developed for inclusion in the 2019 *Alabama Course of Study: Mathematics. Applications of Finite Mathematics* was developed as a fourth-year course that extends beyond the three years of essential content that is required for all high school students.

Applications of Finite Mathematics provides students with the opportunity to explore mathematics concepts related to discrete mathematics and their application to computer science and other fields. Students who are interested in postsecondary programs of study that do not require calculus (such as elementary and early childhood education, English, history, art, music, and technical and trade certifications) would benefit from choosing *Applications of Finite Mathematic*s as their fourth high school mathematics credit. It may also be a useful supplemental course for students pursuing a career in computer science. This course is an important non-calculus option that presents mathematics as relevant and meaningful in everyday life. Its objective is to help students experience the usefulness of mathematics in solving problems that are frequently encountered in today's complex society.

Finite mathematics includes areas of study that are critical to the fast-paced growth of a technologically advancing world. The wide range of topics in *Applications of Finite Mathematics* includes logic, counting methods, information processing, graph theory, election theory, and fair division, with an emphasis on relevance to real-world problems. Logic includes recognizing and developing logical arguments and using principles of logic to solve problems. Students are encouraged to use a variety of approaches and representations to make sense of advanced counting problems, then develop formulas that can be used to explain patterns. Applications in graph theory allow students to use mathematical structures to represent real world problems and make informed decisions. Election theory and fair division applications also engage students in democratic decision-making so that they recognize the power of mathematics in shaping society.

Applications of Finite Mathematics exhibits tremendous diversity with respect to both content and approach. Teachers are encouraged to engage students using an investigative approach to instruction including the Student Mathematical Practices. Students should be given opportunities to engage in learning and decision-making with technology and hands-on tools.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both in the classroom and in everyday life. **The Student Mathematical Practices are standards to be incorporated across all grades**

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

The standards in this course extend beyond the essential concepts described in the overview for high school. The standards indicating what students should know or be able to do are listed in the right columns of tables below, organized by relevant content areas.

Applications of Finite Mathematics Content Standards

Each numbered standard completes the sentence stem *"Students will…"*

Logical Reasoning	
The validity of a statement or argument can be determined using the models and language of first order logic.	1. Represent logic statements in words, with symbols, and in truth tables, including conditional, biconditional, converse, inverse, contrapositive, and quantified statements. 2. Represent logic operations such as *and, or, not, nor*, and *x or* (exclusive *or*) in words, with symbols, and in truth tables. 3. Use truth tables to solve application-based logic problems and determine the truth value of simple and compound statements including negations and implications. a. Determine whether statements are equivalent and construct equivalent statements. *Example: Show that the contrapositive of a statement is its logical equivalent.* 4. Determine whether a logical argument is valid or invalid, using laws of logic such as the law of syllogism and the law of detachment. a. Determine whether a logical argument is a tautology or a contradiction. 5. Prove a statement indirectly by proving the contrapositive of the statement.

Advanced Counting	
Complex counting problems can be solved efficiently using a variety of techniques.	6. Use multiple representations and methods for counting objects and developing more efficient counting techniques. *Note: Representations and methods may include tree diagrams, lists, manipulatives, overcounting methods, recursive patterns, and explicit formulas.* 7. Develop and use the Fundamental Counting Principle for counting independent and dependent events. a. Use various counting models (including tree diagrams and lists) to identify the distinguishing factors of a context in which the Fundamental Counting Principle can be applied. *Example: Apply the Fundamental Counting Principle in a context that can be represented by a tree diagram in which there are the same number of branches from each node at each level of the tree.* 8. Using application-based problems, develop formulas for permutations, combinations, and combinations with repetition and compare student-derived formulas to standard representations of the formulas. *Example: If there are* r *objects chosen from* n *objects, then the number of permutations can be found by the product [*n*(*n-*1) … (*n-r*)(*n-r+*1)] as compared to the standard formula* n*!/(*n-r*)!.* a. Identify differences between applications of combinations and permutations. b. Using application-based problems, calculate the number of permutations of a set with *n* elements. Calculate the number of permutations of *r* elements taken from a set of *n* elements. c. Using application-based problems, calculate the number of subsets of size *r* that can be chosen from a set of *n* elements, explaining this number as the number of combinations "*n* choose *r.*" d. Using application-based problems, calculate the number of combinations with repetitions of *r* elements from a set of *n* elements as "*(n + r – 1)* choose *r.*" 9. Use various counting techniques to determine probabilities of events. 10. Use the Pigeonhole Principle to solve counting problems.

Recursion	
Recursion is a method of problem solving where a given relation or routine operation is repeatedly applied.	11. Find patterns in application problems involving series and sequences, and develop recursive and explicit formulas as models to understand and describe sequential change. *Examples*: *fractals, population growth* 12. Determine characteristics of sequences, including the Fibonacci Sequence, the triangular numbers, and pentagonal numbers. *Example: Write a sequence of the first 10 triangular numbers and hypothesize a formula to find the* n*th triangular number.* 13. Use the recursive process and difference equations to create fractals, population growth models, sequences, and series. 14. Use mathematical induction to prove statements involving the positive integers. *Examples: Prove that 3 divides* $2^{2n} - 1$ *for all positive integers* n*; prove that* $1 + 2 + 3 + \ldots + n = n(n + 1)/2$; *prove that a given recursive sequence has a closed form expression.* 15. Develop and apply connections between Pascal's Triangle and combinations.

Networks	
Complex problems can be modeled using vertex and edge graphs and characteristics of the different structures are used to find solutions.	16. Use vertex and edge graphs to model mathematical situations involving networks. a. Identify properties of simple graphs, complete graphs, bipartite graphs, complete bipartite graphs, and trees.

	17. Solve problems involving networks through investigation and application of existence and nonexistence of Euler paths, Euler circuits, Hamilton paths, and Hamilton circuits. *Note: Real-world contexts modeled by graphs may include roads or communication networks.* *Example: show why a 5x5 grid has no Hamilton circuit.* a. Develop optimal solutions of application-based problems using existing and student-created algorithms. b. Give an argument for graph properties. *Example: Explain why a graph has a Euler cycle if and only if the graph is connected and every vertex has even degree. Show that any tree with* n *vertices has* n – 1 *edges*. 18. Apply algorithms relating to minimum weight spanning trees, networks, flows, and Steiner trees. *Example: traveling salesman problem* a. Use shortest path techniques to find optimal shipping routes. b. Show that every connected graph has a minimal spanning tree. c. Use Kruskal's Algorithm and Prim's Algorithm to determine the minimal spanning tree of a weighted graph. 19. Use vertex-coloring, edge-coloring, and matching techniques to solve application-based problems involving conflict. *Examples: Use graph-coloring techniques to color a map of the western states of the United States so that no adjacent states are the same color, determining the minimum number of colors needed and why no fewer colors may be used; use vertex colorings to determine the minimum number of zoo enclosures needed to house ten animals given their cohabitation constraints; use vertex colorings to develop a time table for scenarios such as scheduling club meetings or for housing hazardous chemicals that cannot all be safely stored together in warehouses.* 20. Determine the minimum time to complete a project using algorithms to schedule tasks in order, including critical path analysis, the list-processing algorithm, and student-created algorithms. 21. Use the adjacency matrix of a graph to determine the number of walks of length *n* in a graph.

Fairness and Democracy	
Various methods for determining a winner in a voting system can result in paradoxes or other issues of fairness.	22. Analyze advantages and disadvantages of different types of ballot voting systems. a. Identify impacts of using a preferential ballot voting system and compare it to single candidate voting and other voting systems. b. Analyze the impact of legal and cultural features of political systems on the mathematical aspects of elections. *Examples: mathematical disadvantages of third parties, the cost of run-off elections* 23. Apply a variety of methods for determining a winner using a preferential ballot voting system, including plurality, majority, run-off with majority, sequential run-off with majority, Borda count, pairwise comparison, Condorcet, and approval voting. 24. Identify issues of fairness for different methods of determining a winner using a preferential voting ballot and other voting systems and identify paradoxes that can result. *Example: Arrow's Theorem* 25. Use methods of weighted voting and identify issues of fairness related to weighted voting. *Example: determine the power of voting bodies using the Banzhaf power index* a. Distinguish between weight and power in voting.

Fair Division	
Methods used to solve non-trivial problems of division of objects often reveal issues of fairness.	26. Explain and apply mathematical aspects of fair division, with respect to classic problems of apportionment, cake cutting, and estate division. Include applications in other contexts and modern situations. 27. Identify and apply historic methods of apportionment for voting districts including Hamilton, Jefferson, Adams, Webster, and Huntington-Hill. Identify issues of fairness and paradoxes that may result from methods. *Examples: the Alabama paradox, population paradox*

	28. Use spreadsheets to examine apportionment methods in large problems. *Example: apportion the 435 seats in the U.S. House of Representatives using historically applied methods*

Information Processing	
Effective systems for sending and receiving information include components that impact accuracy, efficiency, and security.	29. Critically analyze issues related to information processing including accuracy, efficiency, and security. 30. Apply ciphers (encryption and decryption algorithms) and cryptosystems for encrypting and decrypting including symmetric-key or public-key systems. a. Use modular arithmetic to apply RSA (Rivest-Shamir-Adleman) public-key cryptosystems. b. Use matrices and their inverses to encode and decode messages. 31. Apply error-detecting codes and error-correcting codes to determine accuracy of information processing. 32. Apply methods of data compression. *Example*: *Huffman codes*

Precalculus
Overview

Precalculus is designed for students who intend to pursue a career in science, technology, engineering, or mathematics (STEM) that requires the study of calculus. It prepares students for calculus at the postsecondary level or AP Calculus at the high school level. Students must successfully complete *Algebra II with Statistics* before enrolling in *Precalculus.*

Precalculus builds on the study of algebra and functions in *Algebra II with Statistics*, adding rational functions, all trigonometric functions, and general piecewise-defined functions to the families of functions considered. In addition to focusing on the families of functions, *Precalculus* takes a deeper look at functions as a system, including composition of functions and inverses. *Precalculus* also expands on the study of trigonometry in previous courses and considers vectors and their operations. Other topics, such as statistics, that are frequently added to precalculus courses are not included because the course's primary focus is preparing students for the study of calculus.

In particular, a focus on mathematical modeling is included across the course; see Appendix E for more information on the Mathematical Modeling Cycle. Students' use of technology (such as graphing calculators, online graphing software, and spreadsheets) is essential in exploring the functions and equations addressed in *Precalculus*.

The eight Student Mathematical Practices listed in the chart below represent what students are doing as they learn mathematics. Students should regularly engage in these processes and proficiencies at every level throughout their mathematical studies. Proficiency with these practices is critical in using mathematics, both within the classroom and in life. **The Student Mathematical Practices are standards to be incorporated across all grades.**

Student Mathematical Practices	
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.
2. Reason abstractly and quantitatively.	6. Attend to precision.
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.

The standards in this course extend beyond the essential concepts described in the overview. The standards indicating what students should know or be able to do are listed in the right columns of the content area tables. Important concepts within these content areas are described in the left columns, and focus areas within the tables are indicated. Only those focus areas which are appropriate for this course are included.

Statements in **bold print** indicate the scope of the standard and align the standard to related content in other courses. The full scope of every standard should be addressed during instruction.

Precalculus Content Standards

Each numbered standard completes the stem *"Students will…"*

Number and Quantity	
The Complex Number System	
Perform arithmetic operations with complex numbers.	1. Define the constant *e* in a variety of contexts. *Example: the total interest earned if a 100% annual rate is continuously compounded.* a. Explore the behavior of the function $y=e^x$ and its applications. b. Explore the behavior of $ln(x)$, the logarithmic function with base *e,* and its applications. 2. Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.
Represent complex numbers and their operations on the complex plane.	3. Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number. 4. Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. *Example*: $(-1+\sqrt{3}i)^3 = 8$ *because* $(-1+\sqrt{3}i)$ *has modulus 2 and argument 120°.* 5. Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.
Use complex numbers in polynomial identities and equations.	6. Analyze possible zeros for a polynomial function over the complex numbers by applying the Fundamental Theorem of Algebra, using a graph of the function, or factoring with algebraic identities.

Limits	
Understand limits of functions.	7. Determine numerically, algebraically, and graphically the limits of functions at specific values and at infinity. a. Apply limits of functions at specific values and at infinity in problems involving convergence and divergence.
Vector and Matrix Quantities	
Represent and model with vector quantities.	8. Explain that vector quantities have both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes. *Examples:* **v**, $\|\mathbf{v}\|$, $\|\|\mathbf{v}\|\|$, v. 9. Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point. 10. Solve problems involving velocity and other quantities that can be represented by vectors. 11. Find the scalar (dot) product of two vectors as the sum of the products of corresponding components and explain its relationship to the cosine of the angle formed by two vectors.

Perform operations on vectors.	12. Add and subtract vectors. a. Add vectors end-to-end, component-wise, and by the parallelogram rule, understanding that the magnitude of a sum of two vectors is not always the sum of the magnitudes. b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum. c. Explain vector subtraction, $\boldsymbol{v} - \boldsymbol{w}$, as $\boldsymbol{v} + (-\boldsymbol{w})$, where $-\boldsymbol{w}$ is the additive inverse of **w**, with the same magnitude as **w** and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise. 13. Multiply a vector by a scalar. a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise. *Example*: $c(v_x, v_y) = (cv_x, cv_y)$ b. Compute the magnitude of a scalar multiple $c\mathbf{v}$ using $\|c\mathbf{v}\| = |c|v$. Compute the direction of $c\boldsymbol{v}$ knowing that when $|c| \boldsymbol{v} \neq 0$, the direction of $c\boldsymbol{v}$ is either along $\boldsymbol{v}$ (for $c > 0$) or against $\boldsymbol{v}$ (for $c < 0$). 14. Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.

Algebra	
Seeing Structure in Expressions	
Write expressions in equivalent forms to solve problems.	15. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems, extending to infinite geometric series. *Examples: calculate mortgage payments; determine the long-term level of medication if a patient takes 50 mg of a medication every 4 hours, while 70% of the medication is filtered out of the patient's blood.*

Arithmetic With Polynomials and Rational Expressions	
Understand the relationship between zeros and factors of polynomials.	16. Derive and apply the Remainder Theorem: For a polynomial *p(x)* and a number *a*, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.
Use polynomial identities to solve problems.	17. Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer, n, where x and y are any numbers.
Rewrite rational expressions.	18. Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated cases, a computer algebra system. 19. Add, subtract, multiply, and divide rational expressions. a. Explain why rational expressions form a system analogous to the rational numbers, which is closed under addition, subtraction, multiplication, and division by a non-zero rational expression.
Reasoning With Equations and Inequalities	
Understand solving equations as a process of reasoning and explain the reasoning.	20. Explain each step in solving an equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a clear-cut solution. Construct a viable argument to justify a solution method. **Include equations that may involve linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, and trigonometric functions, and their inverses**. 21. Solve simple rational equations in one variable, and give examples showing how extraneous solutions may arise.
Solve systems of equations.	22. Represent a system of linear equations as a single matrix equation in a vector variable. 23. Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 x 3 or greater).

Functions	
Interpreting Functions	
Interpret functions that arise in applications in terms of the context.	24. Compare and contrast families of functions and their representations algebraically, graphically, numerically, and verbally in terms of their key features. *Note: Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries (including even and odd); end behavior; asymptotes; and periodicity.* **Families of functions include but are not limited to linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, trigonometric, and their inverses.** 25. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. **Extend from polynomial, exponential, logarithmic, and radical to rational and all trigonometric functions.** a. Find the difference quotient $\frac{f(x+\Delta x)-f(x)}{\Delta x}$ of a function and use it to evaluate the average rate of change at a point. b. Explore how the average rate of change of a function over an interval (presented symbolically or as a table) can be used to approximate the instantaneous rate of change at a point as the interval decreases.
Analyze functions using different representations.	26. Graph functions expressed symbolically and show key features of the graph, by hand and using technology. Use the equation of functions to identify key features in order to generate a graph. a. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. b. Graph trigonometric functions and their inverses, showing period, midline, amplitude, and phase shift.

Building Functions	
Build a function that models a relationship between two quantities.	27. Compose functions. **Extend to polynomial, trigonometric, radical, and rational functions.** *Example: If* T(y) *is the temperature in the atmosphere as a function of height, and* h(t) *is the height of a weather balloon as a function of time, then T(*h(t)*) is the temperature at the location of the weather balloon as a function of time.*
Build new functions from existing functions.	28. Find inverse functions. a. Given that a function has an inverse, write an expression for the inverse of the function. *Example*: *Given* f(x) = 2 x^3 *or* f(x) = (x + 1)/(x – 1) *for* $x \neq 1$ *find* $f^{-1}(x)$. b. Verify by composition that one function is the inverse of another. c. Read values of an inverse function from a graph or a table, given that the function has an inverse. d. Produce an invertible function from a non-invertible function by restricting the domain. 29. Use the inverse relationship between exponents and logarithms to solve problems involving logarithms and exponents. **Extend from logarithms with base 2 and 10 to a base of *e*.** 30. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k, k \cdot f(x), f(k \cdot x)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. **Extend the analysis to include all trigonometric, rational, and general piecewise-defined functions with and without technology.** *Example: Describe the sequence of transformations that will relate* y=sin(x) and y=2sin(3x).

	31. Graph conic sections from second-degree equations, extending from circles and parabolas to ellipses and hyperbolas, using technology to discover patterns. a. Graph conic sections given their standard form. *Example: The graph of* $\frac{x^2}{9}+\frac{(y-3)^2}{4}=1$ *will be an ellipse centered at (0,3) with major axis 6 and minor* axis *4, while the graph of* $\frac{x^2}{9}-\frac{(y-3)^2}{4}=1$ *will be a hyperbola centered at (0,3) with asymptotes with slope ±2/3.* b. Identify the conic section that will be formed, given its equation in general form. *Example*: $5y^2-25x^2=-25$ *will be a hyperbola.*
Trigonometric Functions	
Recognize attributes of trigonometric functions and solve problems involving trigonometry.	32. Solve application-based problems involving parametric and polar equations. a. Graph parametric and polar equations. b. Convert parametric and polar equations to rectangular form.
Extend the domain of trigonometric functions using the unit circle.	33. Use special triangles to determine geometrically the values of sine, cosine, and tangent for π/3, π/4, and π/6, and use the unit circle to express the values of sine, cosine, and tangent for $\pi - x$, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number. 34. Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.
Model periodic phenomena with trigonometric functions.	35. Demonstrate that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed. 36. Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.

Prove and apply trigonometric identities.	37. Use trigonometric identities to solve problems. a. Use the Pythagorean identity $sin^2(\theta) + cos^2(\theta) = 1$ to derive the other forms of the identity. *Example:* $1 + \cot^2(\theta) = \csc^2(\theta)$ b. Use the angle sum formulas for sine, cosine, and tangent to derive the double angle formulas. c. Use the Pythagorean and double angle identities to prove other simple identities.

Mathematics Teaching Practices: Supporting Equitable Mathematics Teaching

Mathematics Teaching Practices	Equitable Teaching
Establish mathematics goals to focus learning. Effective teaching of mathematics establishes clear goals for the mathematics that students are learning, situates goals within learning progressions, and uses the goals to guide instructional decisions.	● Establish learning progressions that build students' mathematical understanding, increase their confidence, and support their mathematical identities as doers of mathematics. ● Establish high expectations to ensure that each and every student has the opportunity to meet the mathematical goals. ● Establish classroom norms for participation that position each and every student as a competent mathematics thinker. ● Establish classroom environments that promote learning mathematics as just, equitable, and inclusive.
Implement tasks that promote reasoning and problem solving. Effective teaching of mathematics engages students in solving and discussing tasks that promote mathematical reasoning and problem solving and allow multiple entry points and varied solution strategies.	● Engage students in tasks that provide multiple pathways for success and that require reasoning, problem solving, and modeling, thus enhancing each student's mathematical identity and sense of agency. ● Engage students in tasks that are culturally relevant. ● Engage students in tasks that allow them to draw on their funds of knowledge (i.e., the resources that students bring to the classroom, including their home, cultural, and language experiences).
Use and connect mathematical representations. Effective teaching of mathematics engages students in making connections among mathematical representations to deepen understanding of mathematics concepts and procedures and to use as tools for problem solving	● Use multiple representations so that students draw on multiple resources of knowledge to position them as competent. ● Use multiple representations to draw on knowledge and experiences related to the resources that students bring to mathematics (culture, contexts, and experiences). ● Use multiple representations to promote the creation and discussion of unique mathematical representations to position students as mathematically competent.

Facilitate meaningful mathematical discourse. Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing students' approaches and arguments.	• Use discourse to elicit students' ideas and strategies and create space for students to interact with peers to value multiple contributions and diminish hierarchical status among students (i.e., perceptions of differences and ability to participate). • Use discourse to attend to ways in which students position one another as capable or not capable of doing mathematics. • Make discourse an expected and natural part of mathematical thinking and reasoning, providing students with the space and confidence to ask questions that enhance their own mathematical learning. • Use discourse as a means to disrupt structures and language that marginalize students.
Pose purposeful questions. Effective teaching of mathematics uses purposeful questions to assess and advance students' reasoning and sense-making about important mathematical ideas and relationships.	• Pose purposeful questions and then listen to and understand students' thinking to signal to students that their thinking is valued and makes sense. • Pose purposeful questions to assign competence to students. Verbally mark students' ideas as interesting, or identify an important aspect of students' strategies to position them as competent. • Be mindful of the fact that the questions that a teacher asks a student and how the teacher follows up on the student's response can support the student's development of a positive mathematical identity and sense of agency as a thinker and doer of mathematics.
Build procedural fluency from conceptual understanding. Effective teaching of mathematics builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems.	• Connect conceptual understanding with procedural fluency to help students make sense of the mathematics and develop a positive disposition toward mathematics. • Connect conceptual understanding with procedural fluency to reduce mathematical anxiety and position students as mathematical knowers and doers. • Connect conceptual understanding with procedural fluency to provide students with a wider range of options for entering a task and building mathematical meaning.
Support productive struggle in learning mathematics. Effective teaching of mathematics consistently provides students, individually and collectively, with opportunities and supports to engage in productive struggle as they grapple with mathematical ideas and relationships.	• Allow time for students to engage with mathematical ideas to support perseverance and identity development. • Hold high expectations, while offering just enough support and scaffolding to facilitate student progress on challenging work, to communicate caring and confidence in students.

Elicit and use evidence of student thinking. Effective teaching of mathematics uses evidence of student thinking to assess progress toward mathematical understanding and to adjust instruction continually in ways that support and extend learning.	● Elicit student thinking and make use of it during a lesson to send positive messages about students' mathematical identities. ● Make student thinking public, and then choose to elevate a student to a more prominent position in the discussion by identifying his or her idea as worth exploring, to cultivate a positive mathematical identity. ● Promote a classroom culture in which mistakes and errors are viewed as important reasoning opportunities, to encourage a wider range of students to engage in mathematical discussions with their peers and the teacher.

2019 Alabama Course of Study: Mathematics Pathways

Appendix B depicts the pathways the *2019 Alabama Course of Study: Mathematics* provides for students in Alabama public schools. Chart 1 shows the pathways through K-12 Mathematics. Chart 2 shows how K-12 pathways extend to postsecondary study of mathematics, supporting students' progress toward their future goals. Important decisions about which mathematics courses students will take should be made at the middle and high school levels.

As shown in Chart 1, the high school program builds on students' mathematical preparation in Grades 6-8 with a common pathway of three **required courses** taken by all students, followed by additional specialized courses that prepare students for life after high school. Three options are provided for completing the required courses:

1. Complete *Geometry with Data Analysis* in Grade 9, *Algebra I with Probability* in Grade 10, and *Algebra II with Statistics* in Grade 11, followed by a specialized course in Grade 12.
2. Complete **accelerated courses** for Mathematics Grade 7 and Mathematics Grade 8 that incorporate the standards from *Algebra I with Probability* with the standards of Mathematics Grade 7 and Mathematics Grade 8. Students who have shown adequate progress by the end of *Geometry with Data Analysis* in Grade 9 may move directly to *Algebra II with Statistics* in Grade 10. These students will be required to take two additional courses in Grades 11 and 12 to earn the mandatory four credits in mathematics, since neither of the accelerated middle grades courses (nor their combination) is equivalent to a high school mathematics credit. Taking additional specialized course(s) enables students to make additional progress towards their postsecondary goals.
3. Complete *Geometry with Data Analysis* and *Algebra I with Probability* concurrently in Grade 9, and *Algebra II with Statistics* in Grade 10. These students should continue to take a mathematics course in both Grade 11 and Grade 12; therefore, students would earn a fifth mathematics credit in Grade 12.

Chart 1 also depicts mathematics lab courses to be offered by school districts to meet the needs of students struggling in the required courses. These lab courses meet concurrently with the required content courses. Lab courses might provide a review of prior knowledge needed for upcoming lessons, reinforce content from previous lessons, or preview upcoming content to ensure that students can fully participate in the required content classes. Since these lab courses do not cover additional mathematical standards, students can earn only an elective credit for each of them, not a mathematics credit. Care should be taken to ensure that informed choices, based on solid data, are made about which students are assigned to lab classes or other supports. Assignment to lab courses should be fluid, based on frequent scrutiny of student progress, rather than being a foregone conclusion based on the support they have received in the past. See further discussion in the Overview to the High School Standards.

Chart 2 depicts the connections between K-8 mathematics, the three required high school mathematics courses, additional courses needed to earn four credits in mathematics, and their connections to postsecondary study and use of mathematics in the workforce. Following *Algebra II with Statistics*, students will complete courses from the box entitled "Courses for Fourth Mathematics Credit." As noted above, some students will need to complete two of these courses in order to earn the required four mathematics credits, and any student may choose to complete additional courses.

To earn the fourth mathematics credit, students select one or more **specialized courses** that prepare them for future success in the postsecondary study of mathematics, in careers, and in their lifelong use and enjoyment of mathematics. The specialized courses are designed to prepare students for credit-bearing postsecondary study of mathematics and other future mathematical needs, as depicted in the block entitled "Example Postsecondary Courses." Working backwards from a desired field of study or profession, students can identify what their postsecondary needs may be and then determine which specialized courses might best prepare them to reach their future goals.

Students requiring two credits of mathematics after *Algebra II with Statistics* have the opportunity to take any two of the three specialized mathematics courses in any order, as their content does not substantially overlap. In addition, an AP Calculus course may be taken following *Precalculus* in school systems where it is offered.

AP Statistics, AP Computer Science, and other ALSDE approved courses are **extended courses** that satisfy a fourth mathematics credit. These courses will supplement students' mathematical preparation in high school but are not designed to prepare students for their initial credit-bearing post-secondary course in mathematics. Students who intend to pursue a technical field may consider taking an AP Computer Science or other approved computer science courses along with either *Applications of Finite Mathematics* or *Mathematical Modeling*. Students who intend to pursue a field with extensive use of statistics may consider taking AP Statistics along with either *Applications of Finite Mathematics* or *Mathematical Modeling*. While AP Statistics, AP Computer Science, and other ALSDE approved courses may satisfy a fourth mathematics credit, it is recommended that one of the specialized courses also be completed to provide students with an adequate background for future mathematical endeavors. The ALSDE has approved other options for a fourth mathematics credit, including dual enrollment courses; see *Options for Mathematics Credit after Algebra II with Statistics* at the end of Appendix B.

Given the impact these decisions may have on their future prospects, students and their parents, in consultation with school personnel, should carefully consider the consequences of the different options and what options will best meet each student's needs. Students should be encouraged to pursue a pathway that provides options beyond current considerations to accommodate the broadest range of future academic and career interests.

Chart 1: Pathways through K-12 Mathematics

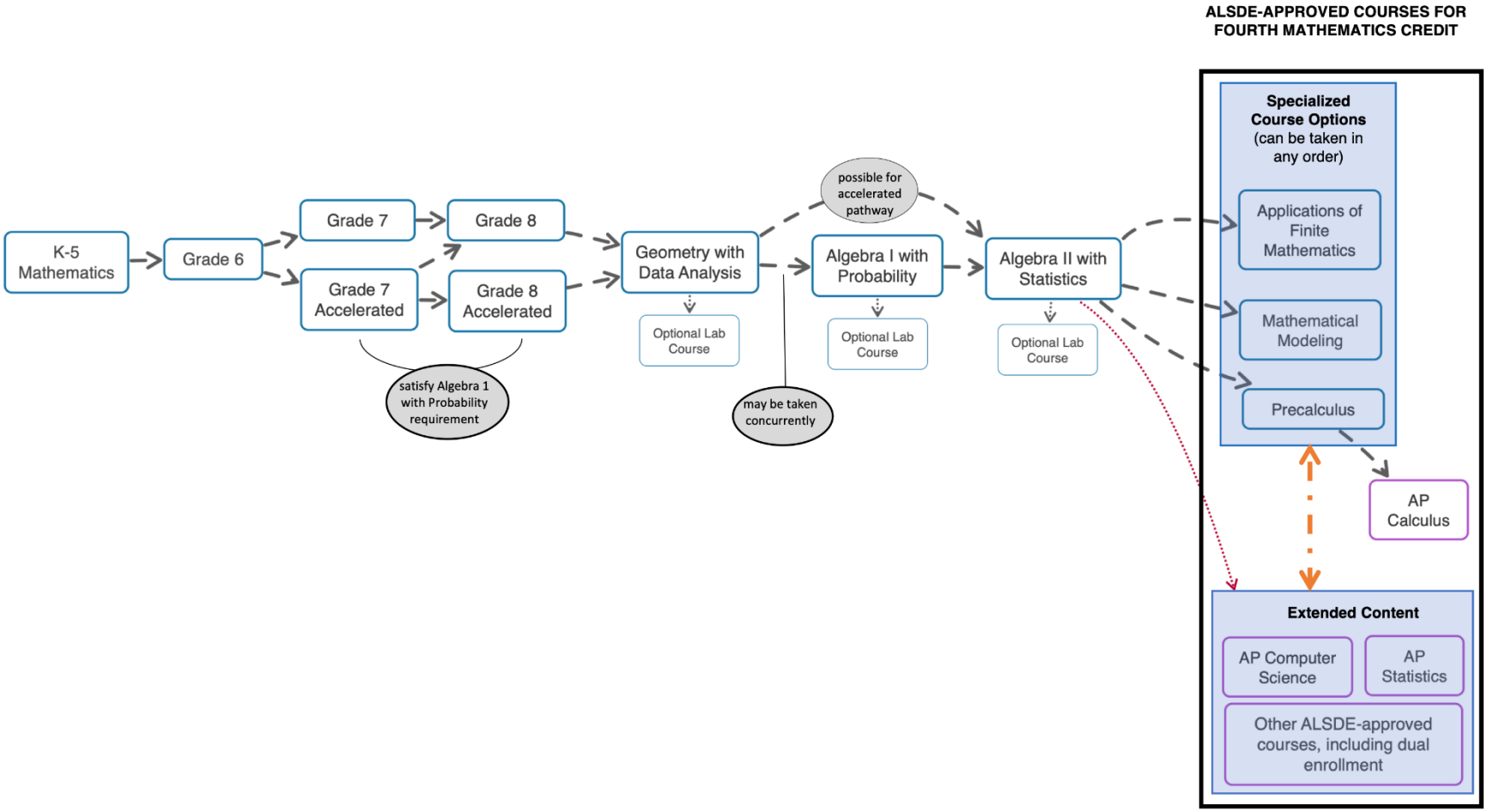
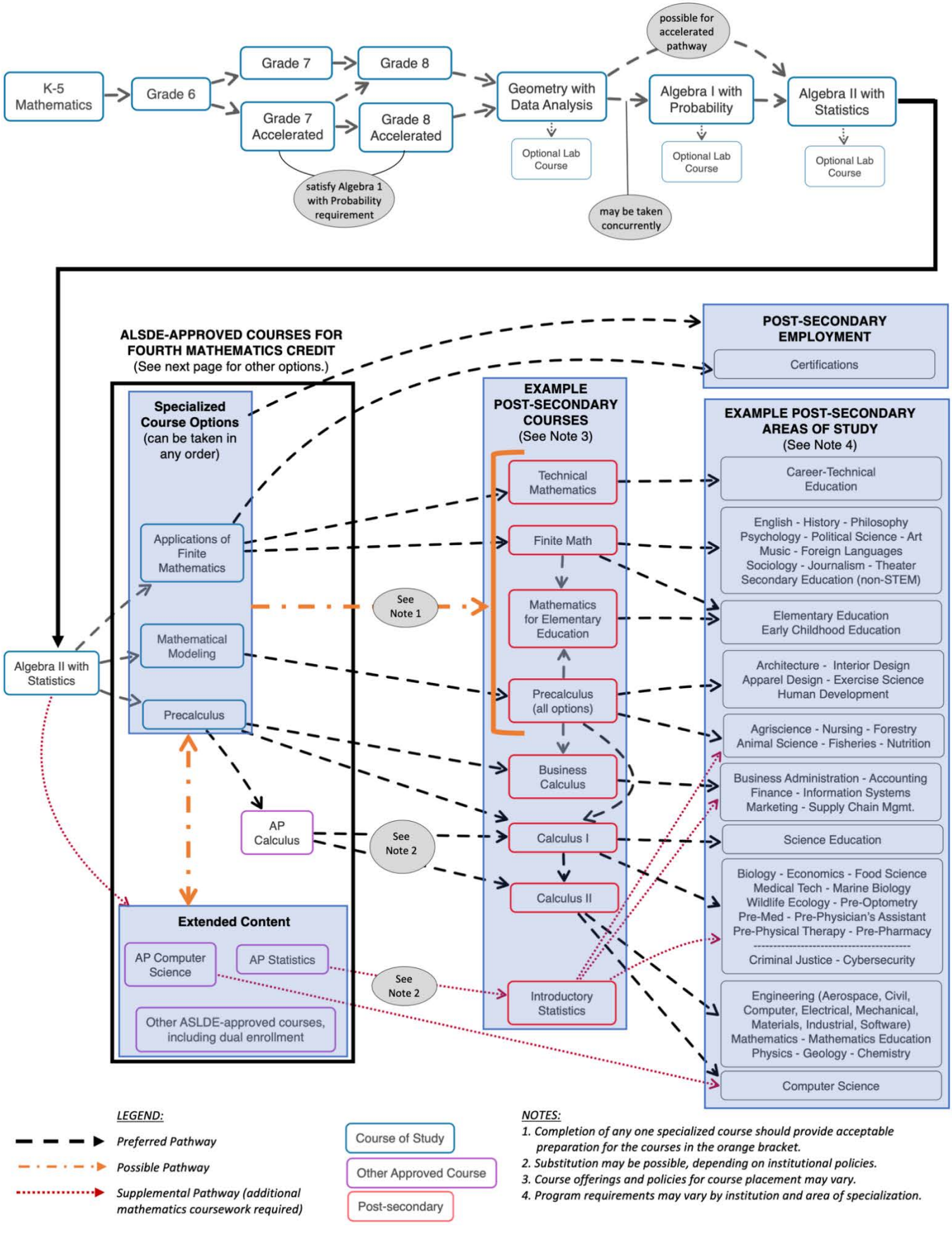


Chart 2: Pathways through K-12 Mathematics to Postsecondary



Options for Mathematics Credit After Algebra II with Statistics*

1. *Applications of Finite Mathematics*
2. *Mathematical Modeling*
3. *Precalculus*
4. Credit-eligible Advanced Placement® mathematics and computer science courses
5. Credit-eligible International Baccalaureate® mathematics and computer science courses
6. Credit-eligible Career and Technical Education mathematics courses
7. ALSDE-approved computer science courses
8. ALSDE-approved dual enrollment/postsecondary mathematics courses
9. ALSDE-approved locally-developed courses

*School administrators, school counselors, classroom teachers, school staff, students, and parents should always refer to the *ALSDE Academic Guide* for sample approved mathematics course pathways.

Resources

Table 1: Student Mathematical Practices

1. Make sense of problems and persevere in solving them

Students can…	Because teachers are…
show patience and positive attitudes.	modeling patience and positive attitudes.
ask themselves if their answers make sense.	providing wait-time for processing and finding solutions.
use concrete objects or pictures to help conceptualize and solve a problem.	choosing and posing rich tasks with multiple entry points.
actively engage in problem-solving.	circulating to pose open-ended questions (also including assessing and advancing questions) as they monitor student progress.
understand the approaches of others to solving complex problems.	modeling listening and speaking skills.

2. Reason abstractly and quantitatively

Students can…	Because teachers are…
understand there are multiple ways to break apart the problem in order to find the solution.	asking students to explain their thinking regardless of accuracy.
use symbols, pictures or other representations to describe the different sections of the problem allowing students to use context skills.	accepting varied solutions and representations.
explain their thinking.	facilitating discussion through guided questions and representations.
attend to the meaning of quantities and can use numbers flexibly by applying properties of operations and using objects.	highlighting flexible use of numbers. (Can be done through Math Talks or Number Talks)
ask themselves if their problem-solving and answers make sense.	providing wait-time for processing and finding solutions.

3. Construct viable arguments and critique the reasoning of others

Students can…	Because teachers are…
justify their conclusions, communicate them to others, and respond to the arguments of others.	aiming to create a common mathematical language that can be used to discuss and explain math as well as support or disagree with others' work.
use appropriate math vocabulary while justifying their thinking.	intentionally using math vocabulary that is easily integrated into daily lesson plans in order for students to be able to communicate effectively. (Whole school agreement on math vocabulary.)
listen to the reasoning of others, compare arguments, and ask useful questions to clarify others' thinking.	asking clarifying and probing questions.
make reasonable guesses to explore their ideas.	providing opportunities for students to listen to the conclusions and arguments of others.
	establishing and facilitating a safe environment for rich discussion.
	avoiding giving too much assistance (for example, providing answers, procedures, or too much explanation.)

4. Model with mathematics

Students can…	Because teachers are…
apply the mathematics they know to solve problems arising in everyday life.	choosing real life situations for students because they know math does not end at the classroom door.
reflect on whether the results make sense, possibly improving the model if it does not serve its purpose.	intentionally posing problems connected to previous concepts.
model their thinking with objects, pictures, acting out, numbers, or words.	using purposeful and planned representations.

5. Use appropriate tools strategically

Students can…	Because teachers are…
select and use tools strategically and flexibly, then discuss what worked and what didn't.	choosing open-ended tasks that will require students to select math tools.
detect possible errors by strategically using estimation and other mathematical knowledge.	making appropriate tools available for learning.
use technological tools and resources to solve problems and deepen understanding.	using tools with instruction.
	providing students opportunities to use tools and see significance in real world situations.

6. Attend to precision

Students can…	Because teachers are…
use clear definitions in discussion with others and in their own reasoning. (This includes explaining their thinking using mathematics vocabulary.)	modeling the importance of precision and exact answers in mathematics.
speak and problem-solve, paying attention to exactness and detail.	recognizing and modeling efficient strategies for computation.
give carefully explanations to each other, including when they are confused.	using, and challenging students to use, mathematics vocabulary accurately and consistently.
use appropriate symbols and specify units of measure.	

7. Look for and make use of structure

Students can…	Because teachers are…
use many different skills to determine the answer.	providing time for students to apply and discuss properties.
look closely to discern a pattern or structure.	asking questions about patterns.
adopt mental math strategies based on patterns.	highlighting different mental math strategies through Number Talks, Math Talks, etc.
apply reasonable thoughts about patterns and properties to new situations	

8. Look for and express regularity in repeated reasoning

Students can…	Because teachers are…
work on applying their mathematical reasoning to various situations and problems.	providing tasks with patterns.
continually check their work by asking themselves, "Does this make sense?"	asking about answers before and reasonableness after computations.
look for shortcuts in patterns and repeated calculations	

This project used work created by and adapted from the Departments of Education in Ohio, North Carolina, Georgia, Kansas, and resources created by Achieve the Core, EngageNY, Illustrative Mathematics, NCTM, and Howard County Public School System in Columbia, MD.

Resources for Grades 6 – 8:

TABLE 1: PROPERTIES OF OPERATIONS

Here *a*, *b*, and *c* stand for arbitrary numbers in a given number system. The properties of operations apply to the rational number system, the real number system, and the complex number system.	
Associative property of addition	$(a + b) + c = a + (b + c)$
Commutative property of addition	$a + b = b + a$
Additive identity property of 0	$a + 0 = 0 + a = a$
Existence of additive inverses	For every a there exists $-a$ so that $a + (-a) = (-a) + a = 0$.
Associative property of multiplication	$(a \times b) \times c = a \times (b \times c)$
Commutative property of multiplication	$a \times b = b \times a$
Multiplicative identity property of 1	$a \times 1 = 1 \times a = a$
Existence of multiplicative inverses	For every $a \neq 0$ there exists $1/a$ so that $a \times 1/a = 1/a \times a = 1$.
Distributive property of multiplication over addition	$a \times (b + c) = a \times b + a \times c$

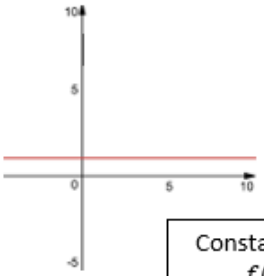
TABLE 2: PROPERTIES OF EQUALITY

Here *a*, *b*, and *c* stand for arbitrary numbers in the rational, real, or complex number systems.	
Reflexive property of equality	$a = a$
Symmetric property of equality	If $a = b$, then $b = a$.
Transitive property of equality	If $a = b$ and $b = c$, then $a = c$.
Addition property of equality	If $a = b$, then $a + c = b + c$.
Subtraction property of equality	If $a = b$, then $a - c = b - c$.
Multiplication property of equality	If $a = b$, then $a \times c = b \times c$.
Division property of equality	If $a = b$ and $c \neq 0$, then $a \div c = b \div c$.
Substitution property of equality	If $a = b$, then b may be substituted for a in any expression containing a.

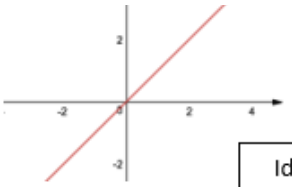
TABLE 3: PROPERTIES OF INEQUALITY

Here *a*, *b,* and *c* stand for arbitrary numbers in the rational or real number systems.
Exactly one of the following is true: $a < b$, $a = b$, $a > b$.
If $a > b$ and $b > c$ then $a > c$.
If $a > b$, then $b < a$.
If $a > b$, then $-a < -b$.
If $a > b$, then $a \pm c > b \pm c$.
If $a > b$ and $c > 0$, then $a \times c > b \times c$.
If $a > b$ and $c < 0$, then $a \times c < b \times c$.
If $a > b$ and $c > 0$, then $a \div c > b \div c$.
If $a > b$ and $c < 0$, then $a \div c < b \div c$.

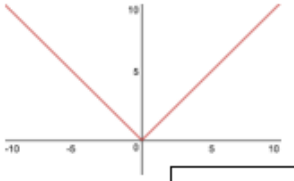
Table 4: Functions



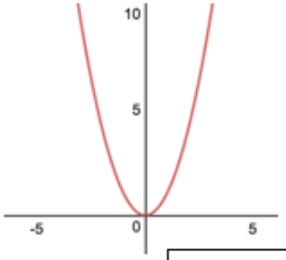
Constant Function
$f(x) = c$



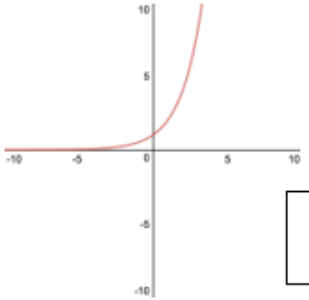
Identity Function
$f(x) = x$



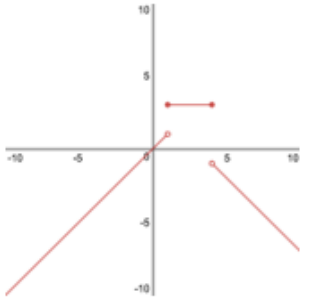
Absolute value Function
$f(x) = |x|$



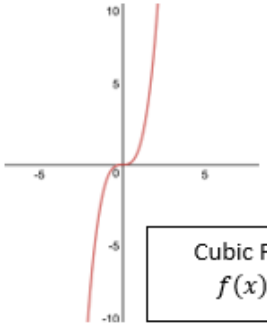
Quadratic Function
$f(x) = x^2$



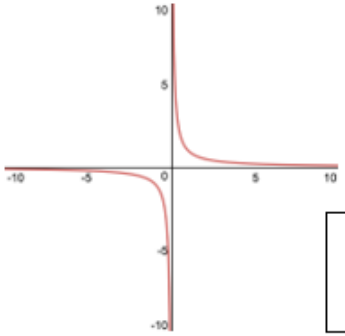
Exponential Function
$f(x) = 2^x$



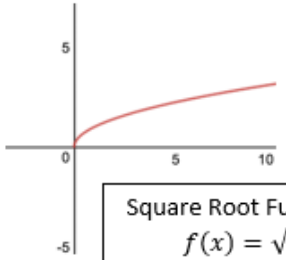
Linear Piecewise Function
$f(x) = \begin{cases} x; x < 1 \\ 4; 1 \leq x \leq 4 \\ -x + 3; x \geq 4 \end{cases}$



Cubic Function
$f(x) = x^3$



Reciprocal Function
$f(x) = \frac{1}{x}$



Square Root Function
$f(x) = \sqrt{x}$

Table 5: Reference Page

Some Abbreviations Used in Formulas

b_1, b_2= bases of a trapezoid	C = circumference	$S.A.$ = surface area
b = base of a polygon	r = radius	V = volume
h = height or altitude	d = diameter	B = area of a base
l = length	$pi = \pi \approx 3.14$	S = sum of interior angles of a convex polygon
w = width	P = perimeter	n = number of sides of a convex polygon
A = area	m = slope	$L.A.$ = lateral area

Formulas

Triangle: $A = \frac{1}{2}bh$

Parallelogram: $A = bh$

Rectangle: $A = lw$

Trapezoid: $A = \frac{1}{2}h(b_1 + b_2)$

Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Circle: $A = \pi r^2$
$C = \pi d$
$C = 2\pi r$

Interest =principal x rate x time

Sum of Measures of Interior Angles of Convex Polygon: $S = 180(n - 2)$

Pythagorean Theorem: $c^2 = a^2 + b^2$

Shape	Surface Area	Volume
Rectangular Prism	$L.A. = Ph$ $S.A. = Ph + 2B$ or $S.A. = 2(wh + lh + lw)$	$V = Bh$ or $V = lwh$
Cylinder	$L.A. = 2\pi rh$ $S.A. = 2\pi rh + 2\pi r^2$	$V = \pi r^2 h$
Square Pyramid	NA	$V = \frac{1}{3}Bh$
Triangular Pyramid	NA	$V = \frac{1}{3}Bh$

Forms of Equations

Standard form of an equation of a line: $Ax + By = C$
Slope-intercept form of an equation of a line: $y = mx + b$
Point-slope form of an equation of a line: $y - y_1 = m(x - x_1)$

Resources for Grades 9-12

Possible Pathways for Students Completing Grade 8 Mathematics

Before deciding on a pathway, consider the following:

Students have several options for high school mathematics, even if they did not take accelerated mathematics in middle school. The first pathway option (shaded blue) is for students who wish to earn four high school mathematics credits and do not want to take additional specialized courses.

However, **students who have the interest and motivation can still access additional specialized mathematics courses in high school** by taking both *Geometry with Data Analysis* and *Algebra I with Probability* concurrently in Grade 9. These pathways are shaded yellow in the chart below. Selecting this option does not exempt students from taking a mathematics course each year of high school. All pathways are designed so that students take mathematics in **each** of the four years of high school.

Students should be informed of the intended purpose of each specialized course in order to make appropriate decisions when choosing a pathway.

Required Courses:
Geometry with Data Analysis
Algebra I with Probability
Algebra II with Statistics

Specialized courses:
Applications of Finite Mathematics
Mathematical Modeling
Precalculus

* Specialized courses can be taken in any order after *Algebra II with Statistics*.
* *AP Calculus* may be considered following *Precalculus*.
* Extended courses, such as *AP Statistics* and *AP Computer Science*, may also be considered for a credit following *Algebra II with Statistics*.

Grade:	Suggested Possible Pathways:		
9	*Geometry with Data Analysis*	*Geometry with Data Analysis* **and** *Algebra I with Probability* (concurrently)	*Geometry with Data Analysis* **and** *Algebra I with Probability* (concurrently)
10	*Algebra I with Probability*	*Algebra II with Statistics*	*Algebra II with Statistics*
11	*Algebra II with Statistics*	*Specialized Course	*Precalculus*
12	*Specialized Course	*Specialized Course (5th credit)	*AP Calculus* (5th credit)

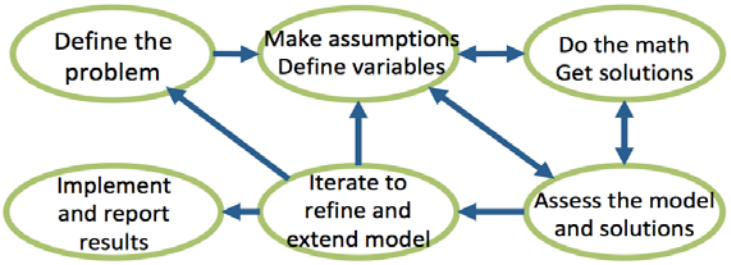
Possible Pathways for Students Completing Grade 8-Accelerated Mathematics

Before deciding on a pathway, consider the following:
Students who have completed Grade 8 Accelerated Mathematics may or may not be ready to continue on an accelerated pathway. The first two pathway options (shaded blue) are for students who are well prepared to continue on an accelerated pathway. The last three pathway options (shaded yellow) are for students who need more experience with the content in *Algebra I with Probability* before moving on to *Algebra II with Statistics*. Students may gain this experience by taking *Geometry with Data Analysis* and *Algebra I with Probability* concurrently in Grade 9. This option does not exempt students from taking a mathematics course each year of high school. Thus, all pathways are designed so that students take mathematics in each of the four years of high school. Students should be aware of the intended purpose of each specialized course in order to make appropriate decisions when choosing a pathway.

Grade	**Suggested Possible Pathways:**				
9	*Geometry with Data Analysis*	*Geometry with Data Analysis*	*Geometry with Data Analysis*	*Geometry with Data Analysis* **and** *Algebra I with Probability* (concurrently)	*Geometry with Data Analysis* **and** *Algebra I with Probability* (concurrently)
10	*Algebra II with Statistics*	*Algebra II with Statistics*	*Algebra I with Probability*	*Algebra II with Statistics*	*Algebra II with Statistics*
11	*Specialized Course	*Precalculus*	*Algebra II with Statistics*	*Specialized Course	*Precalculus*
12	*Specialized Course	*AP Calculus*	*Specialized Course	*Specialized Course (5th credit)	*AP Calculus* (5th credit)

The Mathematical Modeling Cycle

Mathematical modeling "uses mathematics to answer big, messy, reality-based questions" (Bliss, Levy, Teague, Giordano & Garfunkel, 2019, p. 34). Modeling is a process that is often represented as a cycle where thoughts, ideas, and calculations can be reviewed and refined over time; see figure below. Mathematical modeling, like real life, is not composed of a series of predefined steps but must be navigated and reworked to determine the best results. The use of this modeling process becomes inherently applicable to much more than mathematics. When teaching students through modeling, teachers equip their students to make decisions, evaluate those decisions, and revisit and revise their work, and thus allow the student to experience the process for determining a solution that goes beyond the traditional prescribed steps. Note: Using models *of* mathematical ideas (such as manipulatives or graphs) is not the same as engaging in the Mathematical Modeling Cycle.



Depiction of the Mathematical Modeling Cycle (Lai, Teague, & Franklin, 2019).

While aspects of mathematical modeling should be experienced at all levels of education as a way to apply the mathematics learned in school to daily life and for use as informed citizens in a global society, by the time students reach the high school level they should be engaged in the full Mathematical Modeling Cycle.

Mathematical modeling involves problems that can be solved in a variety of ways to reach several valid solutions. Mathematical modeling problems are either open-ended or open-middle type problems where students must make authentic decisions and choices in order to solve the problem. Mathematical modeling is different from a traditional word problem in that it has more than one solution and involves choice.

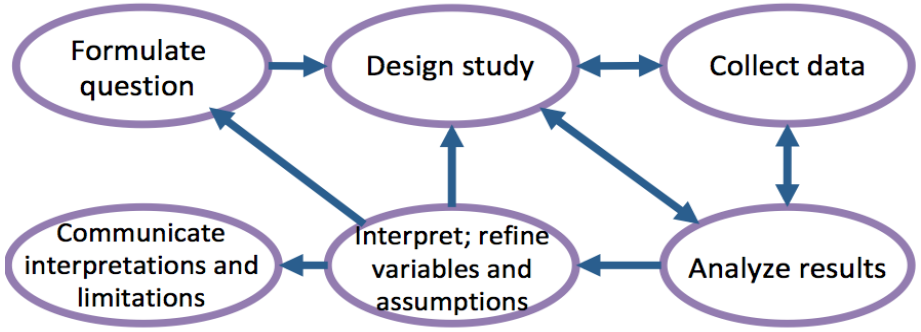
To transform mathematics problems into mathematical modeling problems, teachers must go beyond adding units to the variables as in traditional word problems. Modeling problems must also require students to make meaning of the problem and provide students the opportunity to interpret and make decisions throughout the solution process.

The basic modeling cycle is summarized in the diagram above. It involves (1) defining the problem to be answered; (2) making assumptions to simplify the situation, identifying variables in the situation, and selecting those that represent essential features in order to formulate a mathematical model; (3) analyzing and performing operations to draw conclusions; (4) assessing the model and solutions in terms of the original situation; (5) refining and extending the model as needed; and (6) reporting on the conclusions and the reasoning behind them. The arrows among these steps suggest that one need not go through them in a set order and that one may repeat aspects of the cycle in order to improve the results obtained. Choices, assumptions, and approximations are present throughout this cycle.

Teachers are encouraged to select or develop tasks using contexts that are familiar to students. Teachers are also encouraged to anticipate student responses and pathways in order to support students when necessary.

Statistical Problem-Solving

While mathematics focuses on drawing logical conclusions from a set of assumptions, statistics involves understanding and analyzing the variability in a set of data. This requires an adaptation of the mathematical modeling cycle into a related model of statistical problem-solving, as depicted in the following diagram. This cycle includes formulating a question, designing a study, collecting data, analyzing the results, interpreting and refining solutions, and communicating interpretations and limitations. The arrows among these steps suggest that one need not go through them in a set order and that one may repeat aspects of the cycle in order to improve the results obtained.



Depiction of Statistical Problem Solving (Lai, Teague, & Franklin, 2019).

In summary, both the Mathematical Modeling Cycle and Statistical Problem-Solving Cycle should be incorporated throughout the three required courses of high school mathematics, including using aspects of the cycles as well as the full cycles to explore real-world contexts. The specialized course, *Mathematical Modeling,* was created specifically to focus on both of these cycles in preparation for students' future mathematical endeavors in careers and life. Students will be able to experience the full mathematical modeling and statistical problem-solving cycles multiple times in varying contexts. For more information on the *Mathematical Modeling* course, see the standards for that course.

Resources

Bliss, K., Levy, R., Teague, D., Giordano, F., & Garfunkel S. (2019). *Guidelines for Assessment and Instruction in Mathematical Modeling Education* (2nd Edition). Consortium for Mathematics and its Applications and Society for Industrial and Applied Mathematics. Retrieved from https://www.siam.org/publications/reports/detail/guidelines-for-assessment-and-instruction-in-mathematical-modeling-education

Lai, Y., Teague, D., & Franklin, C. (2019). Process Parallels [digital image]. Retrieved from https://drive.google.com/open?id=1lx81ZJisLiB-3MEj3RDLpih8VWBxxWZj

ALABAMA HIGH SCHOOL GRADUATION REQUIREMENTS

(Alabama Administrative Code 290-3-1-02(8) and (8)(a))		
Effective for students in the ninth grade in the 2013-2014 school year, all students shall earn the required credits for the Alabama High School Diploma. A local board of education may establish requirements for receipt of diplomas and endorsements, but any diploma or endorsement shall include the requirements of the Alabama High School Diploma. The Alabama courses of study shall be followed in determining minimum required content in each discipline.		
	COURSE REQUIREMENTS	
English Language Arts	**Four credits to include:**	**Credits**
	English 9	**1**
	English 10	**1**
	English 11	**1**
	English 12	**1**
	Equivalent options may include: Advanced Placement/International Baccalaureate/postsecondary equivalent courses	
	English Language Arts Total Credits	**4**
Mathematics	**Three credits to include:**	**Credits**
	Algebra I or its equivalent	**1**
	Geometry or its equivalent	**1**
	Algebra II w/Trigonometry or Algebra II, or its equivalent	**1**
	One credit from:	
	Alabama Course of Study: Mathematics or *Career and Technical Education*/Advanced Placement/International Baccalaureate/postsecondary equivalent courses	**1**
	Mathematics Total Credits	**4**
Science	**Two credits to include:**	**Credits**
	Biology	**1**
	A physical science (Chemistry, Physics, Physical Science)	**1**
	Two credits from:	
	Alabama Course of Study: Science or *Career and Technical Education/Advanced Placement/International Baccalaureate/postsecondary equivalent courses*	**2**
	Science Total Credits	**4**
Social Studies	**Four credits to include:**	**Credits**
	World History	**1**
	United States History I	**1**
	United States History II	**1**
	United States Government	**0.5**
	Economics	**0.5**
	Equivalent options may include: Advanced Placement/International Baccalaureate/postsecondary equivalent courses	
	Social Studies Total Credits	**4**
Physical Education	Lifelong Individualized Fitness Education (LIFE)	**1**
Health Education		**0.5**
Career Preparedness		**1**
Career and Technical Education and/or Foreign Language and/or Arts Education		**3**
Electives		**2.5**
Local boards shall offer foreign languages, arts education, physical education, wellness education, career and technical education, and driver education as electives.		
	Total Credits	**24**

GUIDELINES AND SUGGESTIONS FOR LOCAL TIME REQUIREMENTS AND HOMEWORK

Total Instructional Time

The total instructional time of each school day in all schools and at all grade levels shall be not less than 6 hours or 360 minutes, exclusive of lunch periods, recess, or time used for changing classes (*Code of Alabama,* 1975, §16-1-1).

Suggested Time Allotments for Grades 1 - 6

The allocations below are based on considerations of a balanced educational program for Grades 1-6. Local school systems are encouraged to develop a general plan for scheduling that supports interdisciplinary instruction. Remedial and/or enrichment activities should be a part of the time scheduled for the specific subject area.

Subject Area	Grades 1-3	Grades 4-6
Language Arts	150 minutes daily	120 minutes daily
Mathematics	60 minutes daily	60 minutes daily
Science	30 minutes daily	45 minutes daily
Social Studies	30 minutes daily	45 minutes daily
Physical Education	30 minutes daily*	30 minutes daily*
Health	60 minutes weekly	60 minutes weekly
Technology Education (Computer Applications)	60 minutes weekly	60 minutes weekly
Character Education	10 minutes daily**	10 minutes daily**

Arts Education

Dance Music Theatre Visual Arts	*Daily instruction with certified arts specialists in each of the arts disciplines is the most desirable schedule. However, schools unable to provide daily arts instruction in each discipline are encouraged to schedule in Grades 1 through 3 two 30- to 45-minute arts instruction sessions per week and in Grades 4 through 6 a minimum of 60 minutes of instruction per week. Interdisciplinary instruction within the regular classroom setting is encouraged as an alternative approach for scheduling time for arts instruction when certified arts specialists are not available.*

*Established by the Alabama State Department of Education in accordance with *Code of Alabama*, 1975, §16-40-1

**Established by the Alabama State Department of Education in accordance with *Code of Alabama*, 1975, §16-6B-2(h)

Kindergarten

In accordance with *Alabama Administrative Code* r. 290-5-1-.01(5) Minimum Standards for Organizing Kindergarten Programs in Alabama Schools, the daily time schedule of the kindergartens shall be the same as the schedule of the elementary schools in the systems of which they are a part since kindergartens in Alabama operate as full-day programs. There are no established time guidelines for individual subject areas for the kindergarten classroom. The emphasis is on large blocks of time that allow children the opportunity to explore all areas of the curriculum in an unhurried manner.

It is suggested that the full-day kindergarten program be organized utilizing large blocks of time for large groups, small groups, center time, lunch, outdoor activities, snacks, transitions, routines, and afternoon review. Individual exploration, small-group interest activities, interaction with peers and teachers, manipulation of concrete materials, and involvement in many other real-world experiences are needed to provide a balance in the kindergarten classroom.

Grades 7-12

One credit may be granted in Grades 9-12 for required or elective courses consisting of a minimum of 140 instructional hours or in which students demonstrate mastery of Alabama course of study content standards in one credit courses without specified instructional time (*Alabama Administrative Code* r. 290-3-1-.02 (9)(a)).

In those schools where Grades 7 and 8 are housed with other elementary grades, the school may choose the time requirements listed for Grades 4-6 or those listed for Grades 7-12.

Character Education

For all grades, not less than 10 minutes instruction per day shall focus upon the students' development of the following character traits: courage, patriotism, citizenship, honesty, fairness, respect for others, kindness, cooperation, self-respect, self-control, courtesy, compassion, tolerance, diligence, generosity, punctuality, cleanliness, cheerfulness, school pride, respect of the environment, patience, creativity, sportsmanship, loyalty, and perseverance.

Homework

Homework is an important component of every student's instructional program. Students, teachers, and parents should have a clear understanding of the objectives to be accomplished through homework and the role it plays in meeting curriculum requirements. Homework reflects practices that have been taught in the classroom and provides reinforcement and remediation for students. It should be student-managed, and the amount should be age-appropriate, encouraging learning through problem-solving and practice.

At every grade level, homework should be meaning-centered and mirror classroom activities and experiences. Independent and collaborative projects that foster creativity, problem-solving abilities, and student responsibility are appropriate. Parental support and supervision reinforce the quality of practice or product as well as skill development.

Each local board of education shall establish a policy on homework consistent with the Alabama State Board of Education resolution adopted February 23, 1984 (Action Item #F-2).

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GLOSSARY

Absolute value: The distance from a number to zero.

Absolute value function: See Appendix D, Table 4.

Acute angle: An angle that measures between 0˚ and 90˚.

Addend: Any of the numbers added to find a sum.

Addition and subtraction within 5, 10, 20, 100, or 1000: Addition or subtraction of two whole numbers with whole number answers and with sum or minuend in the range 0-5, 0-10, 0-20, 0-100 or 0-1000, respectively. Example: 8 + 2 = 10 is an addition within 10, 14 – 5 = 9 is a subtraction within 20, and 55 – 18 = 37 is a subtraction within 100.

Additive inverses: Two numbers whose sum is 0 are additive inverses of one another.
Example: $\frac{3}{4}$ and $-\frac{3}{4}$ are additive inverses of one another because $\frac{3}{4} + -\frac{3}{4} = 0$

Adjacent angles: Two angles that share a common vertex and a common side but do not share any interior points.

Algorithm: A process or set of rules for solving a problem**.**

Amplitude: The distance from the midline to the maximum or minimum value of a periodic function, calculated as (maximum value - minimum value)/2**.**

Arc: A section of a circle contained between two points.

Area: The measure of the interior of a two-dimensional figure (square units).

Area model: A concrete model for multiplication or division made up of a rectangle. The length and width represent the factors and the area represents the product. Area models can also be used for multiplying and factoring polynomials and for completing the square.

Arithmetic sequence: A sequence in which the difference between two consecutive terms is constant.

Array: A concrete model for multiplication in which items are arranged in rows and columns. Each row (or column) represents the number of groups and each column (or row) represents the number of items in a group. Example: The array shown below represents 5 x 4 = 20, since there are 5 rows of 4 stars for a total of 20 stars. It could also represent 4 x 5 = 20, since there are 4 columns of 5 stars for a total of 20 stars.

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* * * *
* * * *
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Association (Data Analysis, Statistics, and Probability, Grades 9-12): A relationship between two categorical variables in which a specific value of one variable is more likely to coincide with a specific value of another variable.

Asymptote: A line that a curve becomes arbitrarily close to as one of the coordinates of the curve approaches infinity.

Automaticity: The ability to perform mathematical operations accurately and quickly.

Average: See *mean*.

Axis of symmetry: A line that divides a function into two congruent parts so that points on one side of the line are a reflection of the points on the other side; for all values of x, $f(x) = f(-x)$.

B (as in V=Bh): Area of the base of a three-dimensional figure.

Benchmark number: A number or numbers that help to estimate a value. Examples: 10, 100, 0, ½, and 1.

Bias (statistical bias): Using a sampling method that favors some outcomes over others so that it consistently overestimates or underestimates the true value.

Bivariate data: Set of paired values for two related variables. Examples: a person's race and gender (both categorical), a person's height and weight (both quantitative), or a person's gender and height (categorical and quantitative).

Box-and-whisker plot (box plot): A method of visually displaying variation in a set of data values by using the median, quartiles, and extremes of the data set.

Categorical data: Variables with values that may be divided into groups. Examples: race, gender, educational level, zip code.

Categorical variable: A variable whose possible values can be placed into groups and for which arithmetic (e.g., average) does not make sense.

Causation: A change in one variable results in the change of another variable.

Cavalieri's Principle: A method for showing that two solids have the same volume by showing that areas of corresponding cross sections are equal.

Center: A value that represents a typical value or middle of a set of quantitative data, such as mean or median.

Center of a circle: A point that is equidistant from all points on a circle in a plane.

Chord: A segment joining two points on a circle.

Circle: A set of points in a plane equidistant from a given point, which is called the center.

Circumscribed polygon: A polygon whose sides are all tangent to a given circle. The circle is said to be **inscribed** in the polygon.

Closure: If an operation is performed on two elements of a set, the result is always an element of a set.

Coefficient: The numerical factor in a term that contains one or more variables. Example: In $2xy^2$, 2 is the coefficient.

Combination: A way of selecting items from a set or collection, such that the order of selection does not matter**.**

Complementary angles: Two angles whose measures have a sum of 90˚.

Complex fraction: A fraction A/B where A and/or B are fractions (where B is non-zero).

Complex number: A number written in the form $a + bi$, where a and b are real numbers and b is multiplied by the imaginary unit i.

Compose: To put together a number or shape using existing numbers or shapes.

Composition: The process of combining two functions in which one function is performed first and then its output is used as the input for the second function.

Conditional probability: The probability of an event given that another event has occurred.

Conditional relative frequency: The ratio of a joint relative frequency to a related marginal relative frequency.

Confidence interval: An interval combined with a probability statement that is used to express the degree of uncertainty associated with a sample statistic and that estimates where a population parameter will lie. Example: We are 95% confident that the mean salary of the population lies within $512 of the sample mean.

Congruent figures: Two plane or solid figures are congruent if one can be mapped to the other by a rigid motion (a sequence of rotations, reflections, and translations).

Conic section: A figure formed by the intersection of a plane and a right circular cone. Examples: ellipse, parabola, or hyperbola.

Conjugate: An expression formed by changing the sign of the second term. For numbers of the form $a + bi$ where a and b are real numbers, the conjugate is $a - bi$, such that the product of the number and its conjugate is a^2+b^2.

Constant: A variable that has a fixed value.

Constant function: A function that has the same output for every input. See Appendix D, Table 4.

Constraint: A restriction on what solutions to a problem are valid.

Continuous quantitative data: Data items within a set that can take on any value within a range, including non-integer values. Example: A person's height or the length of a person's foot.

Coordinate plane (system): A two-dimensional system for locating points in the plane consisting of two number lines, where the horizontal number line (x-axis) and vertical number line (y-axis) are perpendicular and intersect at a point (origin). Points are described by their relative locations on the two number lines.

Correlation: An association or relationship between two quantitative variables.

Correlation coefficient: A statistic (r) which measures the strength of the linear association between two quantitative variables. Values range from -1 to 1, where 1 denotes a perfect positive relationship, -1 a perfect negative relationship, and 0 no relationship at all.

Corresponding parts: The sides, angles, and vertices of one figure that are mapped onto those of another figure using a geometric transformation.

Counting on: A strategy for finding the number of objects in a group without having to count every member of the group. Example: If a stack of books is known to have 8 books and 3 more books are added to the top, it is not necessary to count the entire stack all over again. One can find the total by *counting on*—pointing to the top book and saying "eight," following this with "nine, ten, eleven. There are eleven books now."

Cube root: A cube root of x is the number that, when multiplied by itself three times (or cubed), gives the number x. Example; 2 is the cube root of 8 because $2^3 = 2 \cdot 2 \cdot 2 = 8$.

Cubic function: A polynomial function whose highest degree is 3. See Appendix D, Table 4.

Decimal number: A quantity represented using base-10 notation, using a decimal point to separate the whole number and fractional parts.

Decompose: To separate numbers or shapes into component or smaller parts.

Denominator: The divisor in a fraction or rational expression.

Dependent events: Two or more events in which the outcome of one is affected by the outcome(s) of the other(s).

Dependent variable: A variable in an expression, equation, or function whose value is determined by the choice of the other variables.

Descriptive statistics: Values used to describe features of a univariate or bivariate quantitative data set. Common statistics involve measures of center and measures of spread.

Dilation: A geometric transformation in which the image of each point lies along the line from a fixed center point through the given point, where its distance is multiplied by a common scale factor. Images of geometric figures using a dilation are similar to the given figures.

Discrete quantitative data: Data items within a set which can take on only a finite number of values. Examples: A person's shoe size or rolling a die.

Distribution: A description of the relative number of times each possible outcome of a statistical variable occurs or will occur in a number of trials.

Dividend: a where $a \div b = c$.

Divisor: b where $a \div b = c$.

Domain: The set of inputs for a function or relation.

Dot plot: See *line plot.*

Ellipse: The set of all points in a two-dimensional plane where the sum of the distance from two distinct points (foci) is constant.

Empirical Rule: A description of a normal distribution of data. In a normal distribution, almost all data will fall within three standard deviations of the mean. Approximately 68% of the values lie within one standard deviation of the mean, approximately 95% of the values lie within two standard deviations of the mean, and approximately 99.7% lie within three standard deviations of the mean. Also known as the 68-95-99.7% Rule.

End behavior: In a function, the values the dependent variable approaches as the independent variable approaches either negative or positive infinity.

Equation: A mathematical relationship in which two expressions are equal.

Equivalent expression: Expressions that represent the same amount; equations or inequalities that have the same solution set.

Evaluate: To determine or calculate the value of an expression once specific values have been substituted for each of the variables in the expression.

Even function: A function whose graph is symmetric with respect to the y-axis. $f(x) = f(-x)$ for all x.

Event: A set of possible outcomes of an experiment or study; a subset of the sample space.

Expanded form: A multi-digit number written as a sum of single-digit multiples of powers of ten. Example: 643 = 600 + 40 + 3.

Expected value: For a random variable, the weighted average of its possible values, with weights given by their respective probabilities.

Experiment: A controlled study used to find the differences between groups subjected to different treatments.

Experimental probability: The number of occurrences of an event in a set of trials divided by the total number of trials. Contrast to *theoretical probability*.

Exponent: The small number placed to the upper right of a base number indicating how many copies of the base number are multiplied together. Example: In 2^4, 2 is the base number, and 4 is the exponent.

Exponential function: A function in which the dependent variable is an exponent, with a constant base. See Appendix D, Table 4.

Exponential notation: A general version of scientific notation in which the base does not have to be 10.

Expression: A mathematical phrase that combines numbers and/or variables using mathematical operations. Examples: 3 x 6; 4 + 7 x 3; 8; $2h + 3k$

Extraneous solution: A solution to an equation that emerges from the process of solving the problem but is not a valid solution to the original problem.

Factors of a number or expression: Numbers or terms multiplied together to find a product. Example: a and b, where $a \times b = c$. Where c is a whole number, integer, or polynomial, a and b are often limited to whole numbers, integers, or polynomials respectively. c is called the **product**.

Fair share model (partitive division): A division model in which the total number of items and the number of groups is known and the number of items in each group is the unknown.

Fibonacci Sequence: A recurrence relation where successive terms are found by adding the two previous terms given that the first two terms are 0 and 1.

Fluency: The ability to use strategies and/or procedures that are flexible, efficient, accurate, and generalizable to answer mathematical questions.

Fraction: A number expressible in the form $\frac{a}{b}$ where a is a whole number and b is a positive whole number. (The word *fraction* in these standards always refers to a non-negative number.) See also *rational number*.

Frequency: The number of cycles of a periodic function that occur within a given distance of the dependent variable; the number of occurrences of a value in a distribution of discrete data.

Frequency table: A table that lists the frequency of each item in a distribution of discrete data. In the lower grades, tally marks may be used to record the number of times each item occurs.

Function: Relationship between two variables where each input (value of the independent variable) has a single output (value of the dependent variable).

Function notation: Use of *f(x)* notation to define a function.

Fundamental Counting Principle: A way to figure out the total number of ways different events can occur (outcomes) in a probability problem. If there are two independent events with m and n possible outcomes, respectively, then there are $m \cdot n$ total possible outcomes for the two events together.

Geometric sequence: A sequence in which the ratio between two consecutive terms is constant.

Geometric series: The sums of the terms in a geometric sequence.

Geometric transformation: A function that maps all the points of the plane onto the plane.

Greatest integer function: A function that assigns each input value to the greatest integer that is less than that value. See Appendix D, Table 4.

Histogram: A graphical display representing the frequency distribution of continuous numerical data where the data are grouped into bins. Each bin represents a range of data.

Hyperbola: The set of all points in a two-dimensional plane where the difference of the distances from two distinct points (foci) is constant.

Identity: An equation that is true for all values of the variables.

Identity function: A function that assigns each input value to itself. See Appendix D, Table 4.

Identity matrix: A square matrix whose elements consist of ones along the diagonal (from upper right to lower left) and zeros everywhere else. Multiplying any matrix by an identity matrix of the appropriate size will yield that same matrix.

Identity property of 0: $a + 0 = 0 + a = a$, for all a. See Appendix D, Table 1.

Image: A figure or set of points that results from a transformation.

Imaginary number (complex number): The square root of a negative number. The square root of negative 1 or $\sqrt{(-1)}$ is defined to be i. See also *complex number.*

Independence: A lack of association between two categorical variables, in which a specific value of one variable is equally likely to coincide with all values of the other variable.

Independent events: Two or more events in which the outcome of one is not affected by the outcome of the other(s).

Independent variable: A variable in an expression, equation, or function whose value is freely chosen regardless of the value of the other quantities.

Inequality: A mathematical sentence that compares the order of two quantities: greater than ($>$), greater than or equal to ($\geq$), less than ($<$), less than or equal to ($\leq$).

Inference (statistical inference): Conclusions drawn, based on data.

Inferential statistics: The mathematical science of using data collection and analysis to make predictions about a population based on a random sample or to draw conclusions of cause and effect based on a random assignment of treatments.

Inscribed polygon: A polygon whose vertices are all contained on a given circle. The circle is said to be **circumscribed** about the polygon.

Integer: Any of the natural numbers, the negatives of these numbers, or zero.

Interquartile range: A measure of variation in a set of numerical data. The interquartile range is the distance between the first and third quartiles of the data set. Example: For the data set {1, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the interquartile range is 15 – 6 = 9.

Inverse function: A function that "undoes" a given function, mapping that function's outputs to its inputs.

Inverse operations: Operations that "undo" one another. Example: 5+4=9 and 9-4=5, demonstrating that subtraction is the inverse operation of addition.

Irrational number: A real number r such that there are no integers a and b ($b \neq 0$) where $r = a \div b$ (such as π).

Joint relative frequency: The ratio of the frequency in a particular category and the total number of data values.

Like terms: Two or more terms that have the same variables and powers, but possibly different coefficients. Note: any constant, c, can be written as $c \cdot x^0$. Thus, all constants are like terms.

Limit: A value that a function approaches as the input approaches some number.

Line plot: A method of visually displaying a distribution of data values where each data value is shown as a dot or mark above a number line (also known as a *dot plot*).

Line segment: Set of points between two endpoints, A and B, that lie on the line that contains A and B.

Linear association: A relationship between two quantitative variables that can be represented using a linear equation. On a scatter plot, the relationship can be represented by a line.

Linear equation: An equation of two linear expressions. Linear equations including two variables can be represented by a line in the coordinate plane.

Linear expression: An expression whose terms each include at most one variable with degree one (raised to the first power). For example, $2x + 7$ or $3x + 4y – 11$.

Linear function: A function whose output is determined by a linear expression. A linear function can be represented by a line in the coordinate plane. See Appendix D, Table 4.

Logarithm: The exponent to which a given base must be raised to yield a given value. Example: the logarithm of 1000 base 10 is 3, since $10^3=1000$.

Logarithmic function: The inverse function of an exponential function.

Magnitude of a vector: The length of a vector.

Marginal relative frequency: The ratio of the sum of the joint relative frequency in a row or column and the total number of data values.

Mass: A measure of how much matter is in an object, usually defined in grams.

Mathematical modeling: Using mathematics to solve a complicated real-world problem where there is no clear-cut method to solve the problem. Note that mathematical modeling is different from using manipulatives and other representations to model mathematical concepts. See Appendix E.

Matrix: A rectangular array of numbers or other data. The dimensions of the matrix are determined by its number of rows and columns. Example: The dimensions of a matrix with two rows and three columns would be 2 x 3.

Maximum: The greatest value in a data set or the greatest possible value of an expression or function.

Mean (arithmetic mean or average): A measure of center in a set of numerical data, computed by adding the values in a list and then dividing by the number of values in the list; the balance point. For the data set $\{x_1, x_2, x_3, \ldots, x_n\}$, the mean (often written $\bar{x}$) $= \frac{1}{n}\sum_{i=1}^{n} x_i$. Example: For the data set {1, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the mean is 21.

Mean absolute deviation: The average distance between each value in a set of numerical data and the mean of the data set. For the data set $\{x_1, x_2, x_3, \ldots, x_n\}$ with mean $\bar{x}$ MAD $= \frac{1}{n}\sum_{i=1}^{n}|x_i - \bar{x}|$. Example: For the data set {2, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the mean absolute deviation is 19.96.

Median: A measure of center in a set of numerical data. The median of a list of values is the number at the center of an ordered list—or the mean of the two numbers in the middle if there are an even number of elements. Example: For the data set {2, 3, 6, 7, 10, 12, 14, 15, 22, 90}, the median is 11.

Metric system: A measurement system used throughout the world that is based on units that are related by powers of 10, using a standard set of prefixes. The base unit for measuring length is the meter, the base unit for capacity is the liter, and the base unit for mass is grams. Commonly-used prefixes include *milli-* denoting 1/1000 of the base unit, *centi-* denoting 1/100 of a unit, and *kilo-* denoting 1000 base units. For example, a milliliter is 1/1000 of a liter, a centimeter is 1/100 of a meter, and a kilometer is 1000 meters. Temperature is measured in degrees Celsius, in which 0˚ C. is the freezing point of water and 100˚ is the boiling point of water.

Midline: In the graph of a trigonometric function, the horizontal line halfway between its maximum and minimum values.

Midpoint: A point on a segment that is equidistant from the endpoints.

Minimum: The smallest value in a data set or the smallest possible value of an expression or function.

Mode: The value that occurs most frequently in a data set.

Modular arithmetic: If *a* and *b* are integers and *m* is a positive integer, then *a* is said to be congruent to *b modulo m* if *m* divides *a* – *b*.

Monomial: A mathematical expression consisting of a single term.

Multiple: A number that is the result of multiplying a given whole number (or integer) by another whole number (or integer). Example: Multiples of 5 are 0, 5, 10, 15, 20, 25, 30….

Multiplication: A mathematical operation involving two factors. One factor describes the number of groups or sets, the other factor describes the number of items in a group or set and the result, or product, describes the total number of items.

Multiplication and division within 100: Multiplication or division of two whole numbers with whole number answers, with product or dividend in the range 0-100. Example: $72 \div 8 = 9$.

Multiplicative inverses: Two numbers whose product is 1 are multiplicative inverses of one another. Example: $\frac{3}{4}$ and $\frac{4}{3}$ are multiplicative inverses of one another because $\frac{3}{4} \times \frac{4}{3} = \frac{4}{3} \times \frac{3}{4} = 1$.

Natural number: Whole numbers excluding zero; "counting numbers."

Nonresponse bias: Bias that occurs when individuals chosen for a sample are unable or unwilling to respond and differ in meaningful ways from those who do respond.

Normal distribution: A naturally occurring distribution that is symmetric about the mean, bell shaped, and dispersed systematically. Also known as a *normal curve*.

Number line diagram: A line diagram used to represent numbers and support reasoning about them. In a number line diagram for measurement quantities, the interval from 0 to 1 on the diagram represents the unit of measure for the quantity.

Numerator: The number in a fraction that indicates the number of parts of the whole that are being considered; the top number in a fraction.

Obtuse angle: An angle measuring more than 90˚ but less than 180˚.

Odd function: A function whose graph is 180˚ rotationally symmetric about the origin. $f(-x) = -f(x)$ for all x.

Open figure: A shape made up of line segments with at least one line segment that isn't connected to anything at one of its endpoints.

Ordered pair: A set of numbers (x, y) where the first number (x-coordinate) shows position to the left or right of the origin (0, 0) and the second number (y-coordinate) shows position above or below the origin on a coordinate plane.

Outlier: Values in a data set that are much smaller or larger than the rest of the values.

Parabola: The set of all values in a two-dimensional plane that are the same distance from a fixed point (focus) and a line (directrix).

Parallel lines: Two lines in a plane that do not intersect.

Parameter: In statistics, a numerical measure that describes a characteristic of a population. In algebra, parameters are quantities that influence the output or behavior of a mathematical object that are not explicitly varied but viewed as being held constant. Example: for $y = mx + b$, m and b are parameters and x and y are variables. Also, the independent variable used in parametric equations.

Parametric equations: A set of equations used to define the coordinates of a set of points in terms of an independent variable called a parameter.

Partial product: A part of the product in a multiplication calculation, usually based on place value and the distributive property.

Partial quotient: A part of the quotient in a division calculation, usually based on place value and the distributive property.

Pattern: Set of numbers or objects that can be described by a specific rule.

Percent rate of change: A rate of change expressed as a percent. Example: If a population grows from 50 to 55 in a year, it grew by $\frac{5}{50} = 10\%$ per year.

Perimeter: The distance around a figure or object.

Period: The length of the dependent variable in a periodic function for a complete cycle to occur.

Permutation: An arrangement of all the members of a set or collection into some sequence or order, or if the set is already ordered, the reordering of its elements, a process called permuting.

Perpendicular lines: Two lines or line segments that intersect to form a right angle (90˚).

Piecewise function: A function in which more than one formula is used to define the output over different intervals (pieces) of the domain.

Pigeonhole Principle: A concept used in problem-solving, which states that if there are more pigeons than pigeonholes, then at least one pigeonhole has at least two pigeons in it.

Plane figure: A two-dimensional shape.

Point: An exact position or location on a plane surface or in space.

Polar equations: An equation defining an algebraic curve expressed in polar coordinates r and θ, where r is the distance from the origin and θ is the angle of rotation from the x-axis.

Polygon: Any closed plane shape formed by line segments (also called **sides** of the polygon,) where each endpoint of a side (also called a **vertex** of the polygon) is shared by exactly two sides.

Polyhedron: A three-dimensional figure formed by polygons (also called **faces** of the polyhedron,) where each side of a face (also called an **edge** of the polyhedron) is common to exactly two faces. The vertices of the polygons (also called **vertices** of the polyhedron) may be shared by multiple edges.

Polynomial: A mathematical expression containing real numbers and variables related only by the operations of addition, subtraction, multiplication, and non-negative integer exponents. The standard form of a polynomial is written as a sum of terms, each of which is simplified to be the product of a constant and/or variables raised to whole number exponents greater than 0. Example: $3x^2 + 4xy^3 + 9$ is a polynomial written in standard form.

Population: The entire group of objects, people, or events about which information is sought in a statistical study.

Population distribution: The distribution of all values of a variable for all individuals in the population.

Power: Exponent; the number of times a base number is multiplied by itself.

Preimage: A figure or set of points that is an input to a transformation.

Prime number: A number that has exactly two factors, 1 and itself.

Prism: Polyhedron with two congruent and parallel faces that are polygons; the rest of the faces are parallelograms.

Probability: A number between 0 and 1 used to quantify likelihood.

Probability distribution: The set of possible values of a random variable with a probability assigned to each.

Probability model: A model used to assign probabilities to outcomes of a chance process by examining the nature of the process. The set of all outcomes is called the sample space, and their probabilities sum to 1. See also *uniform probability model*.

Product: The result when two or more numbers or terms are multiplied together.

Properties: Characteristics, such as color, size, or height; statements that are always true for some class of objects.

Proportional: Term describing two quantities that are related by a constant ratio, whose value is called the constant of proportionality.

Pythagorean Theorem: The sum of the squares of the lengths of the legs of a right triangle is equal to the square of the length of the hypotenuse. $a^2 + b^2 = c^2$, where a and b are the lengths of the legs and c is the length of the hypotenuse.

Quadrant: One of the four parts into which a coordinate plane is divided by the x-axis and y-axis.

Quadratic equation: An equation which equates a quadratic expression to another quadratic expression, linear expression, or constant.

Quadratic expression: A polynomial expression in one variable where the largest exponent of the variable is 2 when written in standard form.

Quadratic formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$, where x is the solution of an equation of the form $ax^2 + bx + c = 0$ and $a \neq 0$.

Quadratic function: A function in which each input value is related to its output value by a quadratic expression. See Appendix D, Table 4.

Qualitative variable: See *categorical variable*.

Quantitative literacy: The ability to use mathematical and statistical reasoning to address practical, civic, professional, recreational, and cultural issues.

Quantitative variable: A variable whose possible values are numerical and represent a measurable quantity. Examples: a person's weight or age.

Quartile: A grouping of data points. Three points in a ranked set of data divide the data into four equal groups, where each group contains a quarter of the data points. The three points include the median of the full set of data (Q2), the median of the set of values above the median of the full set (Q3), and the median of the set of values below the median of the full set (Q1).

Quotient: c where $a \div b = c$.

Radian: The radian measure of an angle is equal to the ratio of the length of the subtended arc of the angle to the radius.

Radical equation: An equation in which at least one variable expression is under a radical.

Random sample: A method of selection in which members of the statistical population are chosen by chance, with each member of the population having an equal probability of being chosen.

Random variable: A statistical variable whose values are the result of a random process.

Range: The maximum value minus the minimum value in a data set. The range of a function is the set of outputs from the domain.

Ratio: The multiplicative comparison of two non-zero quantities. Represented as *a:b, a/b,* and *a* to *b.*

Rational expression: A quotient of two polynomials with a non-zero denominator.

Rational number: A number that can be expressed as a fraction in the form of $\frac{a}{b}$ where $b \neq 0$.

Ray: A set of points on a line that begins at a point (called the endpoint) and extends infinitely in one direction.

Real number: The set of all possible values on a number line; that is, the set of all rational and irrational numbers. Each real number can be represented by a decimal number, either finite or infinite.

Reciprocal: The multiplicative inverse of a number.

Reciprocal function: A function defined by the reciprocal of a linear function. See Appendix D, Table 4.

Remainder: Amount remaining when one whole number is unevenly divided by another whole number.

Repeating decimal: A decimal number in which a string of one or more digits following the decimal point repeats indefinitely. Example: 2.137232323… is a repeating decimal since the string "23" repeats.

Response bias: Bias that results from problems in the measurement process. Examples: leading questions, social desirability.

Right angle: An angle that measures exactly 90˚.

Rigid motion: A geometric transformation of points consisting of a sequence of one or more translations, reflections, and/or rotations which preserve distances and angle measures.

Round: To use mathematical rules to alter a number to one that is less exact but easier to use in mental computation. The number is kept close to its original value.

Sample: A subset of data selected from a statistical population by a defined procedure.

Sample space: All possible outcomes of an event.

Sample survey: A study that obtains data from a subset of a population to estimate population parameters.

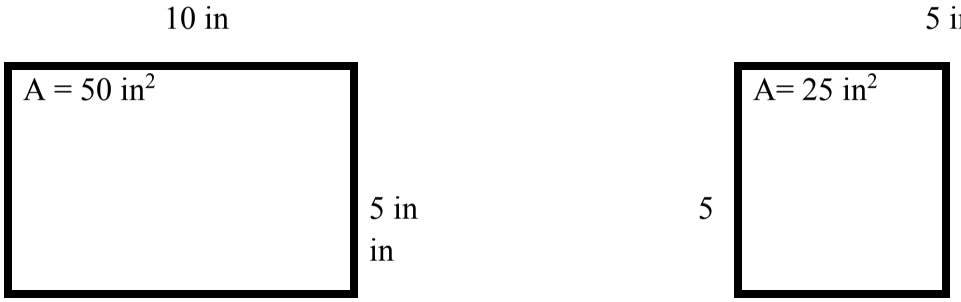
Sampling bias: The partiality that occurs when a sample statistic does not accurately reflect the true value of the parameter in the population.

Sampling distribution: A distribution of values taken by a statistic in all possible samples of the same size from the same population.

Scalar: Numerical values or quantities that are fully described by magnitude alone; a number multiplied by each element of a vector or matrix.

Scale (multiplication): To compare the size of a product to the size of one factor on the basis of the size of the other factor.

Example*:* Compare the area of these rectangles. When one dimension is doubled, the area (A) is doubled.



Scale factor: The common factor by which distances of points from a given center in a dilation are multiplied.

Scatter plot: A graph in the coordinate plane representing a set of bivariate data. Example: the heights and weights of a group of people could be displayed on a scatter plot, where the heights are the *x*-coordinates of the points and the weights for the *y*-coordinates.

Scientific notation: A way of writing very large or very small numbers using a number between 1 and 10 multiplied by a power of 10.

Shape of distribution (Statistics and Probability, Grades 9-12): A description of a distribution. Examples: number of peaks, symmetry, skewness, or uniformity.

Similar figures: Two plane or solid figures which can be obtained from each other by a similarity motion (a sequence of dilations, rotations, reflections, and/or translations). Congruent figures are similar, with a scale factor of 100%.

Similarity motion: A geometric transformation of points consisting of a sequence of one or more dilations, translations, reflections, and/or rotations. Similarity motions preserve angle measure and change lengths proportionally. The constant ratio comparing side lengths is called the **scale factor**.

Simulation: The process of using a mathematical model to recreate real phenomenon, often repeatedly, so that the likelihood of various outcomes can be more accurately estimated.

Simultaneous equations: See *system of equations*.

Skewed: Term which describes a distribution of data that is not symmetrical about its mean.

Slope (rate of change): The ratio of vertical change to horizontal change; the ratio of change in an independent variable compared to change in the dependent variable.

Solid figure: A three-dimensional object.

Solution: A value which makes an equation or inequality true.

Solution to a system of equations: A solution that is common to each of the equations in the system.

Square root: A square root of x is the number that, when multiplied by itself, gives the number x. Example: 5 is the square root of 25 because $5 \cdot 5 = 25$.

Square root function: A function in which the output of the function is found by taking the square root of the input value, preceded or followed by addition, subtraction, or multiplication of the value by one or more constants. See Appendix D, Table 4.

Square unit: The area of a square with side lengths of 1 unit, used as a unit of measure for area.

Standard algorithm: A generally accepted method used to perform a particular mathematical computation.

Standard deviation: A measurement of dispersion that measures how far each number in the data set is from the mean. It is the square root of the variance divided by the number of cases. For the data set $\{x_1, x_2, x_3, \ldots, x_n\}$ with mean $\bar{x}$, SD = $\sqrt{\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^2}$. If the data set is a sample of a population, SD = $\sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2}$.

Statistic: A characteristic of a sample used to estimate the value of a population parameter.

Statistically significant: An observed event is considered statistically significant when, in the presence of randomness, the observed results are not likely due to chance alone.

Stem-and-leaf plot: A graphical display of quantitative data that contains two columns separated by a vertical line. Each value is split into a stem and a leaf, the stem being the first digit(s) and the leaf being the last digit. The stems are typically given in the left column, and the leaves are given in order to the right.

Step function: A discontinuous piecewise defined function in which each piece is a horizontal line segment or a point. Example: greatest integer function.

Strategy: A plan or approach to find an answer or solve a problem.

Subject (Data Analysis, Statistics and Probability, Grades 9-12): An individual to which treatments are applied within a statistical experiment.

Sum: The result of quantities added together.

Supplementary angles: Two angles whose measures have a sum of 180˚.

Survey: A study that obtains data from a subset of a population to draw conclusions.

Symmetry: A quality a figure has when the figure is mapped onto itself by a rigid motion in which the points of the figure are not all mapped to themselves. Figures that have symmetry are said to be symmetric, and the rigid motion is called a symmetry of the figure. Example: equilateral triangles have a rotational symmetry of 120˚ since each vertex of an equilateral triangle will be mapped to another vertex when rotated 120˚ about the center of the triangle. Thus, equilateral triangles are said to be rotationally symmetric.

System of equations: A set of two or more equations that has a common set of solutions. *Solving the system* means finding those common solutions.

Tape diagram: A visual model that uses rectangles of uniform size to illustrate and solve a variety of problems, including number relationship and ratio problems.

Term: A single number or variable, or numbers and variables multiplied together.

Terminating decimal: A decimal number which can be expressed in a finite number of digits; a decimal that ends.

Theorem: A geometric statement that can be proven to be true based on definitions, axioms, and previously proven theorems.

Theoretical probability: The number of ways that an event can occur divided by the total number of outcomes from the sample space. Contrast to *experimental probability.*

Transitivity principle for indirect measurement: A measurement principle stating that if the length of object A is greater than the length of object B, and the length of object B is greater than the length of object C, then the length of object A is greater than the length of object C. This principle applies to measurement of other quantities as well.

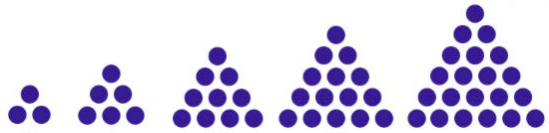
Transversal: A line that intersects two or more lines in a plane.

Treatment: A condition or set of conditions that is applied to one group in an experiment.

Treatment group (Statistics and Probability, Grades 9-12): The group of subjects to which the same treatment is assigned in an experiment.

Tree diagram: In probability, a diagram that shows all possible outcomes of an event.

Triangular numbers: The set of numbers *(1, 3, 6, 10, 15, ...)* that are obtained from the summation of natural numbers that can be arranged in an equilateral triangle.



Trigonometric function: A function that relates the angles and sides of a right triangle, whose input is an angle and whose output is a designated ratio of sides. Trigonometric functions include sine, cosine, tangent, secant, cosecant, and cotangent.

Truth table: A table used to display all possible truth values of logical expressions.

Two-way table: A table listing the frequencies of two categorical variables whose values have been paired.

Uniform probability model: A probability model which assigns equal probability to all outcomes. See also *probability model.*

Unit circle: A circle with the equation $x^2 + y^2 = 1$. It has a radius of 1 unit.

Unit rate: In a proportional relationship, the number of units of the first quantity that correspond to one unit of the second quantity. Example: My rate of travel was 30 miles in one hour (mph).

Univariate data: A data set that is described by one variable (one type of data).

Variable: A symbol used to represent a quantity, which may have a fixed value or have changing values. In statistics, a variable is a characteristic of members of a population that can be measured (quantitative) or counted (categorical). Examples: The height of a person is a quantitative variable, while eye color is a categorical variable.

Variability: A measure of the spread of a data set. Examples: interquartile range, mean absolute deviation, standard deviation.

Variance: A measure of dispersion expressed in square units that considers how far each number in a data set is from its mean, calculated by finding the sum of the square of the distance of each value from the mean. Example: For the data set $\{x_1, x_2, x_3, \ldots, x_n\}$ with mean $\bar{x}$, the variance = $\sum_{i=1}^{n}(x_i - \bar{x})^2$.

Vector: A quantity with magnitude and direction in the plane or in space. It can be defined by an ordered pair or triple of real numbers.

Vertex: The common endpoint of two or more rays or line segments. Plural: vertices

Vertex form: The equation describing a quadratic equation using the vertex (maximum or minimum point) of its graph, which is a parabola. If (h, k) is the vertex of the graph represented by an equation, then the vertex form for that equation will be $f(x) = a(x - h)^2 + k$, where a is a non-zero constant.

Vertical angles: Two nonadjacent angles formed by a pair of intersecting lines.

Visual fraction model: A method of showing fractions. Examples: tape diagram, number line diagram, area model.

Volume: The measure of the amount of space inside of a solid figure, such as a cube, ball, cylinder, or pyramid, expressed in cubic units.

Whole numbers: The numbers 0, 1, 2, 3, …. without any decimal or fractional parts.

***x*-intercept:** The x-coordinate of the ordered pair where a graph crosses the x-axis, where $y = 0$.

***y*-intercept:** The y-coordinate of the ordered pair where a graph crosses the y-axis, where $x = 0$.

Zero matrix: A matrix consisting of all zeros. Any matrix added to a zero matrix of matching dimension will yield itself.

Zero of a function: A value of the independent variable where the value of the function equals 0.

Zero property: The product of any number and zero is zero.

2015 ALABAMA COURSE OF STUDY

SCIENCE

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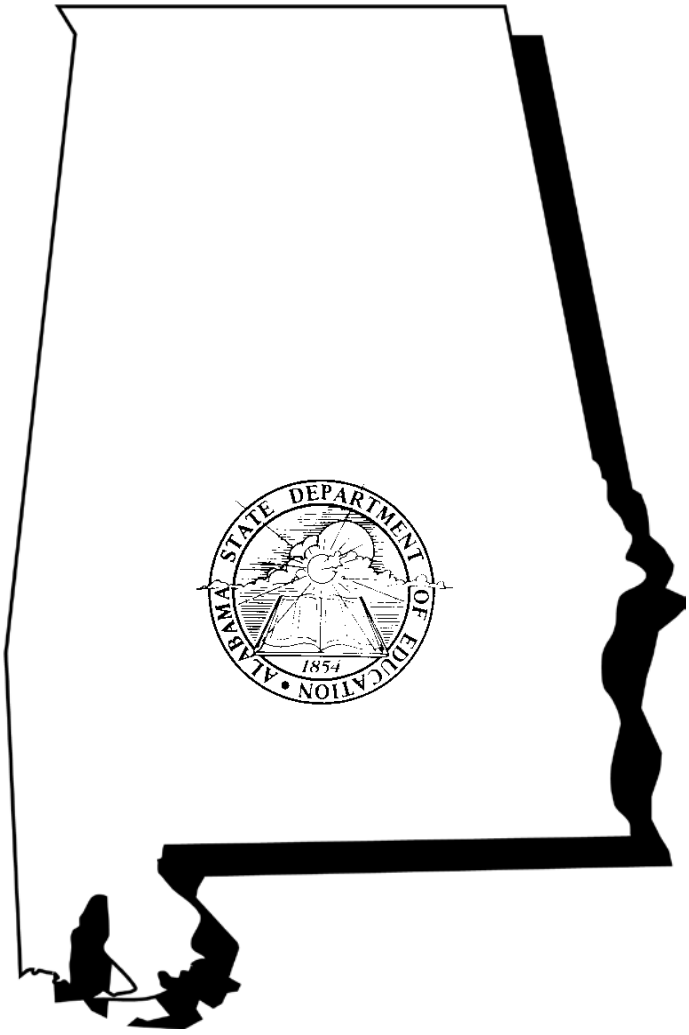
Alabama Course of Study
Science



Thomas R. Bice
State Superintendent of Education
ALABAMA STATE DEPARTMENT OF EDUCATION

STATE SUPERINTENDENT OF EDUCATION'S MESSAGE

Dear Educator:

Our vision is "Every Child a Graduate—Every Graduate Prepared!" To be prepared for college and career in the twenty-first century, it is essential that students have access to a high-quality, solid science education. A great number of personal and societal issues require citizens to be scientifically literate and able to make informed decisions based on an understanding of science and technology. In addition, today's workforce depends on graduates who are prepared with necessary scientific and technological skills to address these issues. Our newly developed science standards affirm the importance of science literacy for all students.

The science standards reflect the interconnectedness of the nature of science as experienced in the real world. Science concepts build coherently in depth and rigor across Grades K-12 as students focus on deeper understanding and application of content. The standards in the course of study represent the minimum content required to prepare students for college, career, and citizenship.

The Alabama State Science Course of Study Committee and Task Force developed what I believe to be a superior set of standards that integrate interdisciplinary teaching and learning to guide local school systems in creating local curriculum for implementation in the schools. By using this new course of study as the foundation for what students should know and be able to do, students in the state of Alabama can meet the goal of graduating with the knowledge and skills that will enable them to succeed in post-high school education and the workforce.

Thomas R. Bice, Ed.D.
State Superintendent of Education

Alabama Course of Study: Science

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PREFACE

The 2015 *Alabama Course of Study: Science* provides the framework for the K-12 science education program in Alabama's public schools. Content standards in this document are minimum and required (*Code of Alabama,* 1975, §16-35-4). They are fundamental and specific, but not exhaustive. When developing a local curriculum, each school system may include additional content standards that focus on local resources and needs. Implementation strategies and external resources may also be added to enhance student learning of science in Alabama schools.

The 2012-2015 Alabama State Science Course of Study Committee and Task Force reviewed the *Alabama Course of Study: Science* (Bulletin 2005, No. 20) and the 2012 National Research Council (NRC) publication, *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*, in developing the minimum required content that integrates scientific concepts and scientific and engineering practices. In addition, committee members read articles in professional journals and magazines, examined similar documents from other states, and studied national evaluations of state standards. Members reviewed suggestions from interested individuals and groups throughout Alabama, used each member's academic and experiential knowledge, and discussed each issue and standard among themselves. As a result, this document represents the scientific knowledge and practices necessary to provide graduates with scientific and engineering literacy for success in college, career, and citizenship.

The main goal of the Alabama course of study for science is to give all Alabama students a solid foundation in science and engineering. This course of study includes the most current scientific and engineering practices, cross-cutting concepts, and disciplinary core ideas our students need in order to become college and career ready. Providing the K-12 students of Alabama with a foundational understanding of scientific theories and laws will enable them to excel in the scientific discoveries of the future. Scientific theories are developed from observations and evidence to explain the nature of phenomena, to predict future outcomes, and to make inferences about the past. Scientific laws are supported by replicable experiments from within a controlled environment. Both theories and laws have equivalent utility and are open for revision in light of new evidence. The theory of evolution has a role in explaining unity and diversity of life on earth. This theory is substantiated with much direct and indirect evidence. Therefore, this course of study requires our students to understand the principles of the theory of evolution from the perspective of established scientific knowledge. The committee recognizes and appreciates the diverse views associated with the theory of evolution.

ACKNOWLEDGMENTS

This document was developed by the 2012-2015 Alabama State Science Course of Study Committee and Task Force composed of early childhood, intermediate school, middle school, high school, and college educators appointed by the Alabama State Board of Education and business and professional persons appointed by the Governor (*Code of Alabama*, 1975, §16-35-1). The Committee and Task Force began work in March 2012 and submitted the document to the Alabama State Board of Education for adoption at the September 2015 meeting.

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ALABAMA COURSE OF STUDY: SCIENCE
GENERAL INTRODUCTION

In response to our nation's declining competitiveness in the science, technology, engineering, and mathematics (STEM) fields, the National Research Council (NRC) published a research-based report on teaching and learning science in a 2012 document titled *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. This document proposes a new approach to K-12 science education through the integration of engineering design and engineering practices within the context of science content instruction. Supported by the NRC framework and our state's College- and Career-Readiness (CCR) Anchor Standards for Reading and for Writing (Appendix A), the goal of Alabama's K-12 science education standards is scientific and engineering literacy for all Alabama students. The 2015 *Alabama Course of Study: Science* defines the minimum required content that students should master to achieve this goal.

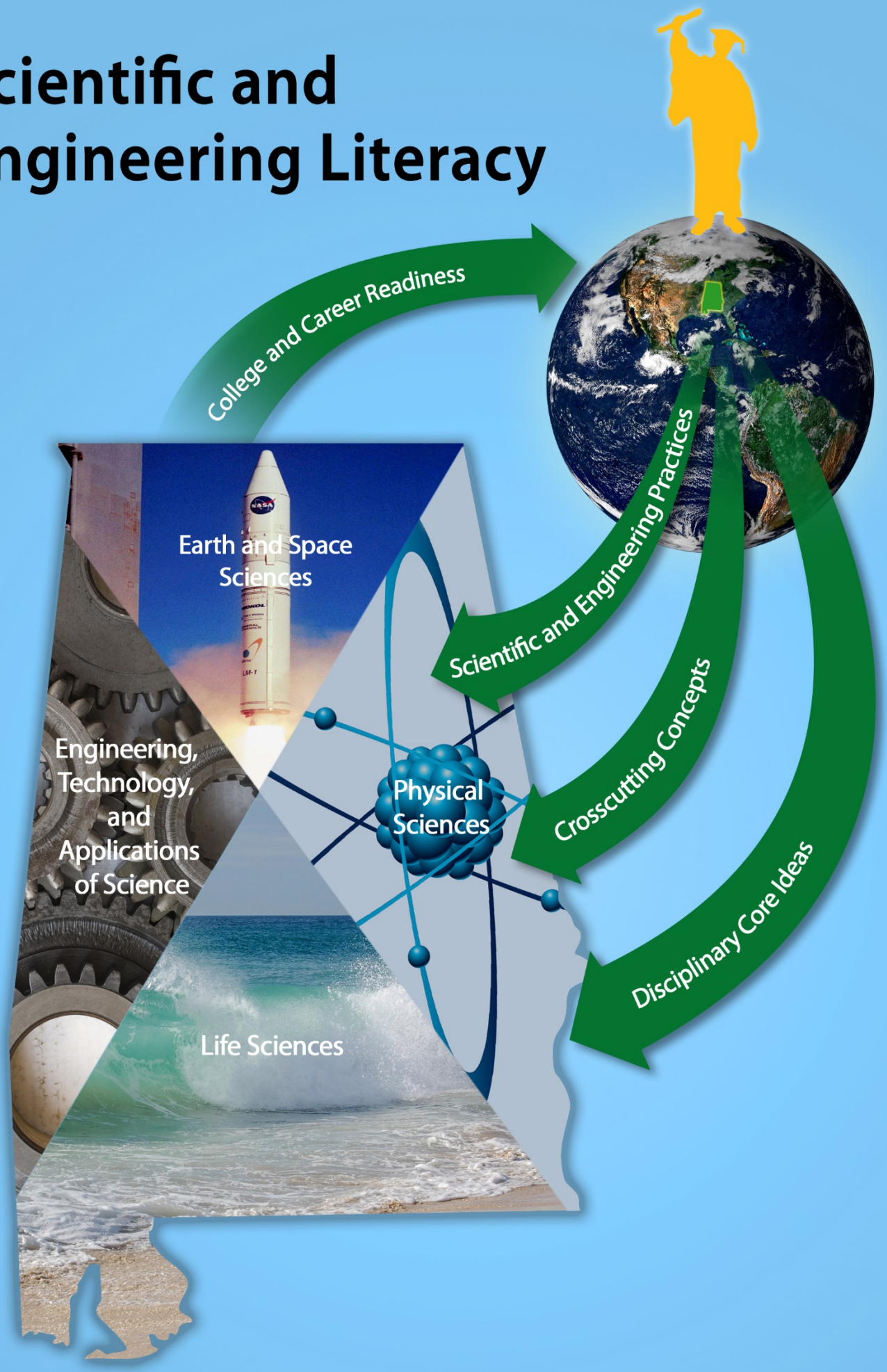
Since the present goal of Alabama's science education curriculum includes engineering literacy, it is important to define what is meant by the terms science, technology, and engineering. Science is the process of building a structured body of knowledge about the natural world delineated in the three traditional domains of physical, life, and earth and space sciences. Technology is defined as any modification of the natural world made to fulfill human needs or desires, thus expanding the interpretation of technology far beyond computers and electronic devices to include simple machines, steam engines, and musical instruments. Engineering, in a broad sense, involves engagement in a systematic practice of design in order to solve problems and generate products rising from human needs and wants. A major conceptual shift in K-12 science and engineering education includes a limited number of disciplinary core ideas in four domains that students explore with increasing rigor and depth over multiple years and the integration of such knowledge with the practices needed to engage in scientific inquiry and engineering design.

Scientific and engineering literacy enables students to become critical thinkers and informed decision makers in an increasingly technological society. While providing students with foundational knowledge of the core ideas of physical, life, and earth and space sciences, the 2015 *Alabama Course of Study: Science* will also help students develop competency in a specific set of engineering practices they can apply in everyday problem-solving situations. Developmentally appropriate engineering projects, beginning in kindergarten, provide a meaningful and relevant context in which students' knowledge and skills can be applied. Engineering projects should include all components of the engineering design process, including specific criteria for success and constraints on materials, time, and cost.

The structure of the Alabama course of study in science reflects the approach outlined by NRC's framework. The 2015 *Alabama Course of Study: Science* incorporates the three dimensions around which K-12 science and engineering education are built. These dimensions are scientific and engineering practices; crosscutting concepts that unify the study of science through their common application across all domains of science and engineering; and disciplinary core ideas in the physical, life, and earth and space sciences, and in engineering, technology, and applications of science.

Alabama's K-12 science program places emphasis on the importance of teaching science every day to every student in every grade. This document provides foundational knowledge and learning progressions that are coherent, vertically aligned, and increasingly rigorous in preparing scientifically literate citizens with the ability to evaluate the quality of science information and make informed personal choices, to gain an appreciation of science as a way of knowing about the world, and to be savvy science consumers. Effective implementation of the 2015 *Alabama Course of Study: Science* will help develop confident and capable graduates, the key to Alabama's economic productivity and our nation's competitiveness in the global marketplace.

Scientific and Engineering Literacy



ALABAMA'S K-12 SCIENCE CURRICULUM CONCEPTUAL FRAMEWORK

The goal of Alabama's K-12 science standards, as shown across the top of the conceptual framework graphic design on page 2, is the achievement of scientific and engineering literacy by all students. A scientifically literate person is one who has a foundation in scientific knowledge, a technological understanding of problem solving, and the ability to design scientific solutions. The correlation among these aspects of scientific literacy is depicted in the conceptual framework, which illustrates the three basic dimensions for establishing scientific and engineering literacy—scientific and engineering practices, crosscutting concepts, and disciplinary core ideas.

To face the many challenges of a universal society, Alabama students should be provided every opportunity to achieve scientific and engineering literacy from a global perspective as indicated by the image of Earth to the right of the goal statement. The infusion of a global science perspective into Alabama's curriculum is accomplished through a study of the three dimensions of science—scientific and engineering practices, crosscutting concepts, and disciplinary core ideas. Scientific and engineering practices are a set of skills and tools used by students to investigate, construct models, design and build systems, and develop theories about the world in which they live. Crosscutting concepts are unifying themes that link scientific and engineering ideas across all domains of science. Disciplinary core ideas in the four domains of Physical Sciences; Life Sciences; Earth and Space Sciences; and Engineering Technology, and Applications of Science are broad concepts that provide students with foundational knowledge. The three dimensions are depicted on the arrows that flow from the globe to the image of the state of Alabama where they are incorporated into the four domains that form the organizational structure for the content standards in this document.

The domains of Earth and Space Sciences; Physical Sciences; Life Sciences; and Engineering, Technology, and Applications of Science are displayed in the four quadrants in the graphic of the state of Alabama. The domain of Earth and Space Sciences is represented by a rocket, the image of an atom characterizes the Physical Sciences domain, and the gulf coastal area of the state symbolizes the Life Sciences domain. In the fourth quadrant are gears representing the meshing of the Engineering, Technology, and Applications of Science domain into each of the other domains. Each of the domains addresses the specific disciplinary core ideas of Dimension 3 as identified on page 12 of this document. Core ideas are the organizers for the content in each grade or course. However, the core ideas for the domain of Engineering, Technology, and Applications of Science are integrated into the content standards of the other three domains. The four domains continue from kindergarten through high school with concepts increasing in depth and rigor as students focus on deeper understanding and application of content.

The resulting science standards contained in this document ensure that Alabama students, having completed the K-12 science study, are informed science citizens and prepared college- and career-ready graduates. Having met the goal of attaining scientific and engineering literacy, these students will be able to achieve success in the global society of the twenty-first century and make meaningful contributions to a dynamic world.

POSITION STATEMENTS

Assessment

Assessment refers to the processes used to measure student progress and achievement by identifying patterns of qualitative and quantitative learning driven by instruction and feedback. Assessments provide evidence of students' prior knowledge, thinking, or learning in order to evaluate what students understand and how they are thinking at a given point in time for the purpose of promoting student learning. Consequently, science instruction should be informed by assessment, and instructional strategies should be adjusted based on feedback to meet the individual needs of all students. Assessment is aligned with curriculum and instruction and supports conceptual understanding with a focus on competency. Because no single assessment method provides a complete picture of what a student knows and can do, a variety of assessment methods is imperative. Ongoing formative assessments provide diagnostic feedback to teachers and students before, during, and after instruction. Formative assessment information should be used as feedback to modify teaching and learning activities. Summative assessments are used in classrooms, schools, and districts to determine student achievement at the end of a unit, course, or time period. Designers of assessments should consider the diverse backgrounds and different learning styles of students when planning for academic success in the classroom. Assessment tasks must integrate the three dimensions of science and engineering practices, crosscutting concepts, and disciplinary core ideas and provide opportunities for students to demonstrate conceptual understanding of science phenomena during inquiry. The primary goal of assessment is to measure with accuracy and validity what a student knows and can do and what a student still needs to learn based on Alabama's College- and Career-Readiness Standards.

Classroom Environment

Effective science classroom environments are those in which teachers and students work collaboratively. These student-centered environments shift the focus from the teacher to the learner, providing opportunities for creative scientific exploration and engineering design that allow students to connect the classroom to the outside world. Thus, stimulating the learner's interest in science through investigation encourages a lifelong pursuit for exploration and knowledge. The science classroom is any place where scientific inquiry occurs, whether it is the traditional laboratory or classroom, a playground, a science museum, an amusement park, a forest, or a beach. In the student-centered classroom, emphasis is placed upon active and cooperative learning environments where students work together to manipulate variables, make observations, and use prior knowledge to construct reasonable explanations while solving problems under conditions that assure both positive interdependence and individual accountability. Teachers guide and facilitate investigations by immersing students in scientific practices using inquiry, correct and appropriate manipulative techniques, and safe and humane laboratory practices. Students may be observed engaging in interpreting scientific data collected to construct and evaluate evidence-based arguments of phenomena during scientific inquiry or engaging in argument from evidence acquired during research of a phenomenon. Quality science instruction emphasizes critical thinking and investigative processes that reveal consistencies, relationships, and patterns. The classroom should be flexible, yet structured, intellectually challenging, positive and nonthreatening, stimulating, and adaptable to a variety of learning styles.

Cultural Diversity

Cultural diversity is an asset in the classroom. Educators should actively encourage students of various backgrounds to share their experiences in relation to science. Recognizing multicultural diversity in the classroom as a valuable resource contributes in positive ways to collaboration and participation in science learning.

Science and engineering are collaborative social processes that take place in the context of culturally valued knowledge and practices. Throughout history, diverse groups of people from different cultures and races have contributed to the body of scientific knowledge. This knowledge has resulted in remarkable technological advances that benefit all mankind. Today's global scientific community can be enhanced by the diverse perspectives represented by all nations, groups, and races. From a global perspective, engineering offers opportunities for innovation and creativity at the K-12 level. Engineering is a field that is critical to innovation, and exposure to engineering activities such as robotics and invention competitions can spark interest in the study of the science, technology, engineering, and mathematics (STEM) fields. This opportunity is particularly important for students who traditionally have not recognized science as relevant to their lives or future because of the lack of emphasis within the culture.

All students, regardless of gender, ethnicity, or cultural background, should have equal access to learning science and engaging in scientific and engineering practices. Strategies utilized for instruction must recognize and respect differences students bring based on their cultures. These standards provide an opportunity for schools to create environments that cultivate and prepare the minds of all students for greater understanding of the scientific enterprise. An increasing number of scientists and engineers are needed in our state and nation to continue technological advancement in many traditional and emerging scientific and engineering careers.

Instructional Model

Effective instruction results from deliberate and focused instructional design. This involves a shift in focus to the desired learning from which appropriate strategies will follow. As teachers shift the focus from teaching to student learning, they begin to spend most of the time considering what the learner needs in order to accomplish the learning goals instead of what the teacher will do and which materials the teacher will use. Effective instruction ensures that students are actively engaged in the learning process, have opportunities for interaction with the environment, and have time for reflection upon learning. The instructional setting must allow students time for developing the reasoning and critical-thinking skills necessary for constructing meaning and acquiring scientific knowledge. In this setting, teachers facilitate the learning process by guiding students, providing students with a focus, challenging students to excel, and encouraging and supporting student learning at all levels of inquiry. Before quality instruction can occur, there must be a plan for what teachers want students to learn. One process for planning includes the following three steps.

1. Identify desired outcomes found in the standards.
2. Determine acceptable evidence of student learning by designing evaluation activities.
3. Develop activities and learning experiences that will engage all students in exploring, explaining, and expanding their understanding of the scientific and engineering practices, crosscutting concepts, and disciplinary core ideas in the standards.

Members of the Alabama State Science Course of Study Committee and Task Force support the use of inquiry-based instructional models such as the following Five E + IA Instructional Model.* This model complements the three-step planning process described on the preceding page.

Five E + IA Instructional Model

Engage

Student interest is stimulated and connections are made to prior knowledge and between past and present experiences. Student thinking is focused on learning outcomes as they become mentally engaged in the practices, crosscutting concepts, and core ideas of the unit or lesson.

Explore

Students investigate initial ideas and solutions in a context within which they can identify. Using investigation, research, discourse, text, and media, students actively explore situations and build common experiences that serve as a basis for developing an understanding of the concept within context.

Explain

Students are provided the opportunity to collaborate, communicate, and construct meaning from their experiences based on an analysis of the exploration. This phase emphasizes the importance of students developing evidence-based explanations founded upon their observations and experiences obtained through investigations. Teachers clarify understanding through definitions, labels, and explanations for abilities, concepts, practices, and skills.

Elaborate

Students reflect upon, expand, and apply conceptual understanding of scientific concepts to new and unfamiliar situations in order to cultivate a broader and deeper understanding of concepts through new experiences within new contexts and situations.

Evaluate

Students are assessed on understanding of scientific concepts. Assessment provides opportunities for teachers to evaluate understanding of concepts and practices identified in the standards. This phase helps teachers know if students are learning in order for appropriate next steps to occur.

Intervene or **A**ccelerate

When some students do not learn the first time, intervention strategies may be implemented to further explain and elaborate upon concepts to a greater extent in order to clarify understanding. Students who have demonstrated proficiency may be able to enrich or accelerate learning through more challenging, engaging, and exploratory experiences.

*Adapted from Zuiker, Steven J., and J. Reid Whitaker (in preparation). "A Case Study of the STEMscopes 5E+I/A Inquiry Model." *Journal of Science Education and Technology*.

Interdisciplinary Connections

Academic rigor, critical-thinking skills, and vertically aligned learning progressions are common elements among Alabama's core academic standards. Diverse texts and media should be infused to create a rich science learning environment where students use real-world experiences and historical facts and events to discuss and create hypotheses and explain theories. Being able to read, write, and understand various media and texts in context are important skills to develop for both in and out of the classroom. Students write, speak, and create multimedia presentations based upon laboratory experiences and knowledge they obtained from published resources. The scientific and engineering practices allow students to utilize reading and writing skills (Appendix A). What is learned in English language arts classes is also learned and practiced in science when students construct explanations from evidence; engage in argument from evidence through debate to defend a claim; or obtain, evaluate, and communicate information from media, texts, and specifically through case studies. In both mathematics and science classes, students use computational thinking and mathematical representations to comprehend and communicate scientific findings. Students learn to develop and use models derived from data analyzed statistically to explain or describe phenomena. The creative element of science is found not only in discovery and invention, but is also realized in the artistic, scientific, and engineering designs developed by students. Science comes alive as students explore the natural world through the use of the five senses and produce sketches as a response to the observed environment while others write fiction and nonfiction to describe surroundings. At the same time, students may discover artifacts and native specimens which lead to discussions of history and geography of the area. High school students studying the disciplinary core idea, Heredity: Inheritance and Variation of Traits, may learn in science and world history about the important role hemophilia has played in Europe's history and communicate their findings orally or through writing. Students should also be able to develop an understanding of historical figures and events that have helped shape our world in the realm of science. Thus, it is essential for teachers to demonstrate how knowledge is interrelated and model strategies to recognize these connections.

Laboratory Safety

Active hands-on learning increases the potential for injuries or accidents. Safety is a primary concern for everyone in kindergarten through Grade 12, including students, teachers, support personnel, and administrators. For this reason, the National Science Teachers Association (NSTA) and the Alabama State Science Course of Study Committee and Task Force recommend that all science teachers be certified in first aid by the American Red Cross. Professional learning information may be accessed at http://www.redcross.org/take-a-class/certificates-ceus and http://www.redcross.org/take-a-class/program-highlights/cpr-first-aid. Before allowing students to participate in scientific investigations, teachers should recognize any potential for harm in order to prevent possible injuries or accidents or to minimize the impact of injuries or accidents if prevention is not successful.

Safety must be given a priority in the storage, use, and care of equipment, specimens, and materials in the science classroom. It is recommended that science teachers adhere to national regulatory agencies such as the American Chemical Society (ACS) and the Occupational Safety and Health Administration's (OSHA) revised Hazard Communication Standard (HCS), now aligned with the Globally Harmonized System (GHS) of Classification and Labeling of Chemicals, as well as local and state regulatory agencies that have established safety guidelines. In addition, teachers must work with the local school and local school system to be certain that science safety guidelines for which they are responsible are implemented.

Teachers must be certain that students receive adequate instruction for participating safely in all science investigations, no matter the location. As part of the safety guidelines, consideration must be given to adequate and safe space for scientific collaboration and investigation. To address this safety issue, professional organizations of science teachers recommend that science laboratory classes not exceed 24 students.

A written science safety plan is an essential part of the school science program. It is suggested that a science safety plan be developed by a team that includes the principal, teachers, school nurse, a fire fighter, and a representative from an insurance agency. Suggestions for developing science safety plans for schools and school systems are available on the Alabama Department of Education Web site at www.alsde.edu. After initial development, an annual review and assessment of the plan should be made to ensure its effectiveness.

Teachers should also be aware of the state safety goggle law found in the *Code of Alabama*, 1975, §16-1-7. This law requires local boards of education to provide American National Standard Institute (ANSI) Z87 or Z87.1 coded safety goggles to every student engaged in science experiments. Teachers are further encouraged to obtain and keep readily available the safety references, *Science and Safety—Making the Connection* for secondary classrooms and the *Science and Safety: It's Elementary!* calendar and flip chart. These publications are available to download free of charge from the Council of State Science Supervisors (CSSS) at http://csss-science.org/safety.shtml.

Nature of Science

Throughout history, humans have attempted to explain the natural world in which they live. Current scientific knowledge and engineering practices are the result of humankind's ongoing pursuit for answers to questions about natural phenomena. All scientists share the assumptions that the universe has order, consistency, and mathematically interpreted patterns. While there is no single pathway to discovering new scientific knowledge, all scientific models, theories, and laws are based on empirical evidence. Specifically, scientific theories can be defined as inferred explanations of observable events or phenomena. Scientific laws are statements of measurable relationships among observable events or phenomena. All scientific knowledge is open to revision in light of new evidence.

All scientific discourse is centered on the common values of logical thinking, open-mindedness, objectivity, skepticism, reliability of research results, and honest reporting of findings. Science is fundamentally a human endeavor constrained by the progressing human capacity, technology, and social and economic contexts.

The 2012 National Research Council (NRC) publication, *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas,* recognizes the importance of the nature of science by stating what an educated citizen should comprehend about the scientific enterprise. As indicated in the publication, there is strong agreement that students should understand and be able to distinguish among observations, hypotheses, inferences, models, and theories or unsubstantiated claims.

Science, Engineering, Technology, and Society

Advances in science and engineering have profound effects on human society, including agriculture, health care, transportation, and communication. At the same time, economic, political, and cultural factors influence the goals and funding for science and engineering research. The work of science is essential in addressing global issues such as the demand for energy, clean water, and food for Earth's growing population. On the other hand, science and engineering are needed to resolve problems created by human activity that draws on natural resources. A goal of science and engineering education is to equip students with the knowledge, skills, and dispositions that will help them grow into responsible consumers and wise managers of Earth's resources. Students should be able to contribute and engage in society as educated, literate science citizens who make responsible and informed decisions about what is appropriate in situations involving science and technology.

The Alabama State Science Course of Study Committee and Task Force recognize two specific important ideas that relate science, technology, and society. The first is that scientific inquiry, engineering design, and technological development are interdependent. Scientific discoveries allow engineers to perform their work, and engineering accomplishments enable the work of scientists. For example, discoveries of electricity made it possible for engineers to create power grids to illuminate cities and allow for communications. The Hubble Space Telescope and certain light sensors created by engineers expanded our understanding of the universe beyond existing astronomical knowledge. The second important idea is that scientific discoveries and technological decisions affect society and the natural environment. People make decisions that ultimately guide the work of scientists and engineers. The infusion of the engineering, technology, and applications of science domain into the science standards should serve as a vehicle for providing reliable sources of scientific and technological information to be used in the process of decision making.

The Alabama Department of Education supports science, technology, engineering, and mathematics (STEM) education through the Alabama Math, Science, and Technology Initiative (AMSTI), an outcome of the Alabama Mathematics, Science, Technology, and Engineering Coalition (AMSTEC), a network of state business, education, and public policy stakeholders working for systemic change in STEM education. AMSTI, designed by a Blue-Ribbon Committee of business leaders and K-12 and higher education representatives, is committed to the mission of affording all K-12 students with the knowledge and skills needed for college and career readiness in science, engineering, and technology. AMSTI, Alabama Science in Motion, the Southeastern Consortium of Minorities in Engineering (SECME), and Alabama Technology in Motion provide research-based practices for incorporating STEM education into classrooms.

Scientific Writing

Written communication in science is essential for conveying data and results from investigations, explaining evidence and findings from research, and affirming and defending claims and arguments based on evidence and reasoning. College- and career-ready writers should be able to utilize the most current technology and media to create, refine, and collaborate through writing. Writing as indicated in the Literacy Standards for Grades 6-12: History/Social Studies, Science, and Technical Subjects (Appendix A), should be emphasized across the curriculum. Students should be given opportunities to demonstrate writing skills to explain and document results of inquiries of scientific phenomena and concepts. Clear and coherent writing, developmentally appropriate for each grade level and reflecting knowledge and understanding through the use of accurate science academic language, is expected.

Writing activities such as scientific journals and laboratory reports should be introduced in the primary grades. During the middle and high school years, students should expand writing to completion of short or more extended inquiry or research projects using appropriate terminology, available technology, and suitable units of measurements. Students should be transitioning to the use of words and phrases with subject-specific meanings that differ from meanings used in everyday life. Discipline-specific discourse through oral or written language provides ways to communicate science core ideas. In addition, open-ended essays are an excellent way to assess student understanding of scientific concepts, principles and laws, scientific and engineering practices, crosscutting concepts, and disciplinary core ideas. As learning progresses, students should develop more sophisticated methods of gathering information, evaluating sources, citing materials, and reporting findings from research. Students should devote significant time and effort to writing for a range of science tasks, purposes, and audiences.

LEARNING PROGRESSIONS

Content standards in the 2015 *Alabama Course of Study: Science* follow a logical learning progression that addresses the same disciplinary core ideas across multiple grade levels. While every core idea is not addressed in every consecutive grade, the core idea is taught through developmentally appropriate approaches with increasing rigor and sophistication in a continuous and progressive manner.

Learning progressions of content standards within Grades K-12 ensure that science concepts are not taught in isolation, but rather in the context of disciplinary core ideas that are introduced in earlier grades and are built upon in subsequent grades leading to the goal of scientific and engineering literacy. Examples of the learning progressions of content across three of the domains are found in the table below. These examples indicate the grade or course where the standard is located, followed by the content standard number. **K.3**, for example, specifies kindergarten, content standard number three.

PHYSICAL SCIENCES			
Motion and Stability: Forces and Interactions			
K-2	**3-5**	**6-8**	**9-12**
K.1. Investigate the resulting motion of objects when forces of different strengths and directions act upon them.	**3.1.** Plan and carry out an experiment to determine the effects of balanced and unbalanced forces on the motion of an object using one variable at a time, including number, size, direction, speed, position, friction, or air resistance, and communicate these findings graphically.	**8.9.** Use Newton's second law to demonstrate and explain how changes in an object's motion depend on the sum of the external forces on the object and the mass of the object.	**Physical Science.8.** Apply Newton's laws to predict the resulting motion of a system by constructing force diagrams that identify the external forces acting on the system, including friction. **Physics.2.** Identify the external forces in a system and apply Newton's laws graphically by using models such as free-body diagrams to explain how the motion of an object is affected, ranging from simple to complex, and including circular motion.
LIFE SCIENCES			
Ecosystems: Interactions, Energy, and Dynamics			
K-2	**3-5**	**6-8**	**9-12**
K.3. Distinguish between living and nonliving things and verify what living things need to survive.	**5.11.** Create a model to illustrate the transfer of matter among producers; consumers, including scavengers and decomposers; and the environment.	**7.5.** Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.	**Biology.8.** Develop and use models to describe the cycling of matter and flow of energy between abiotic and biotic factors in ecosystems.
EARTH AND SPACE SCIENCES			
Earth's Systems			
K-2	**3-5**	**6-8**	**9-12**
2.8. Make observations from media to obtain information about Earth events that happen over a short period of time or over a time period longer than one can observe.	**4.12.** Construct explanations by citing evidence found in patterns of rock formations and fossils in rock layers that Earth changes over time through both slow and rapid processes.	**6.5.** Use evidence to explain how different geologic processes shape Earth's history over widely varying scales of space and time.	**Earth and Space Science.9.** Obtain, evaluate, and communicate information to explain how constructive and destructive processes shape Earth's land features and sea features.

STRUCTURE OF THE STANDARDS

Each content standard in this document addresses the three scientific dimensions listed below and as described in the 2012 National Research Council (NRC) publication, *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. Standards outline the knowledge and skills of science and engineering that all students should know and be able to do by the end of high school.

DIMENSION 1: SCIENTIFIC AND ENGINEERING PRACTICES

- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

DIMENSION 2: CROSSCUTTING CONCEPTS

- Patterns
- Cause and effect
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter
- Structure and function
- Stability and change

DIMENSION 3: DISCIPLINARY CORE IDEAS

- Physical Sciences
  - Matter and Its Interactions
  - Motion and Stability: Forces and Interactions
  - Energy
  - Waves and Their Applications in Technologies for Information Transfer

- Life Sciences
  - From Molecules to Organisms: Structures and Processes
  - Ecosystems: Interactions, Energy, and Dynamics
  - Heredity: Inheritance and Variation of Traits
  - Unity and Diversity

- Earth and Space Sciences
  - Earth's Place in the Universe
  - Earth's Systems
  - Earth and Human Activity

- Engineering, Technology, and Applications of Science
  - Engineering Design
  - Links Among Engineering, Technology, Science, and Society

DIRECTIONS FOR INTERPRETING THE MINIMUM REQUIRED CONTENT

Academic content standards in this document are divided into grade clusters K-2, 3-5, 6-8, and 9-12. Each cluster contains an overview that provides general information regarding student characteristics, the classroom environment, and science instruction. More specific information for each grade level or course, including scientific and engineering practices, crosscutting concepts, and disciplinary core ideas, is provided in the description that precedes the content standards for that grade or course.

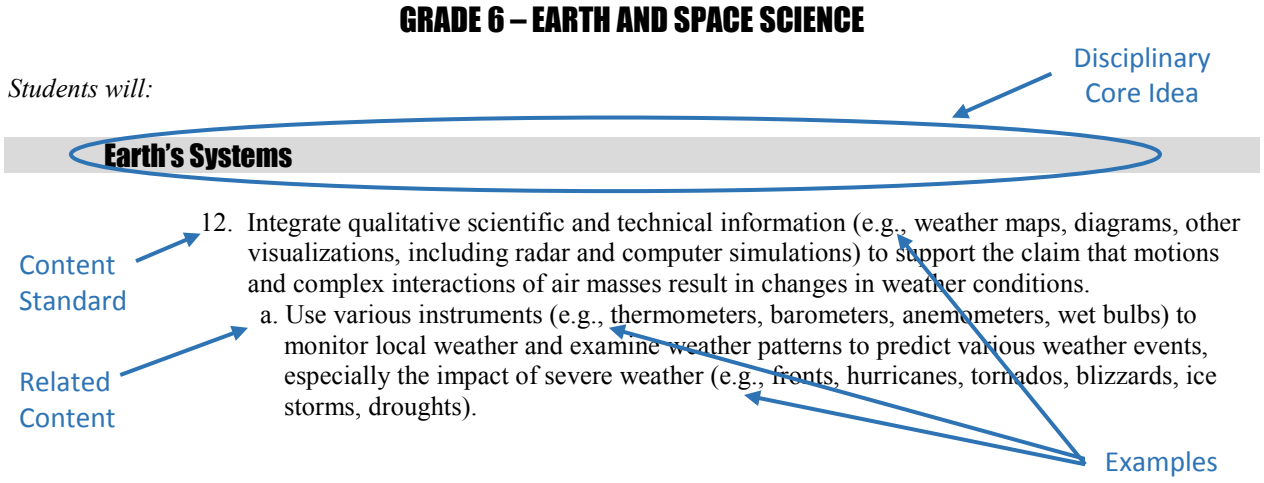
The illustrations below and on the next page are intended to serve as guides for interpreting the Grades K-12 minimum required content. The required content addresses what all students should know and be able to do by the end of a grade or course.

Disciplinary Core Ideas, identified in Dimension 3 on page 12 of this document, are the recurring ideas from the three science domains of Physical Sciences, Life Sciences, and Earth and Space Sciences. The core ideas are the key organizing principles from a domain that are teachable and learnable over multiple grades or increasing levels of depth and sophistication. The core idea is accessible to younger students but is broad enough to maintain continued investigation through high school. As shown below, the core ideas appear in the shaded bands that precede the content standards.

Content Standards are written below each disciplinary core idea as indicated in the illustration. The standards are assessable statements of what students should know and be able to do as a result of instruction. The order in which standards are listed within a grade or course is not intended to convey a sequence for instruction or to dictate curriculum or teaching methods. Each content standard completes the phrase *"Students will."*

Related Content is listed alphabetically under a standard. Related content is required for instruction.

Examples, shown in parentheses and indicated by e.g., are intended to clarify the standards or related content. Examples are illustrative, but not exhaustive, and are not required content.



Engineering Practices are embedded in the content standards throughout the three science domains in each grade level or course. These practices emphasize the engineering, technology, and applications of science core ideas. Standards containing these practices are denoted with an asterisk (*). An example appears below.

GRADES 9-12 – PHYSICAL SCIENCE

Students will:

Energy

12. Design, build, and test the ability of a device (e.g., Rube Goldberg devices, wind turbines, solar cells, solar ovens) to convert one form of energy into another form of energy.*

Engineering Standard

Scientific and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Content, the three dimensions of science, are incorporated into each of the content standards throughout the K-12 science curriculum. Examples of the dimensions as they appear in a standard are illustrated below.

GRADE 2

Students will:

Earth and Human Activity

11. Examine and test solutions that address changes caused by Earth's events (e.g., dams for minimizing flooding, plants for controlling erosion).*

Disciplinary Core Content

Scientific/Engineering Practice

Crosscutting Concept

GRADES K-2
Overview

Science education in Grades K-2 provides students with a foundation for the lifelong pursuit of scientific information and exploration. Young children are natural scientists and possess a curiosity and eagerness to learn about the world around them. They are able to construct knowledge and gather information through the use of the five senses. Learning about science in the early years is a multifaceted task and requires a range of student experiences to support diverse learning styles.

The early childhood classroom environment must stimulate the natural curiosity and capitalize on the energy level of the young learner while providing a safe and supportive environment that appeals to all students. Key components of this educational environment include a meaningful curriculum, high-quality instruction, and effective assessment that drive instruction. The young student is a concrete learner in need of many opportunities to interact in hands-on, inquiry-based investigations and cooperative learning situations.

The K-2 science content creates a sound base for scientific exploration and acquisition of knowledge and skills in a developmentally appropriate manner. Effective science instruction in Grades K-2 includes instructional strategies guided by the content standards that address the three dimensions of scientific and engineering practices, crosscutting concepts, and disciplinary core ideas.

GRADE K

Kindergarten students enter school with an eagerness to explore the world around them. Although their experiences and background knowledge may be limited, science instruction provides ample opportunities to develop investigative thinking, argumentation, and reasoning in the context of familiar surroundings. Students develop the foundational skills necessary for future learning in science.

Students in kindergarten learn disciplinary core ideas from the three scientific domains of Physical, Life, and Earth and Space Sciences while demonstrating their learning in the context of the content standards for this grade level. In Physical Science, students investigate forces and interactions. In Life Science, students explore interactions, energy, and dynamics of ecosystems. In Earth and Space Science, students become familiar with Earth's systems while observing the effects of sunlight and studying weather patterns. The disciplinary core ideas of the Engineering, Technology, and Applications of Science (ETS) domain are integrated within the content standards of the three scientific domains and are denoted with an asterisk (*).

Grade K content standards provide students with opportunities for appropriate investigation and observation of the world around them. Through guided participation in specific engineering design projects, they find answers regarding how to use force to change the speed or direction of an object, how to reduce the human impact on the local environment, how to reduce the effects of sunlight, and how to use weather forecasts to prepare for severe weather.

Students will:

Motion and Stability: Forces and Interactions

1. Investigate the resulting motion of objects when forces of different strengths and directions act upon them (e.g., object being pushed, object being pulled, two objects colliding).

2. Use observations and data from investigations to determine if a design solution (e.g., designing a ramp to increase the speed of an object in order to move a stationary object) solves the problem of using force to change the speed or direction of an object.*

Ecosystems: Interactions, Energy, and Dynamics

3. Distinguish between living and nonliving things and verify what living things need to survive (e.g., animals needing food, water, and air; plants needing nutrients, water, sunlight, and air).

4. Gather evidence to support how plants and animals provide for their needs by altering their environment (e.g., tree roots breaking a sidewalk to provide space, red fox burrowing to create a den to raise young, humans growing gardens for food and building roads for transportation).

5. Construct a model of a natural habitat (e.g., terrarium, ant farm, diorama) conducive to meeting the needs of plants and animals native to Alabama.

6. Identify and plan possible solutions (e.g., reducing, reusing, recycling) to lessen the human impact on the local environment.*

Earth's Systems

7. Observe and describe the effects of sunlight on Earth's surface (e.g., heat from the sun causing evaporation of water or increased temperature of soil, rocks, sand, and water).

8. Design and construct a device (e.g., hat, canopy, umbrella, tent) to reduce the effects of sunlight.*

9. Observe, record, and share findings of local weather patterns over a period of time (e.g., increase in daily temperature from morning to afternoon, typical rain and storm patterns from season to season).

Earth and Human Activity

10. Ask questions to obtain information about the purpose of weather forecasts in planning for, preparing for, and responding to severe weather.*

GRADE 1

First-grade students continue to be eager learners who are curious about their world. This inquisitive nature leads them to ask a variety of questions that deepen understanding. Students are developing social skills that enable them to interact in inquiry-based and cooperative-learning opportunities. Students begin to take ownership of their learning experiences by making connections through meaningful investigations.

Students in Grade 1 learn disciplinary core ideas from the three scientific domains of Physical, Life, and Earth and Space Sciences while demonstrating their learning in the context of the content standards for this grade level. In Physical Science, students conduct experiments to discover the properties of light and sound waves. In Life Science, students determine similarities between parents and their offspring and how organisms adapt to their environment. In Earth and Space Science, students continue to explore Earth's systems through observations of seasonal patterns as well as patterns in the day and night sky. The disciplinary core ideas of the Engineering, Technology, and Applications of Science (ETS) domain are integrated within the content standards of the three science domains and are denoted with an asterisk (*).

Grade 1 content standards provide students with opportunities for appropriate investigation and observation of the world around them. Through guided participation in specific engineering design projects, they find answers regarding how to use light or sound to communicate and how humans can imitate plant or animal parts for survival or protection.

Students will:

Waves and Their Applications in Technologies for Information Transfer

1. Conduct experiments to provide evidence that vibrations of matter can create sound (e.g., striking a tuning fork, plucking a guitar string) and sound can make matter vibrate (e.g., holding a piece of paper near a sound system speaker, touching your throat while speaking).

2. Construct explanations from observations that objects can be seen only when light is available to illuminate them (e.g., moon being illuminated by the sun, colors and patterns in a kaleidoscope being illuminated when held toward a light).

3. Investigate materials to determine which types allow light to pass through (e.g., transparent materials such as clear plastic wrap), allow only partial light to pass through (e.g., translucent materials such as wax paper), block light (e.g., opaque materials such as construction paper), or reflect light (e.g., shiny materials such as aluminum foil).

4. Design and construct a device that uses light or sound to send a communication signal over a distance (e.g., using a flashlight and a piece of cardboard to simulate a signal lamp for sending a coded message to a classmate, using a paper cup and string to simulate a telephone for talking to a classmate).*

From Molecules to Organisms: Structures and Processes

5. Design a solution to a human problem by using materials to imitate how plants and/or animals use their external parts to help them survive, grow, and meet their needs (e.g., outerwear imitating animal furs for insulation, gear mimicking tree bark or shells for protection).*

6. Obtain information to provide evidence that parents and their offspring engage in patterns of behavior that help the offspring survive (e.g., crying of offspring indicating need for feeding, quacking or barking by parents indicating protection of young).

Heredity: Inheritance and Variation of Traits

7. Make observations to identify the similarities and differences of offspring to their parents and to other members of the same species (e.g., flowers from the same kind of plant being the same shape, but differing in size; dog being same breed as parent, but differing in fur color or pattern).

Earth's Place in the Universe

8. Observe, describe, and predict patterns of the sun, moon, and stars as they appear in the sky (e.g., sun and moon appearing to rise in one part of the sky, move across the sky, and set; stars other than our sun being visible at night, but not during the day).

9. Observe seasonal patterns of sunrise and sunset to describe the relationship between the number of hours of daylight and the time of year (e.g., more hours of daylight during summer as compared to winter).

GRADE 2

Second-grade students begin the school year with prior knowledge and skills that enable them to formulate answers to questions as they expand their comprehension of the world around them. Through continued exploration, they develop an understanding of the observable properties of materials and apply this understanding to the acquisition of new information and the construction of new models.

Students in Grade 2 learn disciplinary core ideas from the three scientific domains of Physical, Life, and Earth and Space Sciences while demonstrating their learning in the context of the content standards for this grade level. In Physical Science, students explore the physical properties and structure of matter. In Life Science, students explore plant needs and interactions within their habitats. In Earth and Space Science, students observe and identify Earth's events and physical features. The disciplinary core ideas of the Engineering, Technology, and Applications of Science (ETS) domain are integrated within the content standards of the three scientific domains and are denoted with an asterisk (*).

Grade 2 content standards provide students with opportunities for appropriate exploration and observation of the world around them. Through guided participation in specific engineering design projects, they find answers regarding how properties of materials determine appropriate uses, how plants depend on animals for seed dispersal and pollination, and how to address changes caused by Earth events.

Students will:

Matter and Its Interactions

1. Conduct an investigation to describe and classify various substances according to physical properties (e.g., milk being a liquid, not clear in color, assuming shape of its container, mixing with water; mineral oil being a liquid, clear in color, taking shape of its container, floating in water; a brick being a solid, not clear in color, rough in texture, not taking the shape of its container, sinking in water).

2. Collect and evaluate data to determine appropriate uses of materials based on their properties (e.g., strength, flexibility, hardness, texture, absorbency).*

3. Demonstrate and explain how structures made from small pieces (e.g., linking cubes, blocks, building bricks, creative construction toys) can be disassembled and then rearranged to make new and different structures.

4. Provide evidence that some changes in matter caused by heating or cooling can be reversed (e.g., heating or freezing of water) and some changes are irreversible (e.g., baking a cake, boiling an egg).

Ecosystems: Interactions, Energy, and Dynamics

5. Plan and carry out an investigation, using one variable at a time (e.g., water, light, soil, air), to determine the growth needs of plants.

6. Design and construct models to simulate how animals disperse seeds or pollinate plants (e.g., animals brushing fur against seed pods and seeds falling off in other areas, birds and bees extracting nectar from flowers and transferring pollen from one plant to another).*

7. Obtain information from literature and other media to illustrate that there are many different kinds of living things and that they exist in different places on land and in water (e.g., woodland, tundra, desert, rainforest, ocean, river).

Earth's Systems

8. Make observations from media to obtain information about Earth's events that happen over a short period of time (e.g., tornados, volcanic explosions, earthquakes) or over a time period longer than one can observe (e.g., erosion of rocks, melting of glaciers).

9. Create models to identify physical features of Earth (e.g., mountains, valleys, plains, deserts, lakes, rivers, oceans).

10. Collect and evaluate data to identify water found on Earth and determine whether it is a solid or a liquid (e.g., glaciers as solid forms of water; oceans, lakes, rivers, streams as liquid forms of water).

Earth and Human Activity

11. Examine and test solutions that address changes caused by Earth's events (e.g., dams for minimizing flooding, plants for controlling erosion).*

GRADES 3-5
Overview

In Grades 3-5, students are introduced to disciplinary core ideas and crosscutting concepts in the domains of Physical Science; Life Science; Earth and Space Science; and Engineering, Technology, and Applications of Science through content and participation in scientific and engineering practices. Direct experiences with physical models and materials remain important as students develop their ability to reason and communicate in multimodal scientific contexts. Students in Grades 3-5 ask increasingly sophisticated questions that stem from their observations, experiences, and prior learning. While students engage in the practices of science and engineering, they revise and extend their understanding of the role of science in the natural and technological environments in which they live. Physical evidence derived from numeric measurements and recorded data becomes an important part of students' emerging scientific explanations.

Learning environments in Grades 3-5 encourage a full range of inquiry, including opportunities to carry out scientific investigations and engineering design projects related to the disciplinary core ideas. Students engage in written and oral communication about the texts they read, the phenomena they observe, and the conclusions they draw from their scientific investigations and engineering projects. The role of mathematics becomes increasingly important as students produce and present numerical data in various forms such as tables and graphs. Being engaged in learning environments where content knowledge and scientific and engineering practices are intertwined, helps students develop more scientifically accurate and coherent conceptions of the laws and principles that govern the physical world.

Effective science instruction in Grades 3-5 provides students with opportunities for a variety of scientific activities and scientific thinking. Classroom experiences include investigations that range from those structured by the teacher to those that emerge from students' own questions. Students have opportunities to decide which data to gather, the variables that should be controlled, and which tools and instruments are needed to carry out investigations. Through participation in scientific and engineering practices, students develop their abilities to work in groups to design solutions to problems stemming from real-world scientific scenarios. Domain-specific core ideas, crosscutting concepts, and performance expectations within the content standards create a framework for instructional planning and student learning.

GRADE 3

Grade 3 students are increasingly aware of their environment and have already discovered many patterns and processes in nature. Their capacity to process information is growing, making them eager to participate in scientific and engineering practices. Writing and mathematics skills are used when students communicate scientific information during varied instructional activities.

Students in Grade 3 learn disciplinary core ideas from the three scientific domains of Physical, Life, and Earth and Space Sciences while demonstrating their learning in the context of the content standards for this grade level. In Physical Science, students investigate, measure, and predict the motion of an object and test the cause-and-effect relationship of electric and magnetic interactions. In Life Science, students use evidence to interpret fossil data and construct explanations of an organism's ability to survive in different habitats. Students examine organisms' life cycles and traits and the influence of environment on these traits. In Earth and Space Science, students develop representations to describe weather and climate. The disciplinary core ideas of the Engineering, Technology, and Applications of Science (ETS) domain are integrated within the content standards of the three scientific domains and are denoted with an asterisk (*).

Grade 3 content standards provide students with opportunities for investigation, observation, and interpretation of a variety of scientific phenomena. Through participation in specific engineering design challenges, they find solutions regarding how to use magnets to solve a simple design problem, how to solve problems created by environmental changes, and how to reduce the impact of weather-related hazards.

Students will:

Motion and Stability: Forces and Interactions

1. Plan and carry out an experiment to determine the effects of balanced and unbalanced forces on the motion of an object using one variable at a time, including number, size, direction, speed, position, friction, or air resistance (e.g., balanced forces pushing from both sides on an object, such as a box, producing no motion; unbalanced force on one side of an object, such as a ball, producing motion), and communicate these findings graphically.

2. Investigate, measure, and communicate in a graphical format how an observed pattern of motion (e.g., a child swinging in a swing, a ball rolling back and forth in a bowl, two children teetering on a see-saw, a model vehicle rolling down a ramp of varying heights, a pendulum swinging) can be used to predict the future motion of an object.

3. Explore objects that can be manipulated in order to determine cause-and-effect relationships (e.g., distance between objects affecting strength of a force, orientation of magnets affecting direction of a magnetic force) of electric interactions between two objects not in contact with one another (e.g., force on hair from an electrically charged balloon, electrical forces between a charged rod and pieces of paper) or magnetic interactions between two objects not in contact with one another (e.g., force between two permanent magnets or between an electromagnet and steel paperclips, force exerted by one magnet versus the force exerted by two magnets).

4. Apply scientific ideas about magnets to solve a problem through an engineering design project (e.g., constructing a latch to keep a door shut, creating a device to keep two moving objects from touching each other such as a maglev system).*

From Molecules to Organisms: Structures and Processes

5. Obtain and combine information to describe that organisms are classified as living things, rather than nonliving things, based on their ability to obtain and use resources, grow, reproduce, and maintain stable internal conditions while living in a constantly changing external environment.

6. Create representations to explain the unique and diverse life cycles of organisms other than humans (e.g., flowering plants, frogs, butterflies), including commonalities such as birth, growth, reproduction, and death.

Heredity: Inheritance and Variation of Traits

7. Examine data to provide evidence that plants and animals, excluding humans, have traits inherited from parents and that variations of these traits exist in groups of similar organisms (e.g., flower colors in pea plants, fur color and pattern in animal offspring).

8. Engage in argument from evidence to justify that traits can be influenced by the environment (e.g., stunted growth in normally tall plants due to insufficient water, change in an arctic fox's fur color due to light and/or temperature, stunted growth of a normally large animal due to malnourishment).

Unity and Diversity

9. Analyze and interpret data from fossils (e.g., type, size, distribution) to provide evidence of organisms and the environments in which they lived long ago (e.g., marine fossils on dry land, tropical plant fossils in arctic areas, fossils of extinct organisms in any environment).

10. Investigate how variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing (e.g., plants having larger thorns being less likely to be eaten by predators, animals having better camouflage coloration being more likely to survive and bear offspring).

11. Construct an argument from evidence to explain the likelihood of an organism's ability to survive when compared to the resources in a certain habitat (e.g., freshwater organisms survive well, less well, or not at all in saltwater; desert organisms survive well, less well, or not at all in woodlands).
    a. Construct explanations that forming groups helps some organisms survive.
    b. Create models that illustrate how organisms and their habitats make up a system in which the parts depend on each other.
    c. Categorize resources in various habitats as basic materials (e.g., sunlight, air, freshwater, soil), produced materials (e.g., food, fuel, shelter), or as nonmaterial (e.g., safety, instinct, nature-learned behaviors).

12. Evaluate engineered solutions to a problem created by environmental changes and any resulting impacts on the types and density of plant and animal populations living in the environment (e.g., replanting of sea oats in coastal areas due to destruction by hurricanes, creating property development restrictions in vacation areas to reduce displacement and loss of native animal populations).*

Earth's Systems

13. Display data graphically and in tables to describe typical weather conditions expected during a particular season (e.g., average temperature, precipitation, wind direction).

14. Collect information from a variety of sources to describe climates in different regions of the world.

Earth and Human Activity

15. Evaluate a design solution (e.g., flood barriers, wind resistant roofs, lightning rods) that reduces the impact of a weather-related hazard.*

GRADE 4

Grade 4 students' view of the natural world includes many scientifically accurate components. They recognize the role of evidence in scientific thinking and are beginning to include evidence in their scientific explanations. Fourth graders enjoy an active learning environment with opportunities to manipulate physical materials and construct models.

Fourth-grade students learn disciplinary core ideas from the three scientific domains of Physical, Life, and Earth and Space Sciences while demonstrating their learning in the context of the content standards for this grade level. In Physical Science, students construct explanations based on evidence connecting the speed of an object to the energy of that object, including the transference of energy in its various forms. They obtain information about sources, uses, and environmental effects of renewable and nonrenewable energy resources. Additionally, fourth-grade students analyze wave patterns with observable wavelengths and amplitudes. In Life Science, students compare the internal and external structures of plants and animals, obtain and communicate information about human body systems, and investigate ways animals process information. In Earth and Space Science, Grade 4 students examine evidence to construct explanations for both slow and rapid changes on Earth's land features, describe patterns of Earth's land and water based on maps, and carry out investigations relating to erosion. The disciplinary core ideas of the Engineering, Technology, and Applications of Science (ETS) domain are integrated within the content standards of the three scientific domains and are denoted with an asterisk (*).

Grade 4 content standards provide students with opportunities for investigation, observation, and explanation of a variety of scientific phenomena. Through participation in specific engineering design projects, they find answers regarding which components of a device change energy from one form to another, how wave patterns can be used to transfer information, and how to limit the effects of harmful natural Earth processes on human life.

Students will:

Energy

1. Use evidence to explain the relationship of the speed of an object to the energy of that object.

2. Plan and carry out investigations that explain transference of energy from place to place by sound, light, heat, and electric currents.
    a. Provide evidence that heat can be produced in many ways (e.g., rubbing hands together, burning leaves) and can move from one object to another by conduction.
    b. Demonstrate that different objects can absorb, reflect, and/or conduct energy.
    c. Demonstrate that electric circuits require a complete loop through which an electric current can pass.

3. Investigate to determine changes in energy resulting from increases or decreases in speed that occur when objects collide.

4. Design, construct, and test a device that changes energy from one form to another (e.g., electric circuits converting electrical energy into motion, light, or sound energy; a passive solar heater converting light energy into heat energy).*

5. Compile information to describe how the use of energy derived from natural renewable and nonrenewable resources affects the environment (e.g., constructing dams to harness energy from water, a renewable resource, while causing a loss of animal habitats; burning of fossil fuels, a nonrenewable resource, while causing an increase in air pollution; installing solar panels to harness energy from the sun, a renewable resource, while requiring specialized materials that necessitate mining).

Waves and Their Applications in Technologies for Information Transfer

6. Develop a model of waves to describe patterns in terms of amplitude and wavelength, and including that waves can cause objects to move.

7. Develop and use models to show multiple solutions in which patterns are used to transfer information (e.g., using a grid of 1s and 0s representing black and white to send information about a picture, using drums to send coded information through sound waves, using Morse code to send a message).*

8. Construct a model to explain that an object can be seen when light reflected from its surface enters the eyes.

From Molecules to Organisms: Structures and Processes

9. Examine evidence to support an argument that the internal and external structures of plants (e.g., thorns, leaves, stems, roots, colored petals, xylem, phloem) and animals (e.g., heart, stomach, lung, brain, skin) function to support survival, growth, behavior, and reproduction.

10. Obtain and communicate information explaining that humans have systems that interact with one another for digestion, respiration, circulation, excretion, movement, control, coordination, and protection from disease.

11. Investigate different ways animals receive information through the senses, process that information, and respond to it in different ways (e.g., skunks lifting tails and spraying an odor when threatened, dogs moving ears when reacting to sound, snakes coiling or striking when sensing vibrations).

Earth's Systems

12. Construct explanations by citing evidence found in patterns of rock formations and fossils in rock layers that Earth changes over time through both slow and rapid processes (e.g., rock layers containing shell fossils appearing above rock layers containing plant fossils and no shells indicating a change from land to water over time, a canyon with different rock layers in the walls and a river in the bottom indicating that over time a river cut through the rock).

13. Plan and carry out investigations to examine properties of soils and soil types (e.g., color, texture, capacity to retain water, ability to support growth of plants).

14. Explore information to support the claim that landforms are the result of a combination of constructive forces, including crustal deformation, volcanic eruptions, and sediment deposition as well as a result of destructive forces, including erosion and weathering.

15. Analyze and interpret data (e.g., angle of slope in downhill movement of water, volume of water flow, cycles of freezing and thawing of water, cycles of heating and cooling of water, speed of wind, relative rate of soil deposition, amount of vegetation) to determine effects of weathering and rate of erosion by water, ice, wind, and vegetation using one single form of weathering or erosion at a time.

16. Describe patterns of Earth's features on land and in the ocean using data from maps (e.g., topographic maps of Earth's land and ocean floor; maps of locations of mountains, continental boundaries, volcanoes, and earthquakes).

17. Formulate and evaluate solutions to limit the effects of natural Earth processes on humans (e.g., designing earthquake, tornado, or hurricane-resistant buildings; improving monitoring of volcanic activity).*

GRADE 5

Grade 5 students have developed many skills that enable them to conduct more refined measurements of data and communicate scientific information with greater detail through various forms of presentation. They are able to recognize the process needed for planning and carrying out investigations, relate numeric relationships to patterns discovered in data, and identify the role of design solutions to problems occurring in real life. Many fifth graders are emerging scientific thinkers. An encouraging and challenging learning environment can inspire fifth graders to develop a passion for science and engineering.

Fifth-grade students learn disciplinary core ideas from the three scientific domains of Physical, Life, and Earth and Space Sciences while demonstrating their learning in the context of the content standards for this grade level. In Physical Science, students classify matter based on its physical and chemical properties and carry out investigations to provide evidence of the principle of conservation of matter. In Life Science, they develop models to explain the flow of energy and matter in ecosystems, including classifying resources into living and nonliving and classifying organisms into producers, consumers, and decomposers. In Earth and Space Science, students use multiple ways to illustrate the distribution of water on Earth and the interaction of the atmosphere, biosphere, geosphere, and hydrosphere. Students obtain information about ways individuals and communities can protect Earth's resources and environment. Fifth graders find evidence of the gravitational force that pulls all objects downward, evaluate factors that cause some stars to shine more brightly than others, and construct explanations for the patterns of seasons, day and night, and the seasonal changes of stars visible in the sky. The disciplinary core ideas of the Engineering, Technology, and Applications of Science (ETS) domain are integrated within the content standards of the three scientific domains and are denoted with an asterisk (*).

Grade 5 content standards provide students with opportunities for investigation, observation, and explanation of a variety of scientific phenomena. Through participation in specific engineering design projects, students find answers regarding which methods can be used to clean a polluted environment and how to modify the speed of a falling object due to gravity.

Students will:

Matter and Its Interactions

1. Plan and carry out investigations (e.g., adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, evaporating salt water) to provide evidence that matter is made of particles too small to be seen.

2. Investigate matter to provide mathematical evidence, including graphs, to show that regardless of the type of reaction (e.g., new substance forming due to dissolving or mixing) or change (e.g., phase change) that occurs when heating, cooling, or mixing substances, the total weight of the matter is conserved.

3. Examine matter through observations and measurements to identify materials (e.g., powders, metals, minerals, liquids) based on their properties (e.g., color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, solubility, density).

4. Investigate whether the mixing of two or more substances results in new substances (e.g., mixing of baking soda and vinegar resulting in the formation of a new substance, gas; mixing of sand and water resulting in no new substance being formed).

5. Construct explanations from observations to determine how the density of an object affects whether the object sinks or floats when placed in a liquid.

Motion and Stability: Forces and Interactions

6. Construct an explanation from evidence to illustrate that the gravitational force exerted by Earth on objects is directed downward towards the center of Earth.

7. Design and conduct a test to modify the speed of a falling object due to gravity (e.g., constructing a parachute to keep an attached object from breaking).*

Ecosystems: Interactions, Energy, and Dynamics

8. Defend the position that plants obtain materials needed for growth primarily from air and water.

9. Construct an illustration to explain how plants use light energy to convert carbon dioxide and water into a storable fuel, carbohydrates, and a waste product, oxygen, during the process of photosynthesis.

10. Construct and interpret models (e.g., diagrams, flow charts) to explain that energy in animals' food is used for body repair, growth, motion, and maintenance of body warmth and was once energy from the sun.

11. Create a model to illustrate the transfer of matter among producers; consumers, including scavengers and decomposers; and the environment.

Earth's Place in the Universe

12. Defend the claim that one factor determining the apparent brightness of the sun compared to other stars is the relative distance from Earth.

13. Analyze data and represent with graphs to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky (e.g., shadows and the position and motion of Earth with respect to the sun, visibility of select stars only in particular months).

Earth's Systems

14. Use a model to represent how any two systems, specifically the atmosphere, biosphere, geosphere, and/or hydrosphere, interact and support life (e.g., influence of the ocean on ecosystems, landform shape, and climate; influence of the atmosphere on landforms and ecosystems through weather and climate; influence of mountain ranges on winds and clouds in the atmosphere).

15. Identify the distribution of freshwater and salt water on Earth (e.g., oceans, lakes, rivers, glaciers, ground water, polar ice caps) and construct a graphical representation depicting the amounts and percentages found in different reservoirs.

Earth and Human Activity

16. Collect and organize scientific ideas that individuals and communities can use to protect Earth's natural resources and its environment (e.g., terracing land to prevent soil erosion, utilizing no-till farming to improve soil fertility, regulating emissions from factories and automobiles to reduce air pollution, recycling to reduce overuse of landfill areas).

17. Design solutions, test, and revise a process for cleaning a polluted environment (e.g., simulating an oil spill in the ocean or a flood in a city and creating a solution for containment and/or cleanup).*

GRADES 6-8
Overview

Students in Grades 6-8 develop independent, critical-thinking skills during a time when their bodies experience dramatic emotional changes and their minds shift from concrete to more conceptual thinking. Their curiosity, sense of purpose, and intellectual interests expand and mature. Middle school students are sensitive to peer perception and prefer interaction with peers during learning activities. Students possess multiple learning styles and a wide range of intellectual abilities. Teachers are challenged to incorporate effective instructional strategies using scientific, engineering, and technological practices that meet students' growing needs as individual learners while providing a safe, engaging learning environment.

Earth and Space Science, Life Science, and Physical Science content and skills are best taught through the integration of scientific and engineering practices, crosscutting concepts, and disciplinary core ideas. Students evaluate scientific evidence and engage in data-driven discussions about scientific concepts through peer review and independent verification. Precision and accuracy become more applicable to investigations as students use the International System of Units (SI) and dimensional analysis in their interpretation of empirical data. Students refine their understanding through comparisons, observations, and examinations of information gathered from experiences. By implementing a more rigorous, student-centered curriculum, science teachers enable students to become actively involved in their own learning.

Success in science creates independent, analytical, lifelong learners capable of meeting the needs and challenges of the twenty-first century. Students learn how scientific knowledge is acquired and how scientific explanations are developed. Through the engineering design process and the use of engineering, technology, and applications of science, students develop their abilities to work in cooperative groups to design solutions to problems encountered in the real world.

GRADE 6
Earth and Space Science

Grade 6 students are energetic and curious. They are maturing at a rapid rate and are in a transitional stage characterized by physical, social, and cognitive changes. The sixth-grade classroom environment addresses these changes by providing a balance between elementary and middle school practices. While these changes lead students toward emotional and academic independence, sixth graders continue to need guidance. They also need an environment that both supports and challenges them as they become more responsible learners.

Content standards challenge students to discover their world, their planet, and Earth's place in the universe. Students are provided opportunities to learn important scientific facts and to build conceptual understanding of scientific principles, laws, and theories. Students must understand and communicate scientific concepts in order to be scientifically literate. Inquiry-based instruction allows them to develop critical-thinking skills and problem-solving abilities needed in the field of science.

Grade 6 content focuses on the disciplinary core ideas in the Earth and Space Science domain. The first Earth and Space Science core idea, Earth's Place in the Universe, describes the universe as a whole and addresses its grand scale in both space and time. The second core idea, Earth's Systems, encompasses the processes that drive Earth's conditions and its continual change over time. The third core idea, Earth and Human Activity, addresses society's interactions with the planet. Integrated within the Earth and Space Science content standards are the disciplinary core ideas of the Engineering, Technology, and Applications of Science (ETS) domain, which require students to employ tools and materials to solve problems and to use representations to convey various design solutions. ETS standards are denoted with an asterisk (*).

Students will:

Earth's Place in the Universe

1. Create and manipulate models (e.g., physical, graphical, conceptual) to explain the occurrences of day/night cycles, length of year, seasons, tides, eclipses, and lunar phases based on patterns of the observed motions of celestial bodies.

2. Construct models and use simulations (e.g., diagrams of the relationship between Earth and man-made satellites, rocket launch, International Space Station, elliptical orbits, black holes, life cycles of stars, orbital periods of objects within the solar system, astronomical units and light years) to explain the role of gravity in affecting the motions of celestial bodies (e.g., planets, moons, comets, asteroids, meteors) within galaxies and the solar system.

3. Develop and use models to determine scale properties of objects in the solar system (e.g., scale model representing sizes and distances of the sun, Earth, moon system based on a one-meter diameter sun).

Earth's Systems

4. Construct explanations from geologic evidence (e.g., change or extinction of particular living organisms; field evidence or representations, including models of geologic cross-sections; sedimentary layering) to identify patterns of Earth's major historical events (e.g., formation of mountain chains and ocean basins, significant volcanic eruptions, fossilization, folding, faulting, igneous intrusion, erosion).

5. Use evidence to explain how different geologic processes shape Earth's history over widely varying scales of space and time (e.g., chemical and physical erosion; tectonic plate processes; volcanic eruptions; meteor impacts; regional geographical features, including Alabama fault lines, Rickwood Caverns, and Wetumpka Impact Crater).

6. Provide evidence from data of the distribution of fossils and rocks, continental shapes, and seafloor structures to explain past plate motions.

7. Use models to construct explanations of the various biogeochemical cycles of Earth (e.g., water, carbon, nitrogen) and the flow of energy that drives these processes.

8. Plan and carry out investigations that demonstrate the chemical and physical processes that form rocks and cycle Earth's materials (e.g., processes of crystallization, heating and cooling, weathering, deformation, and sedimentation).

9. Use models to explain how the flow of Earth's internal energy drives a cycling of matter between Earth's surface and deep interior causing plate movements (e.g., mid-ocean ridges, ocean trenches, volcanoes, earthquakes, mountains, rift valleys, volcanic islands).

10. Use research-based evidence to propose a scientific explanation regarding how the distribution of Earth's resources such as minerals, fossil fuels, and groundwater are the result of ongoing geoscience processes (e.g., past volcanic and hydrothermal activity, burial of organic sediments, active weathering of rock).

11. Develop and use models of Earth's interior composition to illustrate the resulting magnetic field (e.g., magnetic poles) and to explain its measureable effects (e.g., protection from cosmic radiation).

12. Integrate qualitative scientific and technical information (e.g., weather maps; diagrams; other visualizations, including radar and computer simulations) to support the claim that motions and complex interactions of air masses result in changes in weather conditions.
    a. Use various instruments (e.g., thermometers, barometers, anemometers, wet bulbs) to monitor local weather and examine weather patterns to predict various weather events, especially the impact of severe weather (e.g., fronts, hurricanes, tornados, blizzards, ice storms, droughts).

13. Use models (e.g., diagrams, maps, globes, digital representations) to explain how the rotation of Earth and unequal heating of its surface create patterns of atmospheric and oceanic circulation that determine regional climates.
    a. Use experiments to investigate how energy from the sun is distributed between Earth's surface and its atmosphere by convection and radiation (e.g., warmer water in a pan rising as cooler water sinks, warming one's hands by a campfire).

14. Analyze and interpret data (e.g., tables, graphs, maps of global and regional temperatures; atmospheric levels of gases such as carbon dioxide and methane; rates of human activities) to describe how various human activities (e.g., use of fossil fuels, creation of urban heat islands, agricultural practices) and natural processes (e.g., solar radiation, greenhouse effect, volcanic activity) may cause changes in local and global temperatures over time.

Earth and Human Activity

15. Analyze evidence (e.g., databases on human populations, rates of consumption of food and other natural resources) to explain how changes in human population, per capita consumption of natural resources, and other human activities (e.g., land use, resource development, water and air pollution, urbanization) affect Earth's systems.

16. Implement scientific principles to design processes for monitoring and minimizing human impact on the environment (e.g., water usage, including withdrawal of water from streams and aquifers or construction of dams and levees; land usage, including urban development, agriculture, or removal of wetlands; pollution of air, water, and land).*

GRADE 7
Life Science

Seventh-grade students experience a wide range of physical and psychological changes during this stage of development where peer perception and social interactions play major roles in life and learning. As students mature and become more independent, their sense of curiosity and discovery must be fostered as they are encouraged to develop the self-discipline necessary for mastery of concepts at a higher level.

A variety of instructional strategies and techniques is essential for guiding students in Grade 7. Teachers must provide opportunities for students to communicate and interact with peers in a collaborative setting to develop explanations and design solutions to real-world problems using scientific concepts and processes. At this stage where learning progresses from concrete to abstract and from knowledge to applications in science, the method of cooperative learning provides an excellent strategy for instruction and a unique opportunity for teachers to capitalize on students' need for peer interaction.

Individual content standards are organized according to the disciplinary core ideas in the Life Science domain. The first Life Science core idea, From Molecules to Organisms: Structures and Processes, concentrates on the structure and function of cells and their connections to organs and organ systems. The second core idea, Ecosystems: Interactions, Energy, and Dynamics, investigates the interactions between living organisms and between biotic and abiotic factors. The third core idea, Heredity: Inheritance and Variation of Traits, centers on explaining genetic variations, describing the results of genetic mutations, and evaluating impacts of genetic technologies. The fourth core idea, Unity and Diversity, examines the patterns of change in populations of organisms over a long period of time and the relationship between natural selection and the reproduction and survival of a population. The Engineering, Technology, and Applications of Science (ETS) domain may be integrated within the Life Science content standards. The ETS domain requires students to use tools and materials to solve problems and to use representations to convey various design solutions.

Students will:

From Molecules to Organisms: Structures and Processes

1. Engage in argument from evidence to support claims of the cell theory.

2. Gather and synthesize information to explain how prokaryotic and eukaryotic cells differ in structure and function, including the methods of asexual and sexual reproduction.

3. Construct an explanation of the function (e.g., mitochondria releasing energy during cellular respiration) of specific cell structures (i.e., nucleus, cell membrane, cell wall, ribosomes, mitochondria, chloroplasts, and vacuoles) for maintaining a stable environment.

4. Construct models and representations of organ systems (e.g., circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific functions.

Ecosystems: Interactions, Energy, and Dynamics

5. Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.
    a. Obtain, evaluate, and communicate information about how food is broken down through chemical reactions to create new molecules that support growth and/or release energy as it moves through an organism.
    b. Generate a scientific explanation based on evidence for the role of photosynthesis and cellular respiration in the cycling of matter and flow of energy into and out of organisms.

6. Analyze and interpret data to provide evidence regarding how resource availability impacts individual organisms as well as populations of organisms within an ecosystem.

7. Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem (e.g., deforestation, succession, drought, fire, disease, human activities, invasive species) can lead to shifts in populations.

8. Construct an explanation to predict patterns of interactions in different ecosystems in terms of the relationships between and among organisms (e.g., competition, predation, mutualism, commensalism, parasitism).

9. Engage in argument to defend the effectiveness of a design solution that maintains biodiversity and ecosystem services (e.g., using scientific, economic, and social considerations regarding purifying water, recycling nutrients, preventing soil erosion).

10. Use evidence and scientific reasoning to explain how characteristic animal behaviors (e.g., building nests to protect young from cold, herding to protect young from predators, attracting mates for breeding by producing special sounds and displaying colorful plumage, transferring pollen or seeds to create conditions for seed germination and growth) and specialized plant structures (e.g., flower brightness, nectar, and odor attracting birds that transfer pollen; hard outer shells on seeds providing protection prior to germination) affect the probability of successful reproduction of both animals and plants.

11. Analyze and interpret data to predict how environmental conditions (e.g., weather, availability of nutrients, location) and genetic factors (e.g., selective breeding of cattle or crops) influence the growth of organisms (e.g., drought decreasing plant growth, adequate supply of nutrients for maintaining normal plant growth, identical plant seeds growing at different rates in different weather conditions, fish growing larger in large ponds than in small ponds).

Heredity: Inheritance and Variation of Traits

12. Construct and use models (e.g., monohybrid crosses using Punnett squares, diagrams, simulations) to explain that genetic variations between parent and offspring (e.g., different alleles, mutations) occur as a result of genetic differences in randomly inherited genes located on chromosomes and that additional variations may arise from alteration of genetic information.

13. Construct an explanation from evidence to describe how genetic mutations result in harmful, beneficial, or neutral effects to the structure and function of an organism.

14. Gather and synthesize information regarding the impact of technologies (e.g., hand pollination, selective breeding, genetic engineering, genetic modification, gene therapy) on the inheritance and/or appearance of desired traits in organisms.

Unity and Diversity

15. Analyze and interpret data for patterns of change in anatomical structures of organisms using the fossil record and the chronological order of fossil appearance in rock layers.

16. Construct an explanation based on evidence (e.g., cladogram, phylogenetic tree) for the anatomical similarities and differences among modern organisms and between modern and fossil organisms, including living fossils (e.g., alligator, horseshoe crab, nautilus, coelacanth).

17. Obtain and evaluate pictorial data to compare patterns in the embryological development across multiple species to identify relationships not evident in the adult anatomy.

18. Construct an explanation from evidence that natural selection acting over generations may lead to the predominance of certain traits that support successful survival and reproduction of a population and to the suppression of other traits.

GRADE 8
Physical Science

Students in eighth grade exhibit a wide range of learning styles and intellectual abilities. This diversity in development requires the implementation of a science curriculum that engages students in scientific inquiry. The classroom environment must provide opportunities for students to identify problems, ask questions, make observations, design solutions, and explore important scientific concepts through investigations. As students' curiosity and creativity flourish, teachers must design activities that encourage students to construct explanations based upon their own experiences and to use their creative abilities to devise solutions to real-world problems. Students engage in higher-level, abstract-thinking processes as they make connections between and among disciplines and become well-grounded in experiences. Students work in a variety of groups that foster collaboration among peers.

Grade 8 content standards are based upon the disciplinary core ideas in the Physical Science domain. The first core idea, Matter and Its Interactions, concentrates on the composition and properties of matter. The second core idea, Motion and Stability: Forces and Interactions, focuses on examining forces and predicting and developing explanations for changes in motion. The third core idea, Energy, involves the conservation of energy, energy transformations, and applications of energy to everyday life. The final core idea, Waves and Their Applications in Technologies for Information Transfer, examines types and properties of waves and the use of waves in communication devices. Integrated into the Physical Science content standards are the disciplinary core ideas of the Engineering, Technology, and Applications of Science (ETS) domain, which require students to employ tools and materials to solve problems and to use representations to convey various design solutions. ETS standards are denoted with an asterisk (*).

Students will:

Matter and Its Interactions

1. Analyze patterns within the periodic table to construct models (e.g., molecular-level models, including drawings; computer representations) that illustrate the structure, composition, and characteristics of atoms and molecules.

2. Plan and carry out investigations to generate evidence supporting the claim that one pure substance can be distinguished from another based on characteristic properties.

3. Construct explanations based on evidence from investigations to differentiate among compounds, mixtures, and solutions.
    a. Collect and analyze information to illustrate how synthetic materials (e.g., medicine, food additives, alternative fuels, plastics) are derived from natural resources and how they impact society.

4. Design and conduct an experiment to determine changes in particle motion, temperature, and state of a pure substance when thermal energy is added to or removed from a system.

5. Observe and analyze characteristic properties of substances (e.g., odor, density, solubility, flammability, melting point, boiling point) before and after the substances combine to determine if a chemical reaction has occurred.

6. Create a model, diagram, or digital simulation to describe conservation of mass in a chemical reaction and explain the resulting differences between products and reactants.

7. Design, construct, and test a device (e.g., glow stick, hand warmer, hot or cold pack, thermal wrap) that either releases or absorbs thermal energy by chemical reactions (e.g., dissolving ammonium chloride or calcium chloride in water) and modify the device as needed based on criteria (e.g., amount/concentration, time, temperature).*

Motion and Stability: Forces and Interactions

8. Use Newton's first law to demonstrate and explain that an object is either at rest or moves at a constant velocity unless acted upon by an external force (e.g., model car on a table remaining at rest until pushed).

9. Use Newton's second law to demonstrate and explain how changes in an object's motion depend on the sum of the external forces on the object and the mass of the object (e.g., billiard balls moving when hit with a cue stick).

10. Use Newton's third law to design a model to demonstrate and explain the resulting motion of two colliding objects (e.g., two cars bumping into each other, a hammer hitting a nail).*

11. Plan and carry out investigations to evaluate how various factors (e.g., electric force produced between two charged objects at various positions; magnetic force produced by an electromagnet with varying number of wire turns, varying number or size of dry cells, and varying size of iron core) affect the strength of electric and magnetic forces.

12. Construct an argument from evidence explaining that fields exist between objects exerting forces on each other (e.g., interactions of magnets, electrically charged strips of tape, electrically charged pith balls, gravitational pull of the moon creating tides) even when the objects are not in contact.

Energy

13. Create and analyze graphical displays of data to illustrate the relationships of kinetic energy to the mass and speed of an object (e.g., riding a bicycle at different speeds, hitting a table tennis ball versus a golf ball, rolling similar toy cars with different masses down an incline).

14. Use models to construct an explanation of how a system of objects may contain varying types and amounts of potential energy (e.g., observing the movement of a roller coaster cart at various inclines, changing the tension in a rubber band, varying the number of batteries connected in a series, observing a balloon with static electrical charge being brought closer to a classmate's hair).

15. Analyze and interpret data from experiments to determine how various factors affect energy transfer as measured by temperature (e.g., comparing final water temperatures after different masses of ice melt in the same volume of water with the same initial temperature, observing the temperature change of samples of different materials with the same mass and the same material with different masses when adding a specific amount of energy).

16. Apply the law of conservation of energy to develop arguments supporting the claim that when the kinetic energy of an object changes, energy is transferred to or from the object (e.g., bowling ball hitting pins, brakes being applied to a car).

Waves and Their Applications in Technologies for Information Transfer

17. Create and manipulate a model of a simple wave to predict and describe the relationships between wave properties (e.g., frequency, amplitude, wavelength) and energy.
    a. Analyze and interpret data to illustrate an electromagnetic spectrum.

18. Use models to demonstrate how light and sound waves differ in how they are absorbed, reflected, and transmitted through different types of media.

19. Integrate qualitative information to explain that common communication devices (e.g., cellular telephones, radios, remote controls, Wi-Fi components, global positioning systems [GPS], wireless technology components) use electromagnetic waves to encode and transmit information.

GRADES 9-12
Overview

The high school science curriculum provides essential preparation for college and career readiness for all students in Grades 9-12. The courses are designed to enable students to attain scientific literacy of the disciplinary core ideas by engaging in science and engineering practices through increased rigor and sophistication to deepen their understanding of science content. By the end of high school, students should have an adequate scientific background to be active, informed citizens and to succeed in both the workplace and in postsecondary courses. Student expectations include the ability to formulate and pose scientific inquiries that establish what is known and what still needs to be understood, to conduct investigations based on well-developed hypotheses, to construct models to explain abstract concepts, to use appropriate tools to obtain numerical measurements that explain mathematical relationships, and to formulate their own explanations of scientific phenomena and be able to use these in problem solving. Finally, students should be able to obtain, assess, and communicate knowledge from scientific literature and construct and engage in evidence-based arguments.

The instructional environment of the science classroom should be student-centered, allowing individuals to participate in inquiry-based learning. All science courses in Grades 9-12 should include a laboratory-based component that encourages students to apply investigation and reasoning skills to develop explanations and propose solutions. Conceptual learning should be supported by computational and graphical representations, and students should be able to apply data analysis techniques, including calculating quantities involving significant figures, writing numbers in standard form and scientific notation, using the International System of Units (SI) as a form of measurement, and performing dimensional analysis. Teachers should incorporate literacy strategies (Appendix B) within the curriculum, including research using credible scientific sources and laboratory reports.

The 2015 *Alabama Course of Study: Science* contains the minimum required content for the Grades 9-12 courses of Physical Science, Biology, Chemistry, Physics, Human Anatomy and Physiology, Earth and Space Science, and Environmental Science. Content standards are integrated with scientific and engineering practices as well as crosscutting concepts that connect the knowledge discovered through observation of the natural world with concentrated themes that permeate throughout all science and engineering domains. This course of study specifies the required minimum subject content in a manner intended to balance a need for rigor in course offerings and consistency statewide with the need for flexibility in designing local course offerings. School systems are encouraged to expand the standards to address specific needs of the local student population and to utilize available resources while retaining the identified core as the foundation for all science courses. Current graduation requirements for students pursuing the Alabama High School Diploma, including the required science credits, are shown in Appendix B.

PHYSICAL SCIENCE

Physical Science is a conceptual, inquiry-based course that provides students with an investigation of the basic concepts of chemistry and physics. Students use evidence from their own investigations as well as the investigations of others to develop and refine knowledge of core ideas. Increased sophistication, both of their model-based explanations and the argumentation by which evidence and explanation are linked, is developed through language and mathematical skills appropriate to the individual student's cognitive ability level. The standards provide a depth of conceptual understanding that will adequately prepare them for college, career, and citizenship with an appropriate level of scientific literacy. Resources specific to the local area as well as external resources, including evidence-based literature found within scientific journals, should be used to extend and increase the complexity of the core ideas.

Content standards are organized according to the disciplinary core ideas for the Physical Science domain. The core idea, Matter and Its Interactions, deals with the substances and processes that encompass our universe on both microscopic and macroscopic levels. The second core idea, Motion and Stability: Forces and Interactions, includes the components of forces and motion, types of interactions, and stability/instability in physical systems. The third core idea, Energy, involves the conservation of energy, energy transformations, and applications of energy to everyday life. The fourth core idea, Waves and Their Applications in Technologies for Information Transfer, examines wave properties, electromagnetic radiation, and information technologies and instrumentation. Integrated within the disciplinary core ideas of Physical Science are the Engineering, Technology, and Applications of Science (ETS) core ideas, which are denoted with an asterisk (*). The ETS core ideas require students to use tools and materials to solve simple problems and to use representations to convey design solutions to a problem and determine which is most appropriate.

Students will:

Matter and Its Interactions

1. Use the periodic table as a model to predict the relative properties and trends (e.g., reactivity of metals; types of bonds formed, including ionic, covalent, and polar covalent; numbers of bonds formed; reactions with oxygen) of main group elements based on the patterns of valence electrons in atoms.

2. Plan and carry out investigations (e.g., squeezing a balloon, placing a balloon on ice) to identify the relationships that exist among the pressure, volume, density, and temperature of a confined gas.

3. Analyze and interpret data from a simple chemical reaction or combustion reaction involving main group elements.

4. Analyze and interpret data using acid-base indicators (e.g., color-changing markers, pH paper) to distinguish between acids and bases, including comparisons between strong and weak acids and bases.

5. Use mathematical representations to support and verify the claim that atoms, and therefore mass, are conserved during a simple chemical reaction.

6. Develop models to illustrate the concept of half-life for radioactive decay.
   a. Research and communicate information about types of naturally occurring radiation and their properties.
   b. Develop arguments for and against nuclear power generation compared to other types of power generation.

Motion and Stability: Forces and Interactions

7. Analyze and interpret data for one- and two-dimensional motion applying basic concepts of distance, displacement, speed, velocity, and acceleration (e.g., velocity versus time graphs, displacement versus time graphs, acceleration versus time graphs).

8. Apply Newton's laws to predict the motion of a system by constructing force diagrams that identify the external forces acting on the system, including friction (e.g., a book on a table, an object being pushed across a floor, an accelerating car).

9. Use mathematical equations (e.g., $(m_1v_1 + m_2v_2)_{\text{before}} = (m_1v_1 + m_2v_2)_{\text{after}}$) and diagrams to explain that the total momentum of a system of objects is conserved when there is no net external force on the system.
   a. Use the laws of conservation of mechanical energy and momentum to predict the result of one-dimensional elastic collisions.

10. Construct simple series and parallel circuits containing resistors and batteries and apply Ohm's law to solve typical problems demonstrating the effect of changing values of resistors and voltages.

Energy

11. Design and conduct investigations to verify the law of conservation of energy, including transformations of potential energy, kinetic energy, thermal energy, and the effect of any work performed on or by the system.

12. Design, build, and test the ability of a device (e.g., Rube Goldberg devices, wind turbines, solar cells, solar ovens) to convert one form of energy into another form of energy.*

Waves and Their Applications in Technologies for Information Transfer

13. Use mathematical representations to demonstrate the relationships among wavelength, frequency, and speed of waves (e.g., the relation $v = \lambda f$) traveling in various media (e.g., electromagnetic radiation traveling in a vacuum and glass, sound waves traveling through air and water, seismic waves traveling through Earth).

14. Propose and defend a hypothesis based on information gathered from published materials (e.g., trade books, magazines, Internet resources, videos) for and against various claims for the safety of electromagnetic radiation.

15. Obtain and communicate information from published materials to explain how transmitting and receiving devices (e.g., cellular telephones, medical-imaging technology, solar cells, wireless Internet, scanners, **So**und **N**avigation **a**nd **R**anging [SONAR]) use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.

BIOLOGY

Biology is a required, inquiry-based course focused on providing all high school students with foundational life science content about the patterns, processes, and interactions among living organisms. The emphasis is on increased sophistication and rigor of a limited number of core ideas rather than on memorizing a breadth of factual content. Students use prior and new knowledge to build conceptual understandings based on evidence from their own and others' investigations. They use their own learning and experiences to support claims and engage in argument from evidence. The standards provide a depth of conceptual understanding to adequately prepare them for college, career, and citizenship with an appropriate level of scientific literacy. Resources specific to the local area as well as external resources, including evidenced-based literature found within scientific journals, should be used to extend and increase the complexity of the core ideas.

Content standards within this course are organized according to the disciplinary core ideas for the Life Science domain. The first core idea, From Molecules to Organisms: Structures and Processes, concentrates on the structure of cells and how their functions are necessary for supporting life, growth, behavior, and reproduction. The second core idea, Ecosystems: Interactions, Energy, and Dynamics, investigates the positive and negative interactions between living organisms and other biotic and abiotic factors. The third core idea, Heredity: Inheritance and Variation of Traits, centers on the formation of proteins that affect the trait expression, also known as the central dogma of molecular biology; the passing of distinguishing genetic information throughout generations; and how environmental factors and genetic errors can cause gene mutations. The fourth core idea, Unity and Diversity, examines the variation of traits within a population over a long period of time that results in diversity among organisms. Integrated within the disciplinary core ideas of Biology are the Engineering, Technology, and Applications of Science (ETS) core ideas, which are denoted with an asterisk (*). The ETS core ideas require students to use tools and materials to solve simple problems and to use representations to convey design solutions to a problem and determine which is most appropriate.

Students will:

From Molecules to Organisms: Structures and Processes

1. Use models to compare and contrast how the structural characteristics of carbohydrates, nucleic acids, proteins, and lipids define their function in organisms.

2. Obtain, evaluate, and communicate information to describe the function and diversity of organelles and structures in various types of cells (e.g., muscle cells having a large amount of mitochondria, plasmids in bacteria, chloroplasts in plant cells).

3. Formulate an evidence-based explanation regarding how the composition of deoxyribonucleic acid (DNA) determines the structural organization of proteins.
    a. Obtain and evaluate experiments of major scientists and communicate their contributions to the development of the structure of DNA and to the development of the central dogma of molecular biology.
    b. Obtain, evaluate, and communicate information that explains how advancements in genetic technology (e.g., Human Genome Project, **Enc**yclopedia **o**f **D**NA **E**lements [ENCODE] project, 1000 Genomes Project) have contributed to the understanding as to how a genetic change at the DNA level may affect proteins and, in turn, influence the appearance of traits.
    c. Obtain information to identify errors that occur during DNA replication (e.g., deletion, insertion, translocation, substitution, inversion, frame-shift, point mutations).

4. Develop and use models to explain the role of the cell cycle during growth and maintenance in multicellular organisms (e.g., normal growth and/or uncontrolled growth resulting in tumors).

5. Plan and carry out investigations to explain feedback mechanisms (e.g., sweating and shivering) and cellular processes (e.g., active and passive transport) that maintain homeostasis.
    a. Plan and carry out investigations to explain how the unique properties of water (e.g., polarity, cohesion, adhesion) are vital to maintaining homeostasis in organisms.

6. Analyze and interpret data from investigations to explain the role of products and reactants of photosynthesis and cellular respiration in the cycling of matter and the flow of energy.
    a. Plan and carry out investigations to explain the interactions among pigments, absorption of light, and reflection of light.

Ecosystems: Interactions, Energy, and Dynamics

7. Develop and use models to illustrate examples of ecological hierarchy levels, including biosphere, biome, ecosystem, community, population, and organism.

8. Develop and use models to describe the cycling of matter (e.g., carbon, nitrogen, water) and flow of energy (e.g., food chains, food webs, biomass pyramids, ten percent law) between abiotic and biotic factors in ecosystems.

9. Use mathematical comparisons and visual representations to support or refute explanations of factors that affect population growth (e.g., exponential, linear, logistic).

10. Construct an explanation and design a real-world solution to address changing conditions and ecological succession caused by density-dependent and/or density-independent factors.*

Heredity: Inheritance and Variation of Traits

11. Analyze and interpret data collected from probability calculations to explain the variation of expressed traits within a population.
    a. Use mathematics and computation to predict phenotypic and genotypic ratios and percentages by constructing Punnett squares, including using both homozygous and heterozygous allele pairs.
    b. Develop and use models to demonstrate codominance, incomplete dominance, and Mendel's laws of segregation and independent assortment.
    c. Analyze and interpret data (e.g., pedigree charts, family and population studies) regarding Mendelian and complex genetic disorders (e.g., sickle-cell anemia, cystic fibrosis, type 2 diabetes) to determine patterns of genetic inheritance and disease risks from both genetic and environmental factors.

12. Develop and use a model to analyze the structure of chromosomes and how new genetic combinations occur through the process of meiosis.
    a. Analyze data to draw conclusions about genetic disorders caused by errors in meiosis (e.g., Down syndrome, Turner syndrome).

Unity and Diversity

13. Obtain, evaluate, and communicate information to explain how organisms are classified by physical characteristics, organized into levels of taxonomy, and identified by binomial nomenclature (e.g., taxonomic classification, dichotomous keys).
    a. Engage in argument to justify the grouping of viruses in a category separate from living things.

14. Analyze and interpret data to evaluate adaptations resulting from natural and artificial selection that may cause changes in populations over time (e.g., antibiotic-resistant bacteria, beak types, peppered moths, pest-resistant crops).

15. Engage in argument from evidence (e.g., mathematical models such as distribution graphs) to explain how the diversity of organisms is affected by overpopulation of species, variation due to genetic mutations, and competition for limited resources.

16. Analyze scientific evidence (e.g., DNA, fossil records, cladograms, biogeography) to support hypotheses of common ancestry and biological evolution.

CHEMISTRY

Chemistry is an elective course that provides students with an investigation of empirical concepts central to biology, earth science, environmental science, and physiology. Chemistry encompasses both qualitative and quantitative ideas derived using the scientific process. By its very nature, the study of chemistry encourages an inquiry-based approach to understanding the substances and processes that explain our world as well as ourselves. Using the practices of science, core ideas are explored in greater detail and refined with increased sophistication and rigor based upon knowledge acquired in earlier grades. Students use the academic language of science in context to communicate claims, evidence, and reasoning for chemical phenomena. The course provides high school students with more in-depth investigations on the properties and interactions of matter. Students acquire prerequisite skills for postsecondary studies and careers in science, technology, engineering, and mathematics (STEM) fields. Additional external resources, including evidence-based research found in scientific journals, should be utilized to provide students with a broad scientific experience that will adequately prepare them for college, career, and citizenship.

Content standards within this course are organized according to three of the core ideas for Physical Science. The first core idea, Matter and Its Interactions, deals with the substances and processes that encompass our universe on both microscopic and macroscopic levels. The second core idea, Motion and Stability: Forces and Interactions, concentrates on forces and motion, types of interactions, and stability and instability in chemical systems. The third core idea, Energy, involves the conservation of energy, energy transformations, and applications of energy to everyday life. Integrated within the disciplinary core ideas of Chemistry are the Engineering, Technology, and Applications of Science (ETS) core ideas, which are denoted with an asterisk (*). The ETS core ideas require students to use tools to solve simple problems and to use representations to convey design solutions to a problem and determine which is most appropriate.

Students will:

Matter and Its Interactions

1. Obtain and communicate information from historical experiments (e.g., work by Mendeleev and Moseley, Rutherford's gold foil experiment, Thomson's cathode ray experiment, Millikan's oil drop experiment, Bohr's interpretation of bright line spectra) to determine the structure and function of an atom and to analyze the patterns represented in the periodic table.

2. Develop and use models of atomic nuclei to explain why the abundance-weighted average of isotopes of an element yields the published atomic mass.

3. Use the periodic table as a systematic representation to predict properties of elements based on their valence electron arrangement.
    a. Analyze data such as physical properties to explain periodic trends of the elements, including metal/nonmetal/metalloid behavior, electrical/heat conductivity, electronegativity and electron affinity, ionization energy, and atomic-covalent/ionic radii, and how they relate to position in the periodic table.
    b. Develop and use models (e.g., Lewis dot, 3-D ball-and-stick, space-filling, valence-shell electron-pair repulsion [VSEPR]) to predict the type of bonding and shape of simple compounds.
    c. Use the periodic table as a model to derive formulas and names of ionic and covalent compounds.

4. Plan and conduct an investigation to classify properties of matter as intensive (e.g., density, viscosity, specific heat, melting point, boiling point) or extensive (e.g., mass, volume, heat) and demonstrate how intensive properties can be used to identify a compound.

5. Plan and conduct investigations to demonstrate different types of simple chemical reactions based on valence electron arrangements of the reactants and determine the quantity of products and reactants.
    a. Use mathematics and computational thinking to represent the ratio of reactants and products in terms of masses, molecules, and moles.
    b. Use mathematics and computational thinking to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

6. Use mathematics and computational thinking to express the concentrations of solutions quantitatively using molarity.
    a. Develop and use models to explain how solutes are dissolved in solvents.
    b. Analyze and interpret data to explain effects of temperature on the solubility of solid, liquid, and gaseous solutes in a solvent and the effects of pressure on the solubility of gaseous solutes.
    c. Design and conduct experiments to test the conductivity of common ionic and covalent substances in a solution.
    d. Use the concept of pH as a model to predict the relative properties of strong, weak, concentrated, and dilute acids and bases (e.g., Arrhenius and Brønsted-Lowry acids and bases).

7. Plan and carry out investigations to explain the behavior of ideal gases in terms of pressure, volume, temperature, and number of particles.
    a. Use mathematics to describe the relationships among pressure, temperature, and volume of an enclosed gas when only the amount of gas is constant.
    b. Use mathematical and computational thinking based on the ideal gas law to determine molar quantities.

8. Refine the design of a given chemical system to illustrate how LeChâtelier's principle affects a dynamic chemical equilibrium when subjected to an outside stress (e.g., heating and cooling a saturated sugar-water solution).*

Motion and Stability: Forces and Interactions

9. Analyze and interpret data (e.g., melting point, boiling point, solubility, phase-change diagrams) to compare the strength of intermolecular forces and how these forces affect physical properties and changes.

Energy

10. Plan and conduct experiments that demonstrate how changes in a system (e.g., phase changes, pressure of a gas) validate the kinetic molecular theory.
    a. Develop a model to explain the relationship between the average kinetic energy of the particles in a substance and the temperature of the substance (e.g., no kinetic energy equaling absolute zero [0K or -273.15^{o}C]).

11. Construct an explanation that describes how the release or absorption of energy from a system depends upon changes in the components of the system.
    a. Develop a model to illustrate how the changes in total bond energy determine whether a chemical reaction is endothermic or exothermic.
    b. Plan and conduct an investigation that demonstrates the transfer of thermal energy in a closed system (e.g., using heat capacities of two components of differing temperatures).

PHYSICS

Physics is an elective course focused on providing high school students with foundational content regarding properties of physical matter, physical quantities, and their interactions. The course provides the required science background preparation for students who plan to pursue postsecondary studies and careers in science, technology, engineering, and mathematics (STEM) fields. Using the practices of science, core ideas are explored and developed in more detail and refined with increased sophistication and rigor based upon knowledge acquired in earlier grades. Students learn through investigation and analysis of data and from their own experiments and those that cannot be undertaken in a science classroom. The academic language of physics is used in context to communicate claims, evidence, and reasoning for phenomena and to engage in argument from evidence to justify and defend claims. Students take part in active learning involving authentic investigations and engineering design processes. The Physics course provides a rich learning context for acquiring knowledge of the practices, core ideas, and crosscutting concepts that lead to the development of critical-thinking, problem-solving, and information-literacy skills. Additional external resources, including evidence-based literature found within scientific journals, research, and other sources, should be utilized to provide students with science experiences that will adequately prepare them for college, career, and citizenship.

Content standards within this course are organized according to three of the core ideas for Physical Science. The first core idea, Motion and Stability: Forces and Interactions, concentrates on forces and motion, types of interactions, and stability and instability in physical systems. The second core idea, Energy, investigates conservation of energy, energy transformations, and applications of energy to everyday life. The final core idea, Waves and Their Applications in Technologies for Information Transfer, examines wave properties, electromagnetic radiation, and information technologies and instrumentation. The Engineering, Technology, and Applications of Science (ETS) core ideas may be integrated into the Physics content. The ETS core ideas require students to use tools and materials to solve simple problems and to use representations to convey design solutions to a problem and determine which is most appropriate.

Students will:

Motion and Stability: Forces and Interactions

1. Investigate and analyze, based on evidence obtained through observation or experimental design, the motion of an object using both graphical and mathematical models (e.g., creating or interpreting graphs of position, velocity, and acceleration versus time graphs for one- and two-dimensional motion; solving problems using kinematic equations for the case of constant acceleration) that may include descriptors such as position, distance traveled, displacement, speed, velocity, and acceleration.

2. Identify external forces in a system and apply Newton's laws graphically by using models such as free-body diagrams to explain how the motion of an object is affected, ranging from simple to complex, and including circular motion.
    a. Use mathematical computations to derive simple equations of motion for various systems using Newton's second law.
    b. Use mathematical computations to explain the nature of forces (e.g., tension, friction, normal) related to Newton's second and third laws.

3. Evaluate qualitatively and quantitatively the relationship between the force acting on an object, the time of interaction, and the change in momentum using the impulse-momentum theorem.

4. Identify and analyze forces responsible for changes in rotational motion and develop an understanding of the effect of rotational inertia on the motion of a rotating object (e.g., merry-go-round, spinning toy, spinning figure skater, stellar collapse [supernova], rapidly spinning pulsar).

Energy

5. Construct models that illustrate how energy is related to work performed on or by an object and explain how different forms of energy are transformed from one form to another (e.g., distinguishing between kinetic, potential, and other forms of energy such as thermal and sound; applying both the work-energy theorem and the law of conservation of energy to systems such as roller coasters, falling objects, and spring-mass systems; discussing the effect of frictional forces on energy conservation and how it affects the motion of an object).

6. Investigate collisions, both elastic and inelastic, to evaluate the effects on momentum and energy conservation.

7. Plan and carry out investigations to provide evidence that the first and second laws of thermodynamics relate work and heat transfers to the change in internal energy of a system with limits on the ability to do useful work (e.g., heat engine transforming heat at high temperature into mechanical energy and low-temperature waste heat, refrigerator absorbing heat from the cold reservoir and giving off heat to the hot reservoir with work being done).
    a. Develop models to illustrate methods of heat transfer by conduction (e.g., an ice cube in water), convection (e.g., currents that transfer heat from the interior up to the surface), and radiation (e.g., an object in sunlight).
    b. Engage in argument from evidence regarding how the second law of thermodynamics applies to the entropy of open and closed systems.

Waves and Their Applications in Technologies for Information Transfer

8. Investigate the nature of wave behavior to illustrate the concept of the superposition principle responsible for wave patterns, constructive and destructive interference, and standing waves (e.g., organ pipes, tuned exhaust systems).
    a. Predict and explore how wave behavior is applied to scientific phenomena such as the Doppler effect and **So**und **N**avigation **a**nd **R**anging (SONAR).

9. Obtain and evaluate information regarding technical devices to describe wave propagation of electromagnetic radiation and compare it to sound propagation. (e.g., wireless telephones, magnetic resonance imaging [MRI], microwave systems, **Ra**dio **D**etection **a**nd **R**anging [RADAR], SONAR, ultrasound).

10. Plan and carry out investigations that evaluate the mathematical explanations of light as related to optical systems (e.g., reflection, refraction, diffraction, intensity, polarization, Snell's law, the inverse square law).

11. Develop and use models to illustrate electric and magnetic fields, including how each is created (e.g., charging by either conduction or induction and polarizing; sketching field lines for situations such as point charges, a charged straight wire, or a current carrying wires such as solenoids; calculating the forces due to Coulomb's laws), and predict the motion of charged particles in each field and the energy required to move a charge between two points in each field.

12. Use the principles of Ohm's and Kirchhoff's laws to design, construct, and analyze combination circuits using typical components (e.g., resistors, capacitors, diodes, sources of power).

HUMAN ANATOMY AND PHYSIOLOGY

The Human Anatomy and Physiology course is designed to address the structure and function of human body systems from the cellular level to the organism level in an approach that complements the natural curiosity of high school students. The course addresses the interactions within and between systems that maintain homeostasis in an organism. It is designed for students who have an interest in learning how the human body works and for those interested in health-related science, technology, engineering, and mathematics (STEM) careers. As students engage in the study of human body systems, they are encouraged to apply the knowledge and processes of science to personally relevant issues, including how personal choices, environmental factors, and genetic factors affect the human body.

The Human Anatomy and Physiology standards provide a depth of conceptual understanding to adequately prepare students for college, career, and citizenship with an appropriate level of scientific literacy. This course encourages critical thinking, the integration of technology, and the application of knowledge and skills to solve problems. An important component of this course is a safe laboratory setting where students participate in active learning to illustrate scientific concepts that incorporate activities such as histological studies, dissections, urinalysis and blood-testing simulations, and computer-based electrocardiography. Students are expected to use clear and accurate academic language, keep detailed records, make oral and written presentations, and defend claims based on evidence from their own and others' scientific investigations.

Content standards within this course are organized according to one of the core ideas of Life Science, From Molecules to Organisms: Structures and Processes. This core idea is explored more extensively within the specific context of the anatomy and physiology of human body systems. Content standards focus on the growth and development of human body systems as well as on the structure and function of these systems from the cellular level to the organism level. Integrated within the discipline of Human Anatomy and Physiology are the Engineering, Technology, and Applications of Science (ETS) core ideas, which are denoted with an asterisk (*). The ETS core ideas require students to use tools and materials to solve simple problems and to use representations to convey design solutions to a problem and determine which is most appropriate.

Students will:

From Molecules to Organisms: Structures and Processes

1. Develop and use models and appropriate terminology to identify regions, directions, planes, and cavities in the human body to locate organs and systems.

2. Analyze characteristics of tissue types (e.g., epithelial tissue) and construct an explanation of how the chemical and structural organizations of the cells that form these tissues are specialized to conduct the function of that tissue (e.g., lining, protecting).

3. Obtain and communicate information to explain the integumentary system's structure and function, including layers and accessories of skin and types of membranes.
    a. Analyze the effects of pathological conditions (e.g., burns, skin cancer, bacterial and viral infections, chemical dermatitis) to determine the body's attempt to maintain homeostasis.

4. Use models to identify the structure and function of the skeletal system (e.g., classification of bones by shape, classification of joints and the appendicular and axial skeletons).
    a. Obtain and communicate information to demonstrate understanding of the growth and development of the skeletal system (e.g., bone growth and remodeling).
    b. Obtain and communicate information to demonstrate understanding of the pathology of the skeletal system (e.g., types of bone fractures and their treatment, osteoporosis, rickets, other bone diseases).

5. Develop and use models to illustrate the anatomy of the muscular system, including muscle locations and groups, actions, origins and insertions.
    a. Plan and conduct investigations to explain the physiology of the muscular system (e.g., muscle contraction/relaxation, muscle fatigue, muscle tone), including pathological conditions (e.g., muscular dystrophy).

6. Obtain, evaluate, and communicate information regarding how the central nervous system and peripheral nervous system interrelate, including how these systems affect all other body systems to maintain homeostasis.
    a. Use scientific evidence to evaluate the effects of pathology on the nervous system (e.g., Parkinson's disease, Alzheimer's disease, cerebral palsy, head trauma) and argue possible prevention and treatment options.
    b. Design a medication to treat a disorder associated with neurotransmission, including mode of entry into the body, form of medication, and desired effects.*

7. Use models to determine the relationship between the structures in and functions of the cardiovascular system (e.g., components of blood, blood circulation through the heart and systems of the body, ABO blood groups, anatomy of the heart, types of blood vessels).
    a. Engage in argument from evidence regarding possible prevention and treatment options related to the pathology of the cardiovascular system (e.g., myocardial infarction, mitral valve prolapse, varicose veins, arteriosclerosis, anemia, high blood pressure).
    b. Design and carry out an experiment to test various conditions that affect the heart (e.g., heart rate, blood pressure, electrocardiogram [ECG] output).

8. Communicate scientific information to explain the relationship between the structures and functions, both mechanical (e.g., chewing, churning in stomach) and chemical (e.g., enzymes, hydrochloric acid [HCl] in stomach), of the digestive system, including the accessory organs (e.g., salivary glands, pancreas).
    a. Obtain and communicate information to demonstrate an understanding of the disorders of the digestive system (e.g., ulcers, Crohn's disease, diverticulitis).

9. Develop and use a model to explain how the organs of the respiratory system function.
    a. Engage in argument from evidence describing how environmental (e.g., cigarette smoke, polluted air) and genetic factors may affect the respiratory system, possibly leading to pathological conditions (e.g., cystic fibrosis).

10. Obtain, evaluate, and communicate information to differentiate between the male and female reproductive systems, including pathological conditions that affect each.
    a. Use models to demonstrate what occurs in fetal development at each stage of pregnancy.

11. Use models to differentiate the structures of the urinary system and to describe their functions.
    a. Analyze and interpret data related to the urinary system to show the relationship between homeostatic imbalances and disease (e.g., kidney stones, effects of pH imbalances).

12. Obtain and communicate information to explain the lymphatic organs and their structure and function.
    a. Develop and use a model to explain the body's lines of defense and immunity.
    b. Obtain and communicate information to demonstrate an understanding of the disorders of the immune system (e.g., acquired immunodeficiency syndrome [AIDS], severe combined immunodeficiency [SCID]).

13. Obtain, evaluate, and communicate information to support the claim that the endocrine glands secrete hormones that help the body maintain homeostasis through feedback loops.
    a. Analyze the effects of pathological conditions (e.g., pituitary dwarfism, Addison's disease, diabetes mellitus) caused by imbalance of the hormones of the endocrine glands.

EARTH AND SPACE SCIENCE

The Earth and Space Science course is highly recommended for all high school students. Content focuses on a comprehensive application of all disciplines of science and is based upon the biologically active nature of our ever-changing planet and the integration of systems that constantly evolve. In an effort to encourage students to pursue careers in the fields of science, technology, engineering, and mathematics (STEM), this course incorporates the scientific and engineering practices that reflect the scientific processes used by scientists. The scientific and engineering practices are implemented through a student-centered, laboratory-intensive, collaborative classroom environment.

The Earth and Space Science standards provide a depth of conceptual understanding to adequately prepare students for college, career, and citizenship with an appropriate level of scientific literacy. Resources specific to the local area as well as external resources, including evidence-based literature found within scientific journals, should be used to extend and increase the complexity of the core ideas.

The foundation of the course is taken from two disciplinary core ideas in the Earth and Space Science domain. The first core idea, Earth's Place in the Universe, addresses the concepts of the universe and its stars, Earth and the solar system, and the history of planet Earth. The second core idea, Earth's Systems, examines Earth's materials and systems, plate tectonics and large-scale system interactions, the roles of water in Earth's surface processes, weather and climate, and biogeology. Integrated within the disciplinary core ideas of Earth and Space Science are the Engineering, Technology, and Applications of Science (ETS) core ideas, which are denoted with an asterisk (*). The ETS core ideas require students to use tools and materials to solve simple problems and to use representations to convey design solutions to a problem and determine which is most appropriate.

Students will:

Earth's Place in the Universe

1. Develop and use models to illustrate the lifespan of the sun, including energy released during nuclear fusion that eventually reaches Earth through radiation.

2. Engage in argument from evidence to compare various theories for the formation and changing nature of the universe and our solar system (e.g., Big Bang Theory, Hubble's law, steady state theory, light spectra, motion of distant galaxies, composition of matter in the universe).

3. Evaluate and communicate scientific information (e.g., Hertzsprung-Russell diagram) in reference to the life cycle of stars using data of both atomic emission and absorption spectra of stars to make inferences about the presence of certain elements.

4. Apply mathematics and computational thinking in reference to Kepler's laws, Newton's laws of motion, and Newton's gravitational laws to predict the orbital motion of natural and man-made objects in the solar system.

5. Use mathematics to explain the relationship of the seasons to the tilt of Earth's axis (e.g., zenith angle, solar angle, surface area) and its revolution about the sun, addressing intensity and distribution of sunlight on Earth's surface.

6. Obtain and evaluate information about Copernicus, Galileo, Kepler, Newton, and Einstein to communicate how their findings challenged conventional thinking and allowed for academic advancements and space exploration.

Earth's Systems

7. Analyze and interpret evidence regarding the theory of plate tectonics, including geologic activity along plate boundaries and magnetic patterns in undersea rocks, to explain the ages and movements of continental and oceanic crusts.

8. Develop a time scale model of Earth's biological and geological history to establish relative and absolute age of major events in Earth's history (e.g., radiometric dating, models of geologic cross sections, sedimentary layering, fossilization, early life forms, folding, faulting, igneous intrusions).

9. Obtain, evaluate, and communicate information to explain how constructive and destructive processes (e.g., weathering, erosion, volcanism, orogeny, plate tectonics, tectonic uplift) shape Earth's land features (e.g., mountains, valleys, plateaus) and sea features (e.g., trenches, ridges, seamounts).

10. Construct an explanation from evidence for the processes that generate the transformation of rocks in Earth's crust, including chemical composition of minerals and characteristics of sedimentary, igneous, and metamorphic rocks.

11. Obtain and communicate information about significant geologic characteristics (e.g., types of rocks and geologic ages, earthquake zones, sinkholes, caves, abundant fossil fauna, mineral and energy resources) that impact life in Alabama and the southeastern United States.

12. Develop a model of Earth's layers using available evidence to explain the role of thermal convection in the movement of Earth's materials (e.g., seismic waves, movement of tectonic plates).

13. Analyze and interpret data of interactions between the hydrologic and rock cycles to explain the mechanical impacts (e.g., stream transportation and deposition, erosion, frost-wedging) and chemical impacts (e.g., oxidation, hydrolysis, carbonation) of Earth materials by water's properties.

14. Construct explanations from evidence to describe how changes in the flow of energy through Earth's systems (e.g., volcanic eruptions, solar output, ocean circulation, surface temperatures, precipitation patterns, glacial ice volumes, sea levels, Coriolis effect) impact the climate.

15. Obtain, evaluate, and communicate information to verify that weather (e.g., temperature, relative humidity, air pressure, dew point, adiabatic cooling, condensation, precipitation, winds, ocean currents, barometric pressure, wind velocity) is influenced by energy transfer within and among the atmosphere, lithosphere, biosphere, and hydrosphere.
    a. Analyze patterns in weather data to predict various systems, including fronts and severe storms.
    b. Use maps and other visualizations to analyze large data sets that illustrate the frequency, magnitude, and resulting damage from severe weather events in order to predict the likelihood and severity of future events.

ENVIRONMENTAL SCIENCE

Environmental Science is a course that introduces students to a broad view of the biosphere and the physical parameters that affect it. The course incorporates the scientific and engineering practices reflecting the scientific processes used in science, technology, engineering, and mathematics (STEM) fields. The scientific and engineering practices are implemented through a student-centered and collaborative classroom environment that is laboratory-intensive and includes field investigations and case studies.

Core ideas are explored and developed in more detail and refined with increased sophistication and rigor based upon knowledge gained in earlier grades. Students learn by constructing explanations from evidence acquired through analysis and interpretation of data from laboratory investigations, field investigations, and case studies. Students integrate and evaluate multiple sources of authentic information to address issues or suggest possible solutions to problems in the environment based on current findings. The academic language of the core idea is used in context to communicate claims, evidence, and reasoning for phenomena and to engage in argument from evidence to justify and defend claims. Students are encouraged to use creativity in designing engineering solutions to solve various problems affecting Earth and its environment.

The Environmental Science content standards provide a depth of conceptual understanding to adequately prepare students for college, career, and citizenship with an appropriate level of scientific literacy. The foundation of the course is based upon Earth and Human Activity, one of the disciplinary core ideas in the Earth and Space Science domain. This core idea involves areas of study that include natural resources, natural hazards, human impacts on Earth systems, and global climate change. Integrated within the disciplinary core ideas of Environmental Science are the Engineering, Technology, and Applications of Science (ETS) core ideas, which are denoted with an asterisk (*). The ETS core ideas require students to use tools and materials to solve simple problems and to use representations to convey design solutions to a problem and determine which is most appropriate.

Students will:

Earth and Human Activity

1. Investigate and analyze the use of nonrenewable energy sources (e.g., fossil fuels, nuclear, natural gas) and renewable energy sources (e.g., solar, wind, hydroelectric, geothermal) and propose solutions for their impact on the environment.

2. Use models to illustrate and communicate the role of photosynthesis and cellular respiration as carbon cycles through the biosphere, atmosphere, hydrosphere, and geosphere.

3. Use mathematics and graphic models to compare factors affecting biodiversity and populations in ecosystems.

4. Engage in argument from evidence to evaluate how biological or physical changes within ecosystems (e.g., ecological succession, seasonal flooding, volcanic eruptions) affect the number and types of organisms, and that changing conditions may result in a new or altered ecosystem.

5. Engage in argument from evidence to compare how individual versus group behavior (e.g., flocking; cooperative behaviors such as hunting, migrating, and swarming) may affect a species' chance to survive and reproduce over time.

6. Obtain, evaluate, and communicate information to describe how human activity may affect biodiversity and genetic variation of organisms, including threatened and endangered species.

7. Analyze and interpret data to investigate how a single change on Earth's surface may cause changes to other Earth systems (e.g., loss of ground vegetation causing an increase in water runoff and soil erosion).

8. Engage in an evidence-based argument to explain how over time Earth's systems affect the biosphere and the biosphere affects Earth's systems (e.g., microbial life increasing the formation of soil; corals creating reefs that alter patterns of erosion and deposition along coastlines).

9. Develop and use models to trace the flow of water, nitrogen, and phosphorus through the hydrosphere, atmosphere, geosphere, and biosphere.

10. Design solutions for protection of natural water resources (e.g., bioassessment, methods of water treatment and conservation) considering properties, uses, and pollutants (e.g., eutrophication, industrial effluents, agricultural runoffs, point and nonpoint pollution resources).*

11. Engage in argument from evidence to defend how coastal, marine, and freshwater sources (e.g., estuaries, marshes, tidal pools, wetlands, beaches, inlets, rivers, lakes, oceans, coral reefs) support biodiversity, economic stability, and human recreation.

12. Analyze and interpret data and climate models to predict how global or regional climate change can affect Earth's systems (e.g., precipitation and temperature and their associated impacts on sea level, glacial ice volumes, and atmosphere and ocean composition).

13. Obtain, evaluate, and communicate information based on evidence to explain how key natural resources (e.g., water sources, fertile soils, concentrations of minerals and fossil fuels), natural hazards, and climate changes influence human activity (e.g., mass migrations).

14. Analyze cost-benefit ratios of competing solutions for developing, conserving, managing, recycling, and reusing energy and mineral resources to minimize impacts in natural systems (e.g., determining best practices for agricultural soil use, mining for coal, and exploring for petroleum and natural gas sources).*

15. Construct an explanation based on evidence to determine the relationships among management of natural resources, human sustainability, and biodiversity (e.g., resources, waste management, per capita consumption, agricultural efficiency, urban planning).

16. Obtain and evaluate information from published results of scientific computational models to illustrate the relationships among Earth's systems and how these relationships may be impacted by human activity (e.g., effects of an increase in atmospheric carbon dioxide on photosynthetic biomass, effect of ocean acidification on marine populations).

17. Obtain, evaluate, and communicate geological and biological information to determine the types of organisms that live in major biomes.
    a. Analyze and interpret data collected through geographic research and field investigations (e.g., relief, topographic, and physiographic maps; rivers; forest types; watersheds) to describe the biodiversity by region for the state of Alabama (e.g., terrestrial, freshwater, marine, endangered, invasive).

LITERACY STANDARDS FOR GRADES 6-12: HISTORY/SOCIAL STUDIES, SCIENCE, AND TECHNICAL SUBJECTS

College- and Career-Readiness Anchor Standards for Reading

The Grades 6-12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College- and Career-Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

Reading Standards for Literacy in Science and Technical Subjects 6-12

Grades 6-8 Students:	Grades 9-10 Students:	Grades 11-12 Students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of science and technical texts.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.	2. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.	2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.	3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
Craft and Structure		
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *Grades 6-8 texts and topics.*	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *Grades 9-10 texts and topics.*	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *Grades 11-12 texts and topics.*
5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	5. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).	5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
Integration of Knowledge and Ideas		
7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).	7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.	8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
Range of Reading and Level of Text Complexity		
10. By the end of Grade 8, read and comprehend science/technical texts in the Grades 6-8 text complexity band independently and proficiently.	10. By the end of Grade 10, read and comprehend science/technical texts in the Grades 9-10 text complexity band independently and proficiently.	10. By the end of Grade 12, read and comprehend science/technical texts in the Grades 11-CCR text complexity band independently and proficiently.

College- and Career-Readiness Anchor Standards for Writing

The Grades 6-12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College- and Career-Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes*

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

*These broad types of writing include many subgenres.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12

The standards below begin at Grade 6; standards for K-5 writing in history/social studies, science, and technical subjects are integrated into the K-5 writing standards. The CCR anchor standards and high school standards in literacy work in tandem to define college- and career-readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 6-8 Students:	Grades 9-10 Students:	Grades 11-12 Students:
Text Types and Purposes		
1. Write arguments focused on *discipline-specific content*. a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.	1. Write arguments focused on *discipline-specific content*. a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.	1. Write arguments focused on *discipline-specific content*. a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12 (Continued)

Grades 6-8 Students:	Grades 9-10 Students:	Grades 11-12 Students:
Text Types and Purposes (Continued)		
2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style and objective tone. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well-chosen, relevant, sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)

Note: Students' narrative skills continue to grow in these grades. The standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science and technical subjects, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work so others can replicate them and (possibly) reach the same results.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12 (Continued)

Grades 6-8 Students:	Grades 9-10 Students:	Grades 11-12 Students:
Production and Distribution of Writing		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Research to Build and Present Knowledge		
7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9. Draw evidence from informational texts to support analysis, reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.
Range of Writing		
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

ALABAMA HIGH SCHOOL GRADUATION REQUIREMENTS

(Alabama Administrative Code 290-3-1-02(8) and (8)(a))

Effective for students in the ninth grade in the 2013-2014 school year, all students shall earn the required credits for the Alabama High School Diploma. A local board of education may establish requirements for receipt of diplomas and endorsements, but any diploma or endorsement shall include the requirements of the Alabama High School Diploma. The Alabama courses of study shall be followed in determining minimum required content in each discipline.

COURSE REQUIREMENTS

English Language Arts	**Four credits to include:**	**Credits**
	English 9	**1**
	English 10	**1**
	English 11	**1**
	English 12	**1**
	Equivalent/substitute options may include: Advanced Placement/International Baccalaureate/postsecondary courses/SDE approved courses.	
	English Language Arts Total Credits	**4**
Mathematics	**Three credits to include:**	**Credits**
	Algebra I or its equivalent/substitute	**1**
	Geometry or its equivalent/substitute	**1**
	Algebra II w/Trigonometry or Algebra II, or its equivalent/substitute	**1**
	Equivalent/substitute options may include: Career and Technical Education/Advanced Placement/International Baccalaureate/postsecondary courses/SDE approved courses.	
	One credit from:	
	Alabama Course of Study for Mathematics or equivalent/substitute courses from Career and Technical Education/Advanced Placement/International Baccalaureate/postsecondary courses/SDE approved courses.	**1**
	Mathematics Total Credits	**4**
Science	**Two credits to include:**	**Credits**
	Biology	**1**
	A physical science (Chemistry, Physics, Physical Science)	**1**
	Equivalent/substitute options may include: Career and Technical Education/Advanced Placement/International Baccalaureate/postsecondary courses/SDE approved courses.	
	Two credits from:	
	Alabama Course of Study for Science or equivalent/substitute courses from Career and Technical Education/Advanced Placement/International Baccalaureate/postsecondary courses/SDE approved courses.	**2**
	Science Total Credits	**4**
Social Studies	**Four credits to include:**	**Credits**
	World History	**1**
	United States History I	**1**
	United States History II	**1**
	United States Government	**0.5**
	Economics	**0.5**
	Equivalent /substitute options may include: Advanced Placement/International Baccalaureate/postsecondary courses/SDE approved courses.	
	Social Studies Total Credits	**4**
Physical Education	Lifelong Individualized Fitness Education (LIFE) or one JROTC Credit	**1**
Health Education		**0.5**
Career Preparedness		**1**
Career and Technical Education and/or Foreign Language and/or Arts Education		**3**
Electives		**2.5**
	Total Credits	**24**

GUIDELINES AND SUGGESTIONS FOR LOCAL TIME REQUIREMENTS AND HOMEWORK

Total Instructional Time

The total instructional time of each school day in all schools and at all grade levels shall be not less than 6 hours or 360 minutes, exclusive of lunch periods, recess, or time used for changing classes (*Code of Alabama,* 1975, §16-1-1).

Suggested Time Allotments for Grades 1-6

The allocations below are based on considerations of a balanced educational program for Grades 1-6. Local school systems are encouraged to develop a general plan for scheduling that supports interdisciplinary instruction. Remedial and/or enrichment activities should be a part of the time schedule for the specific subject area.

Subject Area	Grades 1-3	Grades 4-6
Language Arts	150 minutes daily	120 minutes daily
Mathematics	60 minutes daily	60 minutes daily
Science	30 minutes daily	45 minutes daily
Social Studies	30 minutes daily	45 minutes daily
Physical Education	30 minutes daily*	30 minutes daily*
Health	60 minutes weekly	60 minutes weekly
Technology Education (Computer Applications)	60 minutes weekly	60 minutes weekly
Character Education	10 minutes daily**	10 minutes daily**
Arts Education		
Dance Music Theatre Visual Arts	*Daily instruction with certified arts specialists in each of the arts disciplines is the most desirable schedule. However, schools unable to provide daily arts instruction in each discipline are encouraged to schedule in Grades 1 through 3 two 30- to 45-minute arts instruction sessions per week and in Grades 4 through 6 a minimum of 60 minutes of instruction per week. Interdisciplinary instruction within the regular classroom setting is encouraged as an alternative approach for scheduling time for arts instruction when certified arts specialists are not available.*	

* Established by the Alabama State Department of Education in accordance with *Code of Alabama*, 1975, §16-40-1

** Established by the Alabama State Department of Education in accordance with *Code of Alabama*, 1975, §16-6B-2(h)

Kindergarten

In accordance with *Alabama Administrative Code* r. 290-5-1-.01(5) Minimum Standards for Organizing Kindergarten Programs in Alabama Schools, the daily time schedule of the kindergartens shall be the same as the schedule of the elementary schools in the systems of which they are a part since kindergartens in Alabama operate as full-day programs. There are no established time guidelines for individual subject areas for the kindergarten classroom. The emphasis is on large blocks of time that allow children the opportunity to explore all areas of the curriculum in an unhurried manner.

It is suggested that the full-day kindergarten program be organized utilizing large blocks of time for large groups, small groups, center time, lunch, outdoor activities, snacks, transitions, routines, and afternoon review. Individual exploration, small-group interest activities, interaction with peers and teachers, manipulation of concrete materials, and involvement in many other real-world experiences are needed to provide a balance in the kindergarten classroom.

Grades 7-12

One credit may be granted in Grades 9-12 for required or elective courses consisting of a minimum of 140 instructional hours or in which students demonstrate mastery of Alabama course of study content standards in one-credit courses without specified instructional time (*Alabama Administrative Code* r. 290-3-1-.02 (9)(a)).

In those schools where Grades 7 and 8 are housed with other elementary grades, the school may choose the time requirements listed for Grades 4-6 or those listed for Grades 7-12.

Character Education

For all grades, not less than 10 minutes instruction per day shall focus upon the students' development of the following character traits: courage, patriotism, citizenship, honesty, fairness, respect for others, kindness, cooperation, self-respect, self-control, courtesy, compassion, tolerance, diligence, generosity, punctuality, cleanliness, cheerfulness, school pride, respect of the environment, patience, creativity, sportsmanship, loyalty, and perseverance.

Homework

Homework is an important component of every student's instructional program. Students, teachers, and parents should have a clear understanding of the objectives to be accomplished through homework and the role it plays in meeting curriculum requirements. Homework reflects practices that have been taught in the classroom and provides reinforcement and remediation for students. It should be student-managed, and the amount should be age-appropriate, encouraging learning through problem solving and practice.

At every grade level, homework should be meaning-centered and mirror classroom activities and experiences. Independent and collaborative projects that foster creativity, problem-solving abilities, and student responsibility are appropriate. Parental support and supervision reinforce the quality of practice or product as well as skill development.

Each local board of education shall establish a policy on homework consistent with the Alabama State Board of Education resolution adopted February 23, 1984 (Action Item #F-2).

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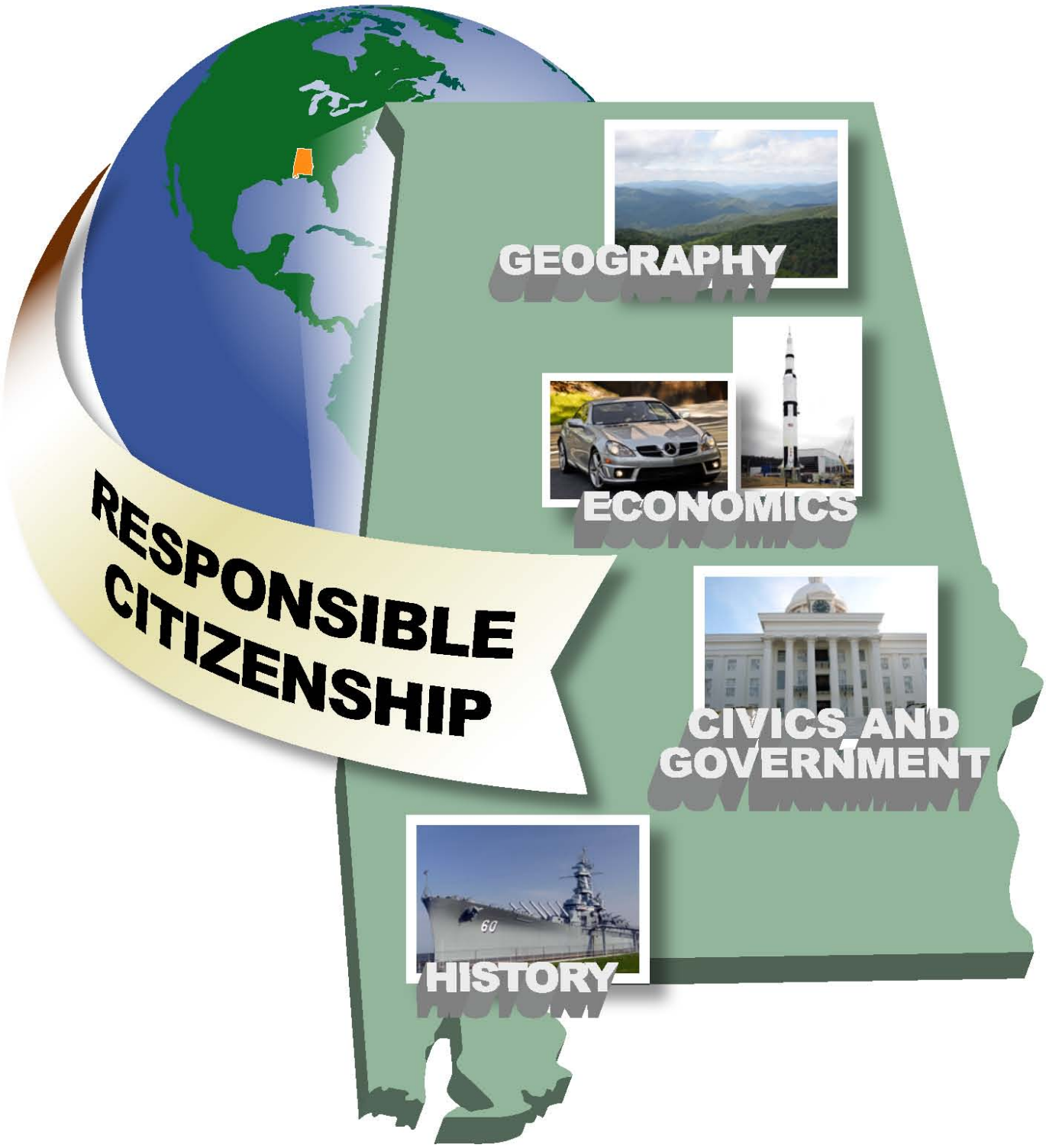
2010 Alabama Course of Study

SOCIAL STUDIES



Joseph B. Morton, State Superintendent of Education · Alabama State Department of Education

For information regarding the
Alabama Course of Study: Social Studies
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Alabama Department of Education,
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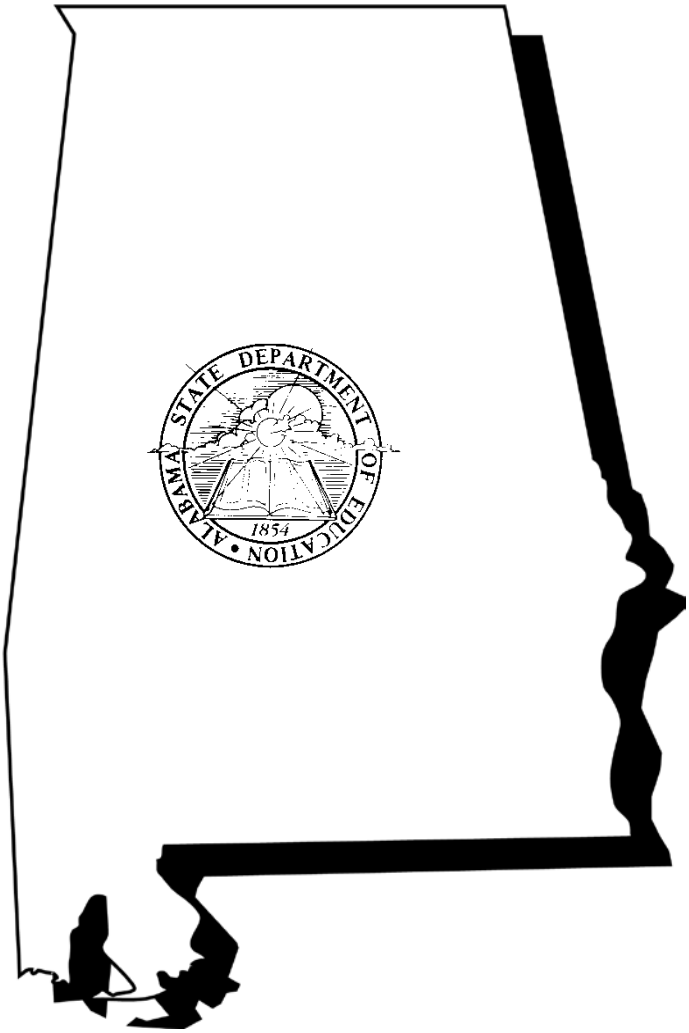
Alabama Course of Study
Social Studies



Joseph B. Morton
State Superintendent of Education
ALABAMA DEPARTMENT OF EDUCATION

STATE SUPERINTENDENT OF EDUCATION'S MESSAGE

Dear Educator:

The 2010 *Alabama Course of Study: Social Studies* provides Alabama students and teachers with a curriculum that contains content designed to promote competence in the areas of economics, geography, history, and civics and government. With an emphasis on responsible citizenship, these content areas serve as the four organizational strands for the Grades K-12 social studies program. Content in this document focuses on enabling students to become literate, analytical thinkers capable of making informed decisions about the world and its people while also preparing them to participate responsibly in society at local, state, national, and international levels.

The rigorous, challenging content standards in this document offer a sound curricular framework designed to enable all students at all grade levels to acquire the essential knowledge and skills necessary to function in today's international society. The Social Studies State Course of Study Committee and Task Force, composed of educators and business and community leaders; the Alabama State Board of Education; and I believe the 2010 *Alabama Course of Study: Social Studies* provides a sound program of instruction to be utilized by Alabama school systems as they design and implement local social studies curricula.

Joseph B. Morton
State Superintendent of Education

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Alabama Course of Study: Social Studies

Table of Contents

PREFACE

The 2010 *Alabama Course of Study: Social Studies* provides the framework for the Grades K-12 social studies program in Alabama's public schools. Content standards and related content in this document are minimum and required (*Code of Alabama*, 1975, §16-35-4), fundamental and specific, but not exhaustive. In developing local curricula, school systems may include additional content standards to reflect local philosophies and add implementation guidelines, resources, and activities; which, by design, are not contained in this document.

The 2009-2010 Social Studies State Course of Study Committee and Task Force used information from several professional documents as guidelines for the development of this course of study. These documents include the 1994 National Geographic Society's *Geography for Life: National Geography Standards,* the 1994 Center for Civic Education's *National Standards for Civics and Government,* the 1994 National Council for the Social Studies' *Expectations of Excellence: Curriculum Standards for Social Studies*, the 1997 National Council on Economic Education's *Voluntary National Content Standards in Economics*, the 1996 National Center for History in the Schools' *National Standards for History,* the 2000 National Geographic Society's *A Path Toward World Literacy: A Standards-Based Guide to K-12 Geography,* and the 2005 American Psychological Association's *National Standards for High School Psychology Curricula*.

In addition, Committee and Task Force members attended state, regional, and national conferences; read articles in professional journals and other publications; reviewed similar curriculum documents from other states; listened to and read statements from interested individuals and groups from throughout the state; used each member's academic and experiential knowledge; and discussed issues among themselves and with colleagues. Using these sources, the Committee and Task Force developed what they believe to be the best possible social studies curriculum for Alabama's K-12 students.

ACKNOWLEDGMENTS

This document was developed by the 2009-2010 Social Studies State Course of Study Committee and Task Force composed of early childhood, intermediate school, middle school, high school, and college educators appointed by the Alabama State Board of Education and business and professional persons appointed by the Governor of the State of Alabama (*Code of Alabama*, 1975, §16-35-1). The Committee and Task Force began work in March 2009 and submitted the document to the Alabama State Board of Education for adoption at the May 2010 meeting.

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Charles V. Creel, Graphic Arts Specialist, Communication Section, assisted in the development of the graphic design.

Susan J. Blankenship, Education Specialist (retired), Alabama Department of Education, edited and proofread the document.

The 2010 *Alabama Course of Study: Social Studies* was reviewed and updated in April 2013.

GENERAL INTRODUCTION

Alabama students find themselves living and learning in a world that is experiencing rapid changes, including a seemingly limitless abundance of knowledge unlike any humankind has ever encountered. They are involved in and affected by local, national, and international events, including state constitutional and economic issues that directly affect both their education and their standard of living. In order to be successful citizens in today's world, students need to be knowledgeable about the economic, geographic, historical, and political perspectives of the world and its people. Since students are more directly involved in these issues and need information and strategies to make informed decisions, the theme of the 2010 *Alabama Course of Study: Social Studies* is **responsible citizenship**.

Responsible citizens are informed and active citizens. They are aware of and participate in various levels of civic responsibility. Mastering standards included in this document provides all students in Grades K-12 with essential knowledge regarding economics, geography, history, and civics and government. With this mastery, students develop an international perspective necessary for living wisely in a world that possesses limited resources and that is characterized by cultural diversity. They learn to view the world and its people with understanding and concern and develop a sense of responsibility for the needs of all people, including a commitment to finding just and peaceful solutions to national as well as international problems.

In preparing the 2010 *Alabama Course of Study: Social Studies*, consideration was given to key concepts from a variety of sources, including six national standards documents. The course of study presents the academic content, concepts, and skills of the strands of economics, geography, history, and civics and government that are essential to the study of democracy and to the development of competent and responsible citizens. Using this document, teachers are able to design instruction for students in kindergarten through twelfth grade regarding the required content, which includes efforts to provide balance between United States history and world history and between and among the many disciplines of the social sciences and humanities.

Content standards in this document describe the required knowledge and skills of economics, geography, history, and civics and government that students are expected to know and be able to do at a particular grade level. In kindergarten and the primary grades, specific content in each strand is clearly delineated and sequenced, serving as an important foundation for the new and increasingly rigorous content at each successive grade level. All strands are included in every grade; however, one strand may be given more emphasis at one or more grade levels.

Although important geographic skills and concepts are addressed in all grades, students in Grade 3 and Grade 7 are involved in an intensive study of basic **geography** where they increase their knowledge about the physical and spatial nature of the world and about relationships between people and their environments. The **civics and government** strand is addressed in each grade while in Grade 7 one-half year is devoted primarily to the civics strand and in Grade 12 the government strand is addressed in the required one-semester course, United States Government. Civics and government content is designed to enable students to become informed, responsible participants in political life and to function as competent citizens committed to the fundamental values and principles of the constitutional democracy that established the republic of the United States of America. Likewise, **history** concepts and skills are included in each grade where students in Grades 5 and 6 as well as in Grades 10 and 11 concentrate on the study of the history of the United States, and students in Grades 8 and 9 focus on world history content. History content addresses the

chronological development of the United States as a nation with a focus on historical development, an essential component in understanding how decisions made and actions taken in the past affect the present. While **economics** content is included for students in all grade levels, a one-semester course with a major emphasis on economics is required for students in Grade 12. The economics strand addresses content that provides students opportunities to apply content knowledge, skills, and concepts to their daily lives as competent consumers and producers as they learn to recognize the role of economics in local, state, national, and international policies.

CONCEPTUAL FRAMEWORK

The conceptual framework graphic on page 6 provides an illustration or overview of the instructional organization and goal of the content of Alabama's K-12 social studies program. The design and concepts reflect both the theme and major components that provide unity and purpose in this document's content. The goal of the program, **responsible citizenship**, is depicted on the banner encompassing the globe and spanning the state. Responsible citizens are informed and active, are cognizant of their roles in and connections with the world, and are capable of making competent decisions that benefit the local community, state, nation, and world. Depicted across the state are the four organizational strands of the social studies program—**economics, geography, history, and civics and government**. These strands serve as the organizational components for the content standards, and each is addressed with increasing rigor at every grade level with an emphasis at selected grades as described in the General Introduction to this document. Through careful local planning and effective classroom instruction, students are able to attain the program goal and accomplish the content standards within each strand at all grade levels.

Economics

Representing the economics strand on the conceptual framework graphic is the insert picturing Alabama's automobile and space industries. While economic content is embedded for students in all grade levels, a semester course with a major emphasis on economics is required for students in Grade 12. As students begin to apply economics content in their daily lives as consumers and producers, they learn to recognize the role of economics in local, state, national, and international policies. A sound program in economics education enables students to:

- Understand the free enterprise system, the American economy, and differing economic views, including the roles of entrepreneurs and the government;
- Explain the law of supply and demand in a market economy;
- Understand the international market system;
- Identify economic problems, including unemployment, inflation, and national debt;
- Understand concepts of money, personal finance, and opportunity costs;
- Understand roles of consumers and producers in the market economy of the United States;
- Apply financial literacy principles, including money management skills; and
- Explain costs and benefits of government intervention on the world economy.

Geography

The Appalachian Mountains region of the state is representative of the geography strand. Although important geographic skills and concepts are addressed in all grades, students in Grade 3 and Grade 7 are involved in an intensive study of geography. Through the study of geographic skills and concepts, students are able to:

- Describe the world in spatial terms using maps and other geographic representations, tools, and technologies;
- Explain how human systems develop in response to physical environmental conditions and understand the relationship between physical geography and human history;
- Determine how regions are used to organize and analyze areas of Earth's surface;
- Compare geographic patterns in the environment that result from processes of Earth's physical systems; and
- Explain how cultural features, traits, and diffusion help define regions.

History

The history strand, depicted on the insert of the Battleship USS *Alabama*, provides a sense of Alabama's role in historical events. History concepts and skills are included in each grade level; however, students in Grades 5, 6, 10, and 11 concentrate on a study of the history of the United States, while students in Grades 8 and 9 focus on world history content. Although students in Grade 4 focus on the study of Alabama history, this content is embedded at other grade levels throughout the curriculum. Knowledge of history is essential to understanding how decisions are made and how actions taken in the past affect the present. Through history education, students become aware of their roles as responsible citizens. Historically informed students are able to:

- Construct a personal connection to historical events at home and abroad;
- Think critically and chronologically regarding major events occurring in the United States and throughout the world;
- Critique a variety of historical documents;
- Engage in historical analysis and interpretation;
- Conduct historical research;
- Evaluate intricate connections among the past, present, and future; and
- Engage in decision making using historical knowledge and analysis.

Civics and Government

The state capitol building in Montgomery, as pictured on the conceptual framework graphic, symbolizes the civics and government strand. Content standards in this strand focus on what governments are; what they do; and how citizens are involved at local, state, national, and international levels of government. While the civics and government strand is embedded in each grade level, students in Grade 7 concentrate on the area of civics during the instructional year, and Grade 12 students focus on United States government. Students who display competent civics and government skills are able to:

- Define government and understand its historical foundations;
- Explain interrelationships of local, state, and federal governments;
- Understand basic values and principles of the American republic;
- Comprehend the relationship of the United States to the rest of the world; and
- Identify rights and responsibilities of citizenship, including the practice of responsible citizenship.

Implementation of the standards within each of the four strands provides an opportunity for all students to achieve essential social studies knowledge and skills and attain the goal of responsible citizenship. In this way, students broaden their awareness of the growing connections among people and places around the world. In addition, they realize that events in other countries and on other continents have a substantial effect upon citizens of the United States and Alabama, and that events in Alabama and the United States have an increasing effect upon others around the globe.


GEOGRAPHY
ECONOMICS
CIVICS AND GOVERNMENT
HISTORY
RESPONSIBLE CITIZENSHIP

POSITION STATEMENTS

Instructional Strategies

Research-based studies have determined that students have a variety of learning styles. Therefore, it is essential for teachers to use a differentiated approach to instruction in order to meet the needs of all students. Students learn and retain information more effectively when they are actively involved in the learning process. Instruction should stimulate critical-thinking skills that enable students to analyze, critique, and evaluate data. Primary sources, the most current technology, literature, the arts, group and individual projects, current events, and community service are all appropriate instructional strategies for the social studies classroom. Effective teachers find ways to model inquiry-based learning concepts that help students gain independence as they develop strong study habits and accept responsibility for their own learning.

In an ever-changing world, it becomes even more critical for students to develop an understanding of how today's world developed, the reasons from which conflict grows, and why and how differing peoples relate to each other and their world views. Facts, including historical dates, events, people, and places, are critical to an understanding of history. There is an implied understanding throughout this document that facts must be taught and mastered for students to have a foundation from which to develop historical reasoning. Content standards are developed to require an increase in rigor of the curriculum beyond the level of rote memory; however, this does not indicate that classroom instruction should not require students to learn key points.

It is also important for students to memorize and recite as part of their class work. The shared core knowledge of our common history is indispensable in a modern culture. Recitation of the Preamble to the Constitution, speeches from politicians and soldiers, poetry, or letters from a period in history build in each student an appreciation of the cost of history to a people.

Primary Sources

Primary sources enrich the social studies program and enable students to visualize and empathize with people of other times and places. Teachers are encouraged to utilize modern technology to access the limitless abundance of primary sources available to enhance the instructional needs of students. Sources such as the United States Library of Congress provide a wealth of historical data that documents our nation's history. In addition, museums, libraries, and cultural centers open doors to the arts, writings, and imaginings of people throughout the world. The richness of primary source materials expands the social studies class by broadening student learning and making history a living concept.

Literature and the Arts

The goal of a comprehensive education is the development of a literate student. Literature has a substantial place, not just in the English language arts class, but also in the social studies class. Novels, stories, poems, biographies, and autobiographies open doors to varied times, places, and events and encourage students to become immersed in those stories. Good literature enables students to explore issues or ideas in a safe environment as they learn to make judgments about the actions and emotions of others. Suggested readings for young persons, which include print as well as Web site sources, are available through The National Council for the Social Studies (NCSS).

The arts, including music, dance, drama, and visual art, provide rich resources for gaining knowledge and understanding of our own as well as other cultures. Instruction in the social studies classroom should provide opportunities for students to explore all aspects of the arts. At the lower grade levels, the arts are the perfect vehicle for thematic-based teaching of social studies while students in the upper grades benefit from cross-curricular experiences. Teachers are encouraged to conduct research for connecting the historical period and place being studied to appropriate arts topics, including live arts experiences that expand student understanding of that moment in time. In addition, many resources for the social studies classroom are provided by arts education organizations throughout the state.

Global Connections

The NCSS deems it essential for students to develop an understanding of the realities of global interdependence among world societies and the United States' place in a global society. Students need to be able to address international issues such as human rights, the environment, and economic competition and interdependence. In order for the United States to maintain its competitive edge, students need an understanding of the peoples of many cultures and civilizations who developed ideas, institutions, and ways of life that are both different from and similar to their own.

Activities that encourage students to examine events from the perspectives of other cultures and religions are essential in helping students clarify their understandings and broaden their viewpoints. These activities also allow students to appreciate differences and similarities among citizens of the United States and how these bind them together in unity as a free people. Through the study of others, students can better understand themselves and can better achieve the goal of becoming responsible citizens of this nation and of today's global society.

Service Learning

Service learning is a teaching and learning method that connects meaningful community service experiences with academic learning and personal growth. Students in Grades K-12 can utilize the knowledge and skills learned in the classroom to address real needs in the community. Teachers should encourage students to work toward developing service-learning projects that seek to address actual needs of the community in an innovative manner. In this way, students gain valuable learning experiences that deepen their understanding not only of the curriculum, but also of civic responsibility, including what it means to be responsible community members. The National Service-Learning Clearinghouse's Web site is an excellent resource for teachers and students seeking to find information and projects to help make a difference in the life of the community.

Current Events

Knowledge about and analysis of current events are vital to responsible citizenship. The inclusion of a study of current events is an essential element of the Grades K-12 social studies program. Current events should be incorporated at each grade level in all social studies courses, and teachers should make every effort to relate the curriculum being studied to events occurring in the community, state, nation, and world. Traditional media, social networking outlets, podcasts, blogs, and other reliable options from the World Wide Web are among the many resources that can be used in obtaining and integrating current events into classroom instruction.

Technology

Technology influences all areas of education. It enables teachers to teach and students to learn in ways not previously possible. If applied appropriately, technology can allow teachers to extend learning experiences beyond the traditional textbook through a variety of resources and methods of instruction. In addition, technology provides opportunities for students to construct and expand their own knowledge and to develop lifelong learning skills to further enhance their development as responsible citizens.

As technology is constantly evolving and while equipment and resources are increasingly available to both the teacher and the student, it is incumbent upon instructors to remain current in curriculum planning as well as in instructional methodology. Because technology continues to be an important tool in our everyday lives, it is essential that teachers model and emphasize ways for students to use and manage technological equipment and resources. Instruction that incorporates multiple ways for obtaining information serves to better prepare students for responsible citizenship. In addition, teachers have a responsibility to help students learn to evaluate the validity of information they find in their research, including the Web sites they visit, and to appropriately attribute information used from the Internet.

Directions for Interpreting the Minimum Required Content

1. **CONTENT STANDARDS** are statements that define what students should know and be able to do at the conclusion of a course or grade. Content standards in this document contain minimum required content. The order in which standards are listed within a course or grade is not intended to convey a sequence for instruction. Each content standard completes the phrase "*Students will*."

> Students will:
>
> *Differentiate between land forms and bodies of water on maps and globes*.
>
> (Kindergarten–Content Standard 9)

2. **BULLETS** denote content related to the standards and required for instruction. Bulleted content is listed under a standard and identifies additional minimum required content.

> Students will:
>
> Interpret various primary sources for reconstructing the past, including documents, letters, diaries, maps, and photographs.
>
> - *Comparing maps of the past to maps of the present*
>
> (Third Grade–Content Standard 11)

3. **EXAMPLES** clarify certain components of content standards or bullets. They are illustrative but not exhaustive.

> Students will:
>
> Trace the development of the early Russian state and the expansion of its trade systems.
>
> *Examples: rise of Kiev and Muscovy, conversion to Orthodox Christianity, movement of peoples of Central Asia, Mongol conquest, rise of czars*
>
> (Eighth Grade–Content Standard 10)

4. **GRIDS** to the left of each content standard indicate the dominant strands that are addressed in the standard or related content found in the bullets. These strands are economics (E), geography (G), history (H), and civics and government (CG).

Students will:

E	*G*	*H*	*CG*
✓	✓	✓	✓

Describe relations of the United States with Britain and France from 1781 to 1823, including the XYZ Affair, the War of 1812, and the Monroe Doctrine.

(Tenth Grade–Content Standard 6)

5. **MAP ICONS** are shaded outlines of the state of Alabama. Map icons are displayed after content standards, bullets, or examples to indicate content related to Alabama history or geography.

Students will:

Compare major events in Alabama from 1781 to 1823, including statehood as part of the expanding nation, acquisition of land, settlement, and the Creek War, to those of the developing nation. 

(Tenth Grade–Content Standard 8)

KINDERGARTEN – SECOND GRADE
OVERVIEW

The intrinsically creative and imaginative nature of Grades K-2 students prompts them to want to explore their world. Through exploration they encounter and gain appreciation of the array of beliefs, cultures, and customs that comprise our world. Students at this level are concrete learners who benefit greatly from challenging, multisensory instructional opportunities that provide time for them to be actively engaged in learning. Through a thematic approach to instruction, students begin to develop an appreciation for their community, state, and nation while broadening their perspectives regarding the lives of others. The use of various genres of literature and hands-on activities that address each strand of the curriculum allows students to experience social studies in real and meaningful ways. The classroom should be one in which students are immersed in a print-rich environment that includes reading stories, myths, legends, and biographies that captivate their imagination. Viewing artifacts, records, and illustrations helps make connections with people and places around the community, state, and nation.

The Grades K-2 social studies content standards introduce students to basic social studies concepts through an integration across all disciplines, including language arts, mathematics, science, the fine arts, technology, and physical education. Students learn about past and present events in history and everyday life and begin to pose questions that promote understanding beyond the present-day world and into the future. Kindergarten content addresses living and working together in family and community while first-grade content focuses on living and working together in community and in state. Second-grade content expands on the theme of living and working together to include state and nation. Throughout the curriculum students are able to develop a sense of their place in the world, including ways to excel both as private individuals and as public citizens.

KINDERGARTEN

Living and Working Together in Family and Community

Kindergarten students are introduced to the world beyond family and home. As students become acquainted with new classmates, they develop sensitivity to the similarities and differences among individuals in the classroom as well as within the school and community. Comparing family traditions enables students to accept and appreciate diversity and gain a sense of purpose regarding their role and the role of others within the community.

The kindergarten curriculum contains balanced, comprehensive content that facilitates students' understanding of economics, geography, history, and civics and government. An appropriate learning environment is one that reflects a thematic and interdisciplinary approach emphasizing instructional flexibility, multiple individual learning styles, and opportunities for student exploration and discovery. Concrete examples of abstract concepts help young students develop skills for critical thinking, inquiry, and an understanding of citizenship in a democratic society. Examples for instruction may include assisting in determining classroom rules, taking turns while playing games, and standing while pledging allegiance to the flag. As students gain insight into these and other concepts, they are able to view themselves as effective citizens of a culturally diverse democratic society.

Students will:

E	G	H	CG
		✓	

1. Sequence events using schedules, calendars, and timelines.
   Examples: daily classroom activities, significant events in students' lives

   - Differentiating among broad categories of historical time
     Examples: long ago, yesterday, today, tomorrow

E	G	H	CG
			✓

2. Identify rights and responsibilities of citizens within the family, classroom, school, and community.
   Examples: taking care of personal belongings and respecting the property of others, following rules and recognizing consequences of breaking rules, taking responsibility for assigned duties

E	G	H	CG
			✓

3. Describe how rules provide order, security, and safety in the home, school, and community.
   - Constructing classroom rules and procedures
   - Determining consequences for not following classroom rules and procedures

E	G	H	CG
✓			

4. Differentiate between needs and wants of family, school, and community.
   - Comparing wants among different families, schools, and communities

E	G	H	CG
✓			

5. Differentiate between goods and services.
   Examples: goods—food, toys, clothing
   services—medical care, fire protection, law enforcement, library resources

E	G	H	CG
	✓	✓	

6. Compare cultural similarities and differences in individuals, families, and communities.
   Examples: celebrations, food, traditions

E	G	H	CG
			✓

7. Describe roles of helpers and leaders, including school principal, school custodian, volunteers, police officers, and fire and rescue workers.

E	G	H	CG
	✓		

8. Recognize maps, globes, and satellite images.

E	G	H	CG
	✓		

9. Differentiate between land forms and bodies of water on maps and globes.

E	G	H	CG
	✓		

10. Apply vocabulary related to giving and following directions.
    Example: locating objects and places to the *right* or *left, up* or *down, in* or *out, above* or *below*

E	G	H	CG
		✓	✓

11. Identify symbols, customs, famous individuals, and celebrations representative of our state and nation.
    Examples: symbols—United States flag, Alabama flag, bald eagle
    customs—pledging allegiance to the United States flag, singing "The Star – Spangled Banner"
    individuals—George Washington; Abraham Lincoln; Squanto; Martin Luther King, Jr.
    celebrations—Fourth of July, Memorial Day, Veterans Day

E	G	H	CG
✓		✓	✓

12. Describe families and communities of the past, including jobs, education, transportation, communication, and recreation.
    - Identifying ways everyday life has both changed and remained the same

FIRST GRADE

Living and Working Together in Community and State

The goal of the first-grade curriculum is to help students acquire knowledge regarding their place in the local community and in the state. First graders gain a deeper sense of the role of effective citizenry in a democratic society as they develop an awareness of their basic rights and responsibilities as citizens, including the laws designed to protect them. Students continue to develop a sense of time and place as they increase their understanding of the past, present, and future through the use of real-life examples. They develop an understanding of historical events within the community and state by comparing life today to life long ago.

As students study concepts in economics, geography, history, and civics and government, they learn about people in different times and places. Extensive use of literature promotes students' understanding of cultures, traditions, and societal groups within the community and state. A thematic approach to instruction includes active, hands-on participation through activities that include opportunities for exploration and discovery. Activities designed for diverse learning styles allow students to understand the relationships among people, places, and events of the community and the state, thus making lessons meaningful to their lives.

Students will:

E	G	H	CG
	✓	✓	

1. Construct daily schedules, calendars, and timelines.
   - Using vocabulary associated with time, including *past, present,* and *future*

E	G	H	CG
✓			✓

2. Identify rights and responsibilities of citizens within the local community and state.
   - Describing how rules in the community and laws in the state protect citizens' rights and property
   - Describing ways, including paying taxes, responsible citizens contribute to the common good of the community and state
   - Demonstrating voting as a way of making choices and decisions

E	G	H	CG
	✓		✓

3. Recognize leaders and their roles in the local community and state. 
   - Describing roles of public officials, including mayor and governor 
   - Identifying on a map Montgomery as the capital of the state of Alabama 

E	G	H	CG
		✓	

4. Identify contributions of diverse significant figures that influenced the local community and state in the past and present.

Example: Admiral Raphael Semmes' and Emma Sansom's roles during the Civil War

E	G	H	CG
	✓	✓	

5. Identify historical events and celebrations within the local community and throughout Alabama.

Examples: Selma Bridge Crossing Jubilee, Mardi Gras, Boll Weevil Festival, Montgomery Bus Boycott, Black History Month

- Differentiating between fact and fiction when sharing stories or retelling events using primary and secondary sources
  Example: fictional version of Pocahontas compared to an authentic historical account

E	G	H	CG
		✓	✓

6. Compare ways individuals and groups in the local community and state lived in the past to how they live today.

- Identifying past and present forms of communication
  Examples: past—letter, radio, rotary-dial telephone
  present—e-mail, television, cellular telephone
- Identifying past and present types of apparel
- Identifying past and present types of technology
  Examples: past—record player, typewriter, wood-burning stove
  present—compact diskette (CD) and digital video diskette (DVD) players, video cassette recorder (VCR), computer, microwave oven
- Identifying past and present types of recreation
  Examples: past—marbles, hopscotch, jump rope
  present—video games, computer games
- Identifying past and present primary sources
  Examples: past—letters, newspapers
  present—e-mail, Internet articles

E	G	H	CG
✓	✓		

7. Describe how occupational and recreational opportunities in the local community and state are affected by the physical environment.

Examples: occupational—commercial fishing and tourism in Gulf coast areas
recreational—camping and hiking in mountain areas, fishing and waterskiing in lake areas

E	G	H	CG
	✓		

8. Identify land masses, bodies of water, and other physical features on maps and globes.

- Explaining the use of cardinal directions and the compass rose
- Measuring distance using nonstandard units
  Example: measuring with pencils, strings, hands, feet
- Using vocabulary associated with geographical features, including *river, lake, ocean,* and *mountain*

E	G	H	CG
✓	✓		

9. Differentiate between natural resources and human-made products.
   - Listing ways to protect our natural resources
     Examples: conserving forests by recycling newspapers, conserving energy by turning off lights, promoting protection of resources by participating in activities such as Earth Day and Arbor Day

E	G	H	CG
✓			

10. Describe the role of money in everyday life.
    - Categorizing purchases families make as needs or wants
    - Explaining the concepts of saving and borrowing
    - Identifying differences between buyers and sellers
    - Classifying specialized jobs of workers with regard to the production of goods and services
    - Using vocabulary associated with the function of money, including *barter, trade, spend*, and *save*

E	G	H	CG
✓	✓	✓	

11. Identify traditions and contributions of various cultures in the local community and state.
    Examples: Kwanzaa, Christmas, Hanukkah, Fourth of July, Cinco de Mayo

E	G	H	CG
✓		✓	

12. Compare common and unique characteristics in societal groups, including age, religious beliefs, ethnicity, persons with disabilities, and equality between genders.

SECOND GRADE

Living and Working Together in State and Nation

The goal of the second-grade curriculum is to introduce students to major historical events, figures, and symbols related to the principles of American democracy. Young students learn to value differences among people and exemplify a respect for the rights and opinions of others. They develop an appreciation of shared values, principles, and beliefs that promote stability for our country's government and its citizens. Through a thematic approach to instruction, second-grade students acquire knowledge as they study various cultures, places, and environments.

Content standards for second grade address the disciplines of economics, geography, history, and civics and government. Students benefit from engagement in factual accounts of history, including artifacts related to these histories. Hands-on instruction that relates content to students' lives provides familiarity and allows students to retain and build on newly presented materials. Students gain a deeper understanding of content through independent and cooperative learning, project-based learning, and through the examination of primary and secondary sources.

Students will:

E	G	H	CG
		✓	✓

1. Relate principles of American democracy to the founding of the nation.
   - Identifying reasons for the settlement of the thirteen colonies
   - Recognizing basic principles of the Declaration of Independence, the Constitution of the United States, the establishment of the three branches of government, and the Emancipation Proclamation
   - Demonstrating the voting process, including roles of major political parties
   - Utilizing school and classroom rules to reinforce democratic values

E	G	H	CG
		✓	✓

2. Identify national historical figures and celebrations that exemplify fundamental democratic values, including equality, justice, and responsibility for the common good.
   - Recognizing our country's founding fathers, including George Washington, Thomas Jefferson, Benjamin Franklin, Patrick Henry, John Adams, John Hancock, and James Madison
   - Recognizing historical female figures, including Abigail Adams, Dolley Madison, Harriet Tubman, and Harriet Beecher Stowe
   - Describing the significance of national holidays, including the birthday of Martin Luther King, Jr.; Presidents' Day; Memorial Day; the Fourth of July; Veterans Day; and Thanksgiving Day
   - Describing the history of American symbols and monuments
     Examples: Liberty Bell, Statue of Liberty, bald eagle, United States flag, Washington Monument, Lincoln Memorial

E	G	H	CG
		✓	

3. Use various primary sources, including calendars and timelines, for reconstructing the past.
   Examples: historical letters, stories, interviews with elders, photographs, maps, artifacts

E	G	H	CG
		✓	

4. Use vocabulary to describe segments of time, including *year, decade, score*, and *century*.

E	G	H	CG
	✓		

5. Differentiate between a physical map and a political map.
   Examples: physical—illustrating rivers and mountains
   political—illustrating symbols for states and capitals

   - Using vocabulary associated with geographical features, including *latitude, longitude,* and *border*

E	G	H	CG
	✓		

6. Identify states, continents, oceans, and the equator using maps, globes, and technology.
   - Identifying map elements, including title, legend, compass rose, and scale
   - Identifying the intermediate directions of northeast, southeast, northwest, and southwest
   - Recognizing technological resources such as a virtual globe, satellite images, and radar
   - Locating points on a grid

E	G	H	CG
✓			

7. Explain production and distribution processes.
   Example: tracing milk supply from dairy to consumer

   - Identifying examples of imported and exported goods
   - Describing the impact of consumer choices and decisions on supply and demand

E	G	H	CG
✓			

8. Describe how scarcity affects supply and demand of natural resources and human-made products.
   Examples: cost of gasoline during oil shortages, price and expiration date of perishable foods

E	G	H	CG
✓	✓	✓	✓

9. Describe how and why people from various cultures immigrate to the United States.
   Examples: how—ships, planes, automobiles
   why—improved quality of life, family connections, disasters

   - Describing the importance of cultural unity and diversity within and across groups

E	G	H	CG
✓	✓	✓	

10. Identify ways people throughout the country are affected by their human and physical environments.

Examples: land use, housing, occupation

- Comparing physical features of regions throughout the United States
  Example: differences in a desert environment, a tropical rain forest, and a polar region
- Identifying positive and negative ways people affect the environment
  Examples: positive—restocking fish in lakes, reforesting cleared land
  negative—polluting water, littering roadways, eroding soil
- Recognizing benefits of recreation and tourism at state and national parks 

E	G	H	CG
		✓	

11. Interpret legends, stories, and songs that contributed to the development of the cultural history of the United States.

Examples: American Indian legends, African-American stories, tall tales, stories of folk heroes

THIRD – FOURTH GRADE
OVERVIEW

Students in Grades 3 and 4 continue to be naturally curious and eager to learn. They express interest in the unfamiliar and are developmentally ready to study geographic skills and concepts, a major focus of third-grade content. Students begin to develop an understanding of how the environment affects its inhabitants and how people change the land. In fourth grade, students enjoy hearing stories of Alabama's past and are ready to be introduced to their first formal chronological study of history. As they develop an appreciation for people, places, and events that shaped the history of Alabama, they expand their understanding of historical concepts and gain an understanding of their relationship to cultures locally, nationally, and internationally.

The four strands of economics, geography, history, and civics and government are woven throughout the third- and fourth-grade curricula. Through the study of geography in third grade and Alabama history in fourth grade, students develop a better understanding of where they live. As they become active participants in their schools and communities, they begin to view themselves as future leaders with civic responsibilities. Students compare their own economic experiences to those of others to aid in understanding local, national, and international concepts. Through a variety of learning experiences, including the use of technology for exploration and investigation, students gain an increased level of interest and involvement in their world as they prepare to become competent, responsible citizens who lead productive and independent lives.

THIRD GRADE

Geographical and Historical Studies: People, Places, and Regions

During third grade, teachers capitalize upon students' natural curiosity and their interest in the unfamiliar as geographic information is introduced regarding areas of the United States as well as the world. Students in Grade 3 learn from concrete experiences and benefit from resources such as pictures, graphs, maps, globes, and information technology that help make abstractions more concrete. Instruction of this nature plays a dual role in helping students learn not only to use these geographic tools, but also to learn in real and interesting ways about other people, places, and cultures.

This year-long study focuses on skills necessary for students to organize information about people, places, and environments in a spatial context. Although all four content strands are interwoven into instruction, the greatest emphasis is placed on the geography strand. Content expands upon geographic knowledge acquired by students from kindergarten through second grade to help students establish a firm geographic foundation to build upon throughout life.

Students will:

E	G	H	CG
	✓		

1. Locate the prime meridian, equator, Tropic of Capricorn, Tropic of Cancer, International Date Line, and lines of latitude and longitude on maps and globes.
    - Using cardinal and intermediate directions to locate on a map or globe an area in Alabama or the world 
    - Using coordinates to locate points on a grid
    - Determining distance between places on a map using a scale
    - Locating physical and cultural regions using labels, symbols, and legends on an Alabama or world map 
    - Describing the use of geospatial technologies
        Examples: Global Positioning System (GPS), geographic information system (GIS)
    - Interpreting information on thematic maps
        Examples: population, vegetation, climate, growing season, irrigation
    - Using vocabulary associated with maps and globes, including *megalopolis, landlocked, border,* and *elevation*

E	G	H	CG
	✓		

2. Locate the continents on a map or globe.
    - Using vocabulary associated with geographical features of Earth, including *hill, plateau, valley, peninsula, island, isthmus, ice cap,* and *glacier*
    - Locating major mountain ranges, oceans, rivers, and lakes throughout the world 

E	G	H	CG
✓	✓		

3. Describe ways the environment is affected by humans in Alabama and the world.

Examples: crop rotation, oil spills, landfills, clearing of forests, replacement of cleared lands, restocking of fish in waterways

- Using vocabulary associated with human influence on the environment, including *irrigation, aeration, urbanization, reforestation, erosion,* and *migration*

E	G	H	CG
✓	✓	✓	

4. Relate population dispersion to geographic, economic, and historic changes in Alabama and the world.

Examples: geographic—flood, hurricane, tsunami
economic—crop failure
historic—disease, war, migration

- Identifying human and physical criteria used to define regions and boundaries
  Examples: human—city boundaries, school district lines
  physical—hemispheres, regions within continents or countries

E	G	H	CG
✓	✓		

5. Compare trading patterns between countries and regions.
- Differentiating between producers and consumers
- Differentiating between imports and exports
  Examples: imports—coffee, crude oil
  exports—corn, wheat, automobiles

E	G	H	CG
✓	✓	✓	✓

6. Identify conflicts within and between geographic areas involving use of land, economic competition for scarce resources, opposing political views, boundary disputes, and cultural differences.

- Identifying examples of cooperation among governmental agencies within and between different geographic areas
  Examples: American Red Cross, Federal Emergency Management Agency (FEMA), World Health Organization (WHO)
- Locating areas of political conflict on maps and globes
- Explaining the role of the United Nations (UN) and the United States in resolving conflict within and between geographic areas

E	G	H	CG
✓	✓		

7. Describe the relationship between locations of resources and patterns of population distribution.

Examples: presence of trees for building homes, availability of natural gas supply for heating, availability of water supply for drinking and for irrigating crops

- Locating major natural resources and deposits throughout the world on topographical maps

- Comparing present-day mechanization of labor with the historical use of human labor for harvesting natural resources
  Example: present-day practices of using machinery versus human labor to mine coal and harvest cotton and pecans
- Explaining the geographic impact of using petroleum, coal, nuclear power, and solar power as major energy sources in the twenty-first century

E	G	H	CG
✓	✓		✓

8. Identify geographic links of land regions, river systems, and interstate highways between Alabama and other states.

Examples: Appalachian Mountains, Tennessee-Tombigbee Waterway, Interstate Highway 65 (I-65), Natchez Trace Parkway

- Locating the five geographic regions of Alabama
- Locating state and national parks on a map or globe

E	G	H	CG
✓	✓		

9. Identify ways to prepare for natural disasters.

Examples: constructing houses on stilts in flood-prone areas, buying earthquake and flood insurance, providing hurricane or tornado shelters, establishing emergency evacuation routes

E	G	H	CG
		✓	✓

10. Recognize functions of the Declaration of Independence and the Constitution of the United States.

- Describing the process by which a bill becomes law
- Explaining the relationship between the federal government and state governments, including the three branches of government
- Defining governmental systems, including democracy, monarchy, and dictatorship

E	G	H	CG
	✓	✓	

11. Interpret various primary sources for reconstructing the past, including documents, letters, diaries, maps, and photographs.

- Comparing maps of the past to maps of the present

E	G	H	CG
		✓	

12. Explain the significance of representations of American values and beliefs, including the Statue of Liberty, the statue of Lady Justice, the United States flag, and the national anthem.

E	G	H	CG
✓	✓	✓	✓

13. Describe prehistoric and historic American Indian cultures, governments, and economics in Alabama.

Examples: prehistoric—Paleo-Indian, Archaic, Woodland, Mississippian
historic—Choctaw, Chickasaw, Cherokee, Creek

- Identifying roles of archaeologists and paleontologists

FOURTH GRADE

Alabama Studies 

Fourth-grade students apply geographic concepts obtained in Grade 3 to a study of their own state and relate geography to history, economics, and politics in Alabama. They examine ways economic and political institutions respond to the needs of Alabamians. Students gain knowledge of economic principles and technological advancements as well as knowledge of past events and present-day practices in the state. They learn specific characteristics regarding the land and its people and analyze diverse groups that contributed to the development of Alabama, beginning with early American Indians in Alabama and continuing to the present.

Fourth-graders' enthusiasm for classifying and organizing information may be used for obtaining knowledge about geographic regions in Alabama. Students investigate Alabama's role in the Civil War, civil rights efforts, and the structure of state and local governments. They compare similarities between contemporary issues and their historical origins and draw parallels among historical events in Alabama, other states, and the world.

Students will:

E	G	H	CG
✓	✓	✓	✓

1. Compare historical and current economic, political, and geographic information about Alabama on thematic maps, including weather and climate, physical-relief, waterway, transportation, political, economic development, land-use, and population maps.
    - Describing types of migrations as they affect the environment, agriculture, economic development, and population changes in Alabama

E	G	H	CG
✓	✓	✓	✓

2. Relate reasons for European exploration and settlement in Alabama to the impact of European explorers on trade, health, and land expansion in Alabama.
    - Locating on maps European settlements in early Alabama, including Fort Condé, Fort Toulouse, and Fort Mims
    - Tracing on maps and globes, the routes of early explorers of the New World, including Juan Ponce de León, Hernando de Soto, and Vasco Núñez de Balboa
    - Explaining reasons for conflicts between Europeans and American Indians in Alabama from 1519 to 1840, including differing beliefs regarding land ownership, religion, and culture

E	G	H	CG
✓	✓	✓	✓

3. Explain the social, political, and economic impact of the War of 1812, including battles and significant leaders of the Creek War, on Alabama.

   Examples: social—adoption of European culture by American Indians, opening of Alabama land for settlement
   political—forced relocation of American Indians, labeling of Andrew Jackson as a hero and propelling him toward Presidency
   economic—acquisition of tribal land in Alabama by the United States

   - Explaining the impact of the Trail of Tears on Alabama American Indians' lives, rights, and territories

E	G	H	CG
	✓	✓	

4. Relate the relationship of the five geographic regions of Alabama to the movement of Alabama settlers during the early nineteenth century.
   - Identifying natural resources of Alabama during the early nineteenth century
   - Describing human environments of Alabama as they relate to settlement during the early nineteenth century, including housing, roads, and place names

E	G	H	CG
	✓	✓	✓

5. Describe Alabama's entry into statehood and establishment of its three branches of government and the constitutions.
   - Explaining political and geographic reasons for changes in location of Alabama's state capital
   - Recognizing roles of prominent political leaders during early statehood in Alabama, including William Wyatt Bibb, Thomas Bibb, Israel Pickens, William Rufus King, and John W. Walker

E	G	H	CG
✓	✓	✓	✓

6. Describe cultural, economic, and political aspects of the lifestyles of early nineteenth-century farmers, plantation owners, slaves, and townspeople.

   Examples: cultural—housing, education, religion, recreation
   economic—transportation, means of support
   political—inequity of legal codes

   - Describing major areas of agricultural production in Alabama, including the Black Belt and fertile river valleys

E	G	H	CG
✓		✓	✓

7. Explain reasons for Alabama's secession from the Union, including sectionalism, slavery, states' rights, and economic disagreements.
   - Identifying Alabama's role in the organization of the Confederacy, including hosting the secession convention and the inauguration ceremony for leaders
   - Recognizing Montgomery as the first capital of the Confederacy
   - Interpreting the Articles of the Confederation and the Gettysburg Address

E	G	H	CG
✓		✓	

8. Explain Alabama's economic and military role during the Civil War.

Examples: economic—production of iron products, munitions, textiles, and ships
military—provision of military supplies through the Port of Mobile, provision of an armament center at Selma

- Recognizing military leaders from Alabama during the Civil War
- Comparing roles of women on the home front and the battlefront during and after the Civil War
- Explaining economic conditions as a result of the Civil War, including the collapse of the economic structure, destruction of the transportation infrastructure, and high casualty rates

E	G	H	CG
✓		✓	✓

9. Analyze political and economic issues facing Alabama during Reconstruction for their impact on various social groups.

Examples: political—military rule, presence of Freedmen's Bureau, Alabama's readmittance to the Union
economic—sharecropping, tenant farming, scarcity of goods and money

- Interpreting the Thirteenth, Fourteenth, and Fifteenth Amendments to the Constitution of the United States
- Identifying African Americans who had an impact on Alabama during Reconstruction in Alabama
- Identifying major political parties in Alabama during Reconstruction

E	G	H	CG
✓		✓	✓

10. Analyze social and educational changes during the late nineteenth and early twentieth centuries for their impact on Alabama.

Examples: social—implementation of the *Plessey versus Ferguson* "separate but not equal" court decision, birth of the National Association for the Advancement of Colored People (NAACP)
educational—establishment of normal schools and land-grant colleges such as Huntsville Normal School (Alabama Agricultural and Mechanical [A&M] University), Agricultural and Mechanical College of Alabama (Auburn University), Tuskegee Normal and Industrial Institute (Tuskegee University), Lincoln Normal School (Alabama State University)

- Explaining the development and changing role of industry, trade, and agriculture in Alabama during the late nineteenth and early twentieth centuries, including the rise of Populism
- Explaining the Jim Crow laws
- Identifying Alabamians who made contributions in the fields of science, education, the arts, politics, and business during the late nineteenth and early twentieth centuries

E	G	H	CG
✓	✓	✓	

11. Describe the impact of World War I on Alabamians, including the migration of African Americans from Alabama to the North and West, utilization of Alabama's military installations and training facilities, and increased production of goods for the war effort.
    - Recognizing Alabama participants in World War I, including Alabama's 167th Regiment of the Rainbow Division
    - Identifying World War I technologies, including airplanes, machine guns, and chemical warfare

E	G	H	CG
✓		✓	

12. Explain the impact the 1920s and Great Depression had on different socioeconomic groups in Alabama.

    Examples: 1920s—increase in availability of electricity, employment opportunities, wages, products, consumption of goods and services; overproduction of goods; stock market crash

    Great Depression—overcropping of land, unemployment, poverty, establishment of new federal programs

    - Explaining how supply and demand impacted economies of Alabama and the United States during the 1920s and the Great Depression

E	G	H	CG
✓	✓	✓	

13. Describe the economic and social impact of World War II on Alabamians, including entry of women into the workforce, increase in job opportunities, rationing, utilization of Alabama's military installations, military recruitment, the draft, and a rise in racial consciousness.
    - Recognizing Alabama participants in World War II, including the Tuskegee Airmen and women in the military
    - Justifying the strategic placement of military bases in Alabama, including Redstone Arsenal, Fort Rucker, Fort McClellan, and Craig Air Force Base

E	G	H	CG
✓	✓	✓	✓

14. Analyze the modern Civil Rights Movement to determine the social, political, and economic impact on Alabama.
    - Recognizing important persons of the modern Civil Rights Movement, including Martin Luther King, Jr.; George C. Wallace; Rosa Parks; Fred Shuttlesworth; John Lewis; Malcolm X; Thurgood Marshall; Hugo Black; and Ralph David Abernathy
    - Describing events of the modern Civil Rights Movement, including the Montgomery Bus Boycott, the Sixteenth Street Baptist Church bombing in Birmingham, the Freedom Riders bus bombing, and the Selma-to-Montgomery March
    - Explaining benefits of the Civil Rights Act of 1964, the Voting Rights Act of 1965, and *Brown versus Board of Education* Supreme Court case of 1954
    - Using vocabulary associated with the modern Civil Rights Movement, including *discrimination*, *prejudice*, *segregation*, *integration*, *suffrage*, and *rights*

E	G	H	CG
		✓	

15. Identify major world events that influenced Alabama since 1950, including the Korean Conflict, the Cold War, the Vietnam War, the Persian Gulf War, and the War on Terrorism.

E	G	H	CG
✓	✓	✓	

16. Determine the impact of population growth on cities, major road systems, demographics, natural resources, and the natural environment of Alabama during the late twentieth and early twenty-first centuries.
    - Describing how technological advancements brought change to Alabamians, including the telephone; refrigerator; automobile; television; and wireless, Internet, and space technologies
    - Relating Alabama's economy to the influence of foreign-based industry, including the automobile industry

FIFTH – SIXTH GRADE
OVERVIEW

Students in fifth and sixth grades are interested in ways different groups of people developed and in cultures represented in American society. Students begin to examine and question the nature of culture and its influence on human belief systems. While not yet skilled in abstract reasoning, fifth and sixth graders are beginning to formulate more focused questions about the world around them. This curiosity can be utilized to help them identify important concepts and ideas embedded in the history of the United States.

Effective instruction is critical in guiding students to reach their full potential in understanding and applying economic concepts, patterns of historical change and continuity, and the use of land. Fifth- and sixth-grade content standards require students to examine and explain interactions between states and nations and their cultural complexities. These learners are able to think about themselves as persons in civic roles as they grow in the recognition of their rights and responsibilities as citizens.

The main focus of the social studies program in Grades 5 and 6 is a study of the chronological development of the United States through a two-year sequence as recommended by the National Council for the Social Studies. Through an integrated approach that includes economic, geographic, historical, political, social, and cultural perspectives, content in these grades emphasizes roles various groups played in the development of American society. The key concepts of chronology, change, conflict, complexity, and increased globalization are addressed to show connections among the strands of economics, geography, history, and civics and government.

Effective teachers utilize a variety of instructional strategies and assessment tools to address various learning styles. They consistently incorporate best practices into instruction, introduce and make use of primary sources integral to the teaching of history, and utilize current technology on a regular basis in classroom instruction. Rather than providing all the answers, innovative teachers help students develop critical-thinking skills by encouraging them to evaluate their own opinions as well as those of others. In addition, effective teachers recognize the strong need for a sense of belonging exhibited by this age group and therefore provide cooperative learning experiences where students develop a sense of personal identity as well as a sense of responsibility to the group.

FIFTH GRADE

United States Studies: Beginnings to the Industrial Revolution

Fifth-grade content standards focus on the United States from the prehistoric period to the Industrial Revolution. Instruction addresses the strands of economics, geography, history, and civics and government from the earliest times through the formation and growth of the nation to the latter part of the nineteenth century with an emphasis on the development of the American Republic. Students also become familiar with major events in the periods of the American Revolution, the Westward Expansion, the Civil War, and Reconstruction.

Students at the fifth-grade level are becoming more aware of both their immediate and global environments. Due to the emotional and social development of fifth-grade students, this is the optimal time to assist in their understanding of history by involving them in discussions that include differing viewpoints and opinions of others. As students begin to explore multiple ideas and perceptions, they become more respectful of others' viewpoints and actions.

Fifth-grade students benefit from a positive classroom environment that provides learning activities designed to optimize growth and achievement, including lessons that integrate a variety of appropriate and effective instructional strategies from hands-on activities to inquiry-based learning. By developing and monitoring goals for their own learning and behavior, fifth graders are able to gain a greater sense of responsibility for their own actions, including how these actions may affect fellow classmates.

Students will:

E	G	H	CG
	✓	✓	

1. Locate on a map physical features that impacted the exploration and settlement of the Americas, including ocean currents, prevailing winds, large forests, major rivers, and significant mountain ranges.
    - Locating on a map states and capitals east of the Mississippi River
    - Identifying natural harbors in North America
        Examples: Mobile, Boston, New York, New Orleans, Savannah 

E	G	H	CG
	✓	✓	

2. Identify causes and effects of early migration and settlement of North America.

E	G	H	CG
✓	✓	✓	✓

3. Distinguish differences among major American Indian cultures in North America according to geographic region, natural resources, community organization, economy, and belief systems.
    - Locating on a map American Indian nations according to geographic region

E	G	H	CG
✓	✓	✓	✓

4. Determine the economic and cultural impact of European exploration during the Age of Discovery upon European society and American Indians.
   - Identifying significant early European patrons, explorers, and their countries of origin, including early settlements in the New World
     Examples: patrons—King Ferdinand and Queen Isabella
     explorers—Christopher Columbus
     early settlements—St. Augustine, Quebec, Jamestown
   - Tracing the development and impact of the Columbian Exchange

E	G	H	CG
✓	✓	✓	✓

5. Explain the early colonization of North America and reasons for settlement in the Northern, Middle, and Southern colonies, including geographic features, landforms, and differences in climate among the colonies.
   - Recognizing how colonial development was influenced by the desire for religious freedom
     Example: development in Massachusetts, Connecticut, Rhode Island, Pennsylvania, and Maryland colonies
   - Identifying influential leaders in colonial society
   - Describing emerging colonial government
     Examples: Mayflower Compact, representative government, town meetings, rule of law

E	G	H	CG
✓	✓	✓	

6. Describe colonial economic life and labor systems in the Americas.
   - Recognizing centers of slave trade in the Western Hemisphere and the establishment of the Triangular Trade Route

E	G	H	CG
✓		✓	✓

7. Determine causes and events leading to the American Revolution, including the French and Indian War, the Stamp Act, the Intolerable Acts, the Boston Massacre, and the Boston Tea Party.

E	G	H	CG
✓	✓	✓	✓

8. Identify major events of the American Revolution, including the battles of Lexington and Concord, Bunker Hill, Saratoga, and Yorktown.
   - Describing principles contained in the Declaration of Independence
   - Explaining contributions of Thomas Jefferson, Samuel Adams, Paul Revere, Patrick Henry, Thomas Paine, George Washington, Haym Solomon, and supporters from other countries to the American Revolution
   - Explaining contributions of ordinary citizens, including African Americans and women, to the American Revolution
   - Describing efforts to mobilize support for the American Revolution by the Minutemen, Committees of Correspondence, First Continental Congress, Sons of Liberty, boycotts, and the Second Continental Congress

- Locating on a map major battle sites of the American Revolution, including the battles of Lexington and Concord, Bunker Hill, Saratoga, and Yorktown
- Recognizing reasons for colonial victory in the American Revolution
- Explaining the effect of the Treaty of Paris of 1783 on the development of the United States

E	G	H	CG
		✓	✓

9. Explain how inadequacies of the Articles of Confederation led to the creation and eventual ratification of the Constitution of the United States.

- Describing major ideas, concepts, and limitations of the Constitution of the United States, including duties and powers of the three branches of government
- Identifying factions in favor of and opposed to ratification of the Constitution of the United States
  Example: Federalist and Anti-Federalist factions
- Identifying main principles in the Bill of Rights
- Analyzing the election of George Washington as President of the United States for its impact on the role of president in a republic

E	G	H	CG
✓	✓	✓	✓

10. Describe political, social, and economic events between 1803 and 1860 that led to the expansion of the territory of the United States, including the War of 1812, the Indian Removal Act, the Texas-Mexican War, the Mexican-American War, and the Gold Rush of 1849.

- Analyzing the role of the Louisiana Purchase and explorations of Meriwether Lewis and William Clark for their impact on Westward Expansion
- Explaining the purpose of the Monroe Doctrine
- Identifying Alabama's role in the expansion movement in the United States, including the Battle of Horseshoe Bend and the Trail of Tears 
- Identifying the impact of technological developments on United States' expansion
  Examples: steamboat, steam locomotive, telegraph, barbed wire

E	G	H	CG
✓	✓	✓	✓

11. Identify causes of the Civil War, including states' rights and the issue of slavery.

- Describing the importance of the Missouri Compromise, Nat Turner's insurrection, the Compromise of 1850, the Dred Scott decision, John Brown's rebellion, and the election of 1860
- Recognizing key Northern and Southern personalities, including Abraham Lincoln, Jefferson Davis, Ulysses S. Grant, Robert E. Lee, Thomas Jonathan "Stonewall" Jackson, William Tecumseh Sherman, and Joseph Wheeler 
- Describing social, economic, and political conditions that affected citizens during the Civil War
- Identifying Alabama's role in the Civil War 
  Examples: Montgomery as the first capital of the Confederacy, Winston County's opposition to Alabama's secession 

- Locating on a map sites important to the Civil War
  Examples: Mason-Dixon Line, Fort Sumter, Appomattox, Gettysburg, Confederate states, Union states 
- Explaining events that led to the conclusion of the Civil War

E	G	H	CG
✓	✓	✓	✓

12. Summarize successes and failures of the Reconstruction Era.

- Evaluating the extension of citizenship rights to African Americans included in the Thirteenth, Fourteenth, and Fifteenth Amendments to the Constitution of the United States
- Analyzing the impact of Reconstruction for its effect on education and social institutions in the United States
  Examples: Horace Mann and education reform, Freedmen's Bureau, establishment of segregated schools, African-American churches
- Explaining the black codes and the Jim Crow laws
- Describing post-Civil War land distribution, including tenant farming and sharecropping

E	G	H	CG
✓	✓	✓	✓

13. Describe social and economic influences on United States' expansion prior to World War I.

- Explaining how the development of transcontinental railroads helped the United States achieve its Manifest Destiny
- Locating on a map states, capitals, and important geographic features west of the Mississippi River
- Explaining how the United States acquired Alaska and Hawaii
- Identifying major groups and individuals involved with the Westward Expansion, including farmers, ranchers, Jewish merchants, Mormons, and Hispanics
- Analyzing the impact of closing the frontier on American Indians' way of life
- Explaining how the Spanish-American War led to the emergence of the United States as a world power

SIXTH GRADE

United States Studies: The Industrial Revolution to the Present

Sixth-grade content standards focus on the history of the United States from the Industrial Revolution to the present. Historical events studied by sixth graders include the rise of the United States as an industrial nation, World War I, the Great Depression, World War II, and the Cold War Era. Furthermore, the economic, political, social, and technological issues and developments from post-World War II to the present are explored. Emphasis is placed on economic, geographic, historic, and civic and governmental changes that have influenced every aspect of life during these events, including communication and technological advances, reorganization of national boundaries, and the movement of the United States into the role of world leader.

Sixth-grade students are interested in acquiring a deeper understanding of cultures and political opinions that differ from their own. Students at this age benefit from a positive learning environment that challenges and encourages their efforts and progress. As they enter into a transitional stage characterized by physical, cognitive, and social changes, they begin to analyze and evaluate relationships between ideas and practices. Sixth-grade instruction should provide constant opportunities for students to explore prior knowledge and opinions. Teachers should maximize and expand students' knowledge through the use of integral tools, including cooperative learning, large- and small-group discussions, hands-on activities, current technology, and the use of primary sources.

Students will:

E	G	H	CG
✓	✓	✓	✓

1. Explain the impact of industrialization, urbanization, communication, and cultural changes on life in the United States from the late nineteenth century to World War I.

E	G	H	CG
✓	✓	✓	✓

2. Describe reform movements and changing social conditions during the Progressive Era in the United States.
   - Relating countries of origin and experiences of new immigrants to life in the United States
     Example: Ellis Island and Angel Island experiences
   - Identifying workplace reforms, including the eight-hour workday, child labor laws, and workers' compensation laws
   - Identifying political reforms of Progressive movement leaders, including Theodore Roosevelt and the establishment of the national park system
   - Identifying social reforms of the Progressive movement, including efforts by Jane Adams, Clara Barton, and Julia Tutwiler
   - Recognizing goals of the early civil rights movement and the purpose of the National Association for the Advancement of Colored People (NAACP)
   - Explaining Progressive movement provisions of the Sixteenth, Seventeenth, Eighteenth, Nineteenth, and Twenty-first Amendments to the Constitution of the United States

E	G	H	CG
✓	✓	✓	✓

3. Identify causes and consequences of World War I and reasons for the United States' entry into the war.

Examples: sinking of the *Lusitania*, Zimmerman Note, alliances, militarism, imperialism, nationalism

- Describing military and civilian roles in the United States during World War I
- Explaining roles of important persons associated with World War I, including Woodrow Wilson and Archduke Franz Ferdinand
- Analyzing technological advances of the World War I era for their impact on modern warfare
  - Examples: machine gun, tank, submarine, airplane, poisonous gas, gas mask
- Locating on a map major countries involved in World War I and boundary changes after the war
- Explaining the intensification of isolationism in the United States after World War I
  - Example: reaction of the Congress of the United States to the Treaty of Versailles, League of Nations, and Red Scare
- Recognizing the strategic placement of military bases in Alabama 

E	G	H	CG
✓		✓	✓

4. Identify cultural and economic developments in the United States from 1900 through the 1930s.

- Describing the impact of various writers, musicians, and artists on American culture during the Harlem Renaissance and the Jazz Age
  - Examples: Langston Hughes, Louis Armstrong, Ernest Hemingway, F. Scott Fitzgerald, Andrew Wyeth, Frederic Remington, W. C. Handy, Erskine Hawkins, George Gershwin, Zora Neale Hurston 
- Identifying contributions of turn-of-the-century inventors
  - Examples: George Washington Carver, Henry Ford, Alexander Graham Bell, Thomas Alva Edison, Wilbur and Orville Wright 
- Describing the emergence of the modern woman during the early 1900s
  - Examples: Amelia Earhart, Zelda Fitzgerald, Helen Keller, Susan B. Anthony, Margaret Washington, suffragettes, suffragists, flappers 
- Identifying notable persons of the early 1900s
  - Examples: Babe Ruth, Charles A. Lindbergh, W. E. B. Du Bois, John T. Scopes 
- Comparing results of the economic policies of the Warren G. Harding, Calvin Coolidge, and Herbert Hoover Administrations
  - Examples: higher wages, increase in consumer goods, collapse of farm economy, extension of personal credit, stock market crash, Immigration Act of 1924

E	G	H	CG
✓	✓	✓	✓

5. Explain causes and effects of the Great Depression on the people of the United States.

Examples: economic failure, loss of farms, rising unemployment, building of Hoovervilles

- Identifying patterns of migration during the Great Depression
- Locating on a map the area of the United States known as the Dust Bowl
- Describing the importance of the election of Franklin D. Roosevelt as President of the United States, including the New Deal alphabet agencies
- Locating on a map the river systems utilized by the Tennessee Valley Authority (TVA)

E	G	H	CG
	✓	✓	✓

6. Identify causes and consequences of World War II and reasons for the United States' entry into the war.

- Locating on a map Allied countries and Axis Powers
- Locating on a map key engagements of World War II, including Pearl Harbor; the battles of Normandy, Stalingrad, and Midway; and the Battle of the Bulge
- Identifying key figures of World War II, including Franklin D. Roosevelt, Sir Winston Churchill, Harry S. Truman, Joseph Stalin, Adolf Hitler, Benito Mussolini, Michinomiya Hirohito, and Hideki Tōjō
- Describing the development of and the decision to use the atomic bomb
- Describing human costs associated with World War II
  Examples: the Holocaust, civilian and military casualties
- Explaining the importance of the surrender of the Axis Powers ending World War II

E	G	H	CG
✓	✓	✓	✓

7. Identify changes on the American home front during World War II.
Example: rationing

- Recognizing the retooling of factories from consumer to military production
- Identifying new roles of women and African Americans in the workforce
- Describing increased demand on the Birmingham steel industry and Port of Mobile facilities
- Describing the experience of African Americans and Japanese Americans in the United States during World War II, including the Tuskegee Airmen and occupants of internment camps

E	G	H	CG
✓	✓	✓	✓

8. Describe how the United States' role in the Cold War influenced domestic and international events.

- Describing the origin and meaning of the Iron Curtain and communism
- Recognizing how the Cold War conflict manifested itself through sports
  - Examples: Olympic Games, international chess tournaments, Ping-Pong diplomacy
- Identifying strategic diplomatic initiatives that intensified the Cold War, including the policies of Harry S. Truman, Dwight D. Eisenhower, and John F. Kennedy
  - Examples: trade embargoes, Marshall Plan, arms race, Berlin blockade and airlift, Berlin Wall, mutually assured destruction, North Atlantic Treaty Organization (NATO), Warsaw Pact, Cuban missile crisis, Bay of Pigs invasion
- Identifying how Cold War tensions resulted in armed conflict
  - Examples: Korean Conflict, Vietnam War, proxy wars
- Describing the impact of the Cold War on technological innovations
  - Examples: Sputnik; space race; weapons of mass destruction; accessibility of microwave ovens, calculators, and computers
- Recognizing Alabama's role in the Cold War
  - Examples: rocket production at Redstone Arsenal, helicopter training at Fort Rucker
- Assessing effects of the end of the Cold War Era
  - Examples: policies of Mikhail Gorbachev; collapse of the Soviet Union; Ronald W. Reagan's foreign policies, including the Strategic Defense Initiative (SDI or Star Wars)

E	G	H	CG
✓		✓	✓

9. Critique major social and cultural changes in the United States since World War II.

- Identifying key persons and events of the modern Civil Rights Movement
  - Examples: persons—Martin Luther King Jr.; Rosa Parks; Fred Shuttlesworth; John Lewis
    events—*Brown versus Board of Education*, Montgomery Bus Boycott, student protests, Freedom Rides, Selma-to-Montgomery Voting Rights March, political assassinations
- Describing the changing role of women in United States' society and how it affected the family unit
  - Examples: women in the workplace, latchkey children

- Recognizing the impact of music genres and artists on United States' culture since World War II
  - Examples: genres—protest songs; Motown, rock and roll, rap, folk, and country music
    artists—Elvis Presley, the Beatles, Bob Dylan, Aretha Franklin, Hank Williams
- Identifying the impact of media, including newspapers, AM and FM radio, television, twenty-four hour sports and news programming, talk radio, and Internet social networking, on United States' culture since World War II

E	G	H	CG
✓	✓	✓	✓

10. Analyze changing economic priorities and cycles of economic expansion and contraction for their impact on society since World War II.
  - Examples: shift from manufacturing to service economy, higher standard of living, globalization, outsourcing, insourcing, "boom and bust," economic bubbles

- Identifying policies and programs that had an economic impact on society since World War II
  - Examples: Servicemen's Readjustment Act of 1944 (G. I. Bill of Rights), Medicare and Medicaid, Head Start programs, space exploration, Children's Health Insurance Program (CHIP), environmental protection issues
- Analyzing consequences of immigration for their impact on national and Alabama economies since World War II

E	G	H	CG
✓		✓	

11. Identify technological advancements on society in the United States since World War II.
  - Examples: 1950s—fashion doll, audio cassette
    1960s—action figure, artificial heart, Internet, calculator
    1970s—word processor, video game, cellular telephone
    1980s—personal computer, Doppler radar, digital cellular telephone
    1990s—World Wide Web, digital video diskette (DVD)
    2000s—digital music player, social networking technology, personal Global Positioning System (GPS) device

E	G	H	CG
✓	✓	✓	✓

12. Evaluate significant political issues and policies of presidential administrations since World War II.

- Identifying domestic policies that shaped the United States since World War II
  - Examples: desegregation of the military, Interstate Highway System, federal funding for education, Great Society, affirmative action, Americans with Disabilities Act, welfare reform, Patriot Act, No Child Left Behind Act
- Recognizing domestic issues that shaped the United States since World War II
  - Examples: McCarthyism, Watergate scandal, political assassinations, health care, impeachment, Hurricane Katrina
- Identifying issues of foreign affairs that shaped the United States since World War II
  - Examples: Vietnam Conflict, Richard Nixon's China initiative, Jimmy Carter's human rights initiative, emergence of China and India as economic powers
- Explaining how conflict in the Middle East impacted life in the United States since World War II
  - Examples: oil embargoes; Iranian hostage situation; Camp David Accords; Persian Gulf Wars; 1993 World Trade Center bombing; terrorist attacks on September 11, 2001; War on Terrorism; homeland security
- Recognizing the election of Barack Obama as the culmination of a movement in the United States to realize equal opportunity for all Americans
- Identifying the 2008 presidential election as a watershed in the use of new technology and mass participation in the electoral process

SEVENTH – EIGHTH GRADE
OVERVIEW

In seventh grade, geography and civics are each taught as a one-semester course. In the one-semester seventh-grade geography course, students study world geography using a thematic approach. They focus on Earth as the subject matter that involves people, places, and environments and learn that geography seeks meaning in spatial patterns and processes that involve asking questions regarding where and why. Teachers select particular continents, countries, and regions to provide the geographic framework for classroom instruction and investigation.

The one-semester seventh-grade civics course addresses content regarding democracy; liberty; law; personal economics; and local, state, and national civic responsibility. This course provides students with information about how society works, including the role students play in the community and in the world.

The geographic knowledge of the world gained in Grade 7 helps eighth-grade students as they begin their study of world history. Students benefit by knowing where things are, how they got that way, and how the study of history applies to ways in which geography affected historical events. Course content incorporates the strands of economics, geography, history, and civics and government with an emphasis on the history and geography strands.

These courses emphasize the knowledge and skills necessary for developing a geographic perspective of the world and its people and events. Geography is a strong component of the content for these grades, as students are required to become knowledgeable about the spatial aspects of human existence. Students use geographic knowledge, tools, and technologies to pose and answer questions about spatial processes and to compare human and physical patterns on Earth. Real maps and mental maps are also utilized by students to answer geographic questions.

Effective teachers incorporate a variety of instructional techniques and assessment strategies into plans for student learning. The classroom environment, activities, assignments, and assessments foster the skills of acquiring information and manipulating data; developing and presenting policies, arguments, and stories; constructing new knowledge; and participating in groups. Technology, including Internet access, computer software, videos, and television programs, is used not only to provide opportunities for students to explore historical as well as geographic concepts, but also to enable students to compete in a rapidly changing world. Because understanding contemporary events and relating them to the past are essential to any social studies course, the incorporation of current events is a vital component of the social studies content for Grades 7 and 8.

SEVENTH GRADE

Geography

Geography is a diverse field of study that describes and examines spatial patterns of physical and human phenomena across Earth's surface and the processes that created them. Geography provides a spatial perspective that enables students to answer questions about the world around them, including why things are located where they are. In this one-semester geography course, students increase their knowledge about the physical and human nature of the world and about relationships between people and their environments. Interwoven throughout the course are the three interrelated components of geography. These components include Earth as a physical object, a physical environment, and a place in which humans live; geographic skills; and spatial and ecological perspectives. Students also study geography in the context of economics, civics and politics, history, and culture. Content standards follow a thematic approach based on the essential elements of the National Geographic Society's *Geography for Life: National Geography Standards,* which includes the world in spatial terms, places and regions, physical systems, human systems, environment and society, and uses of geography.

The classroom instructional environment should provide students with numerous opportunities to participate in learning activities that incorporate a variety of formats and learning tools, including role-playing, debate, and hands-on activities as well as the use of maps, globes, satellite images, and skills to interpret graphic organizers, text, charts, and graphs. Students should have multiple opportunities for listening, reading, and writing activities as well as group and individual projects. Culminating projects ensure that students apply geographic knowledge and skills to understand local, national, and international issues.

Students will:

E	G	H	CG
✓	✓		✓

1. Describe the world in spatial terms using maps and other geographic representations, tools, and technologies.
    - Explaining the use of map essentials, including type, projections, scale, legend, distance, direction, grid, and symbols
        Examples: type—reference, thematic, planimetric, topographic, globe and map projections, aerial photographs, satellite images
        distance—fractional, graphic, and verbal scales
        direction—lines of latitude and longitude, cardinal and intermediate directions
    - Identifying geospatial technologies to acquire, process, and report information from a spatial perspective
        Examples: Google Earth, Global Positioning System (GPS), geographic information system (GIS), satellite-remote sensing, aerial photography
    - Utilizing maps to explain relationships and environments among people and places, including trade patterns, governmental alliances, and immigration patterns

- Applying mental maps to answer geographic questions, including how experiences and cultures influence perceptions and decisions
- Categorizing the geographic organization of people, places, and environments using spatial models
  - Examples: urban land-use patterns, distribution and linkages of cities, migration patterns, population-density patterns, spread of culture traits, spread of contagious diseases through a population

E	G	H	CG
✓	✓		

2. Determine how regions are used to describe the organization of Earth's surface.
   - Identifying physical and human features used as criteria for mapping formal, functional, and perceptual regions
     - Examples: physical—landforms, climates, bodies of water, resources
       human—language, religion, culture, economy, government
   - Interpreting processes and reasons for regional change, including land use, urban growth, population, natural disasters, and trade
   - Analyzing interactions among regions to show transnational relationships, including the flow of commodities and Internet connectivity
     - Examples: winter produce to Alabama from Chile and California, poultry from Alabama to other countries 
   - Comparing how culture and experience influence individual perceptions of places and regions
     - Examples: cultural influences—language, religion, ethnicity, iconography, symbology, stereotypes
   - Explaining globalization and its impact on people in all regions of the world
     - Examples: quality and sustainability of life, international cooperation

E	G	H	CG
✓	✓		

3. Compare geographic patterns in the environment that result from processes within the atmosphere, biosphere, lithosphere, and hydrosphere of Earth's physical systems.
   - Comparing Earth-Sun relationships regarding seasons, fall hurricanes, monsoon rainfalls, and tornadoes
   - Explaining processes that shape the physical environment, including long-range effects of extreme weather phenomena
     - Examples: processes—plate tectonics, glaciers, ocean and atmospheric circulation, El Niño
       long-range effects—erosion on agriculture, typhoons on coastal ecosystems
   - Describing characteristics and physical processes that influence the spatial distribution of ecosystems and biomes on Earth's surface

- Comparing how ecosystems vary from place to place and over time
  Examples: place to place—differences in soil, climate, and topography
  over time—alteration or destruction of natural habitats due to effects of floods and forest fires, reduction of species diversity due to loss of natural habitats, reduction of wetlands due to replacement by farms, reduction of forest and farmland due to replacement by housing developments, reduction of previously cleared land due to reforestation efforts
- Comparing geographic issues in different regions that result from human and natural processes
  Examples: human—increase or decrease in population, land-use change in tropical forests
  natural—hurricanes, tsunamis, tornadoes, floods

E	G	H	CG
✓	✓	✓	✓

4. Evaluate spatial patterns and the demographic structure of population on Earth's surface in terms of density, dispersion, growth and mortality rates, natural increase, and doubling time.
   Examples: spatial patterns—major population clusters
   demographic structure—age and sex distribution using population pyramids

- Predicting reasons and consequences of migration, including push and pull factors
  Examples: push—politics, war, famine
  pull—potential jobs, family

E	G	H	CG
✓	✓	✓	

5. Explain how cultural features, traits, and diffusion help define regions, including religious structures, agricultural patterns, ethnic enclaves, ethnic restaurants, and the spread of Islam.

E	G	H	CG
✓	✓	✓	✓

6. Illustrate how primary, secondary, and tertiary economic activities have specific functions and spatial patterns.
   Examples: primary—forestry, agriculture, mining
   secondary—manufacturing furniture, grinding coffee beans, assembling automobiles
   tertiary—selling furniture, selling caffé latte, selling automobiles

- Comparing one location to another for production of goods and services
  Examples: fast food restaurants in highly accessible locations, medical offices near hospitals, legal offices near courthouses, industries near major transportation routes

- Analyzing the impact of economic interdependence and globalization on places and their populations
  - Examples: seed corn produced in Iowa and planted in South America, silicon chips manufactured in California and installed in a computer made in China that is purchased in Australia
- Explaining why countries enter into global trade agreements, including the North American Free Trade Agreement (NAFTA), the Dominican Republic-Central America Free Trade Agreement (DR-CAFTA), the European Union (EU), the Mercado Común del Sur (MERCOSUR), and the Association of Southeast Asian Nations (ASEAN)

E	G	H	CG
✓	✓	✓	✓

7. Classify spatial patterns of settlement in different regions of the world, including types and sizes of settlement patterns.

   Examples: types—linear, clustered, grid
   sizes—large urban, small urban, and rural areas

- Explaining human activities that resulted in the development of settlements at particular locations due to trade, political importance, or natural resources
  - Examples: Timbuktu near caravan routes; Pittsburgh, Pennsylvania, and Birmingham, Alabama, as manufacturing centers near coal and iron ore deposits; Singapore near a major ocean transportation corridor
- Describing settlement patterns in association with the location of resources
  - Examples: fall line settlements near waterfalls used as a source of energy for mills, European industrial settlements near coal seams, spatial arrangement of towns and cities in North American Corn Belt settlements
- Describing ways in which urban areas interact and influence surrounding regions
  - Examples: daily commuters from nearby regions; communication centers that service nearby and distant locations through television, radio, newspapers, and the Internet; regional specialization in services or production

E	G	H	CG
✓	✓	✓	✓

8. Determine political, military, cultural, and economic forces that contribute to cooperation and conflict among people.

- Identifying political boundaries based on physical and human systems
  - Examples: physical—rivers as boundaries between counties
    human—streets as boundaries between local government units
- Identifying effects of cooperation among countries in controlling territories
  - Examples: Great Lakes environmental management by United States and Canada, United Nations (UN) Heritage sites and host countries, Antarctic Treaty on scientific research
- Describing the eruption of territorial conflicts over borders, resources, land use, and ethnic and nationalistic identity
  - Examples: India and Pakistan conflict over Jammu and Kashmir, the West Bank, the Sudan, Somalia piracy, ocean fishing and mineral rights, local land-use disputes

E	G	H	CG
✓	✓	✓	

9. Explain how human actions modify the physical environment within and between places, including how human-induced changes affect the environment.

Examples: within—construction of dams and downstream water availability for human consumption, agriculture, and aquatic ecosystems
between—urban heat islands and global climate change, desertification and land degradation, pollution and ozone depletion

E	G	H	CG
✓	✓		✓

10. Explain how human systems develop in response to physical environmental conditions.

Example: farming practices in different regions, including slash-and-burn agriculture, terrace farming, and center-pivot irrigation

- Identifying types, locations, and characteristics of natural hazards, including earthquakes, hurricanes, tornadoes, and mudslides
- Differentiating ways people prepare for and respond to natural hazards, including building storm shelters, conducting fire and tornado drills, and establishing building codes for construction

E	G	H	CG
✓	✓	✓	

11. Explain the cultural concept of natural resources and changes in spatial distribution, quantity, and quality through time and by location.

- Evaluating various cultural viewpoints regarding the use or value of natural resources
  - Examples: salt and gold as valued commodities, petroleum product use and the invention of the internal combustion engine
- Identifying issues regarding depletion of nonrenewable resources and the sustainability of renewable resources
  - Examples: ocean shelf and Arctic exploration for petroleum, hybrid engines in cars, wind-powered generators, solar collection panels

E	G	H	CG
✓	✓	✓	✓

12. Explain ways geographic features and environmental issues have influenced historical events.

Examples: geographic features—fall line, Cumberland Gap, Westward Expansion in the United States, weather conditions at Valley Forge and the outcome of the American Revolution, role of ocean currents and winds during exploration by Christopher Columbus

environmental issues—boundary disputes, ownership of ocean resources, revitalization of downtown areas

SEVENTH GRADE

Civics

The goal of education in civics and government is informed, responsible participation in political life by competent citizens committed to the fundamental values and principles of the constitutional democracy that established the republic of the United States of America. These standards incorporate the strands of economics, geography, history, and civics and government with an obvious emphasis on political ideology. They address representative democracy, individual rights and freedoms, law, personal finance, and civic responsibilities.

Students at this age should be able to assume more responsibilities in their family, school, and community roles. To address this concern, students are given opportunities to apply civic knowledge to problem-based learning situations in the community and to other activities that foster increased personal responsibility.

The classroom instructional environment should provide students with numerous opportunities to participate in learning activities that incorporate a variety of formats and learning tools, including role playing, debate, and hands-on activities as well as the use of graphic organizers, texts, charts, and graphs. Students should have multiple opportunities for listening, reading, and writing activities as well as group and individual projects. Culminating projects ensure that students apply their civic knowledge and skills to understand local, national, and international issues.

Students will:

E	G	H	CG
		✓	✓

1. Compare influences of ancient Greece, the Roman Republic, the Judeo-Christian tradition, the Magna Carta, federalism, the Mayflower Compact, the English Bill of Rights, the House of Burgesses, and the Petition of Rights on the government of the United States.

E	G	H	CG
		✓	✓

2. Explain essential characteristics of the political system of the United States, including the organization and function of political parties and the process of selecting political leaders.
    - Describing the influence of John Locke, Thomas Hobbes, Jean-Jacques Rousseau, Thomas Paine, Niccolò Machiavelli, Charles de Montesquieu, and François-Marie Arouet (Voltaire) on the political system of the United States

E	G	H	CG
		✓	✓

3. Compare the government of the United States with other governmental systems, including monarchy, limited monarchy, oligarchy, dictatorship, theocracy, and pure democracy.

E	G	H	CG
✓		✓	✓

4. Describe structures of state and local governments in the United States, including major Alabama offices and officeholders.
   - Describing how local and state governments are funded

E	G	H	CG
	✓	✓	✓

5. Compare duties and functions of members of the legislative, executive, and judicial branches of Alabama's local and state governments and of the national government.
   - Locating political and geographic districts of the legislative, executive, and judicial branches of Alabama's local and state governments and of the national government
   - Describing the organization and jurisdiction of courts at the local, state, and national levels within the judicial system of the United States
   - Explaining concepts of separation of powers and checks and balances among the three branches of state and national governments

E	G	H	CG
		✓	✓

6. Explain the importance of juvenile, adult, civil, and criminal laws within the judicial system of the United States.
   - Explaining rights of citizens as guaranteed by the Bill of Rights under the Constitution of the United States
   - Explaining what is meant by the term *rule of law*
   - Justifying consequences of committing a civil or criminal offense
   - Contrasting juvenile and adult laws at local, state, and federal levels

E	G	H	CG
✓	✓	✓	

7. Determine how people organize economic systems to address basic economic questions regarding which goods and services will be produced, how they will be distributed, and who will consume them.
   - Using economic concepts to explain historical and current developments and issues in global, national, state, or local contexts
     Example: increase in oil prices resulting from supply and demand
   - Analyzing agriculture, tourism, and urban growth in Alabama for their impact on economic development

E	G	H	CG
✓		✓	✓

8. Appraise the relationship between the consumer and the marketplace in the economy of the United States regarding scarcity, opportunity cost, trade-off decision making, and the stock market.
   - Describing effects of government policies on the free market
   - Identifying laws protecting rights of consumers and avenues of recourse when those rights are violated
   - Comparing economic systems, including market, command, and traditional

E	G	H	CG
✓			✓

9. Apply principles of money management to the preparation of a personal budget that addresses housing, transportation, food, clothing, medical expenses, insurance, checking and savings accounts, loans, investments, credit, and comparison shopping.

E	G	H	CG
		✓	✓

10. Describe individual and civic responsibilities of citizens of the United States.

Examples: individual—respect for rights of others, self-discipline, negotiation, compromise, fiscal responsibility
civic—respect for law, patriotism, participation in political process, fiscal responsibility

- Differentiating rights, privileges, duties, and responsibilities between citizens and noncitizens
- Explaining how United States' citizenship is acquired by immigrants
- Explaining character traits that are beneficial to individuals and society
  Examples: honesty, courage, compassion, civility, loyalty

E	G	H	CG
✓		✓	✓

11. Compare changes in social and economic conditions in the United States during the twentieth and twenty-first centuries.

Examples: social—family values, peer pressure, education opportunities, women in the workplace
economic—career opportunities, disposable income, consumption of goods and services

- Determining benefits of Alabama's role in world trade
- Tracing the political and social impact of the modern Civil Rights Movement from 1954 to the present, including Alabama's role

E	G	H	CG
✓	✓	✓	✓

12. Describe how the United States can be improved by individual and group participation in civic and community activities.

- Identifying options for civic and community action
  Examples: investigating the feasibility of a specific solution to a traffic problem, developing a plan for construction of a subdivision, using maps to make and justify decisions about best locations for public facilities
- Determining ways to participate in the political process
  Examples: voting, running for office, serving on a jury, writing letters, being involved in political parties and political campaigns

E	G	H	CG
			✓

13. Identify contemporary American issues since 2001, including the establishment of the United States Department of Homeland Security, the enactment of the Patriot Act of 2001, and the impact of media analysis.

EIGHTH GRADE

World History to 1500

Students in the eighth grade can be described as curious and independent learners, discovering who they are and determining their place in the world. As they begin to assert independence from adults and become more reliant on peers, they continue to need a great amount of guidance. Through instruction that includes various media and first-hand experiences, students become more aware of events on a global scale and learn how these events affect them.

The study of world history in Grade 8 addresses the time period from prehistoric man to the 1500s. Content standards for this grade incorporate the strands of economics, geography, history, and political science, with an emphasis on the history and geography strands. Course content focuses on the migrations of early peoples, the rise of civilizations, the establishment of governments and religions, the growth of economic systems, and ways in which these events shaped Europe, Asia, Africa, and the Americas. Unique to this course are experiences that provide for the study of the how human beings view themselves over time.

To address the independent and curious nature of eighth graders, instruction is designed to actively involve students in critical thinking and the exchange of ideas, including critical evaluation, interpretation, reasoning, and deduction. Instruction of this nature can best be accomplished through the use of electronic media such as the Internet, videos, and television as well as by participation in small-group and individual activities.

Abbreviated terms used in Grade 8 content standards include *A.D.* (abbreviation of *anno Domini*, Latin for "in the year of our Lord") and *B.C.* ("before Christ"). These designations are used to label years on the Gregorian calendar. The terms *C.E.* (meaning "in the Common Era") and *B.C.E.* (meaning "before the Common Era") are beginning to be utilized by some schools of theology as well as appear in some publications such as state and national assessments and national history standards. The use of the abbreviated terms of *C.E.* and *B.C.E.*, also based on the Gregorian calendar, does not in any way, diminish or negate the importance of the terms *A.D.* and *B.C.*

Students will:

E	G	H	CG
	✓	✓	

1. Explain how artifacts and other archaeological findings provide evidence of the nature and movement of prehistoric groups of people.

   Examples: cave paintings, Ice Man, Lucy, fossils, pottery

   - Identifying the founding of Rome as the basis of the calendar established by Julius Caesar and used in early Western civilization for over a thousand years
   - Identifying the birth of Christ as the basis of the Gregorian calendar used in the United States since its beginning and in most countries of the world today, signified by *B.C.* and *A.D.*
   - Using vocabulary terms other than *B.C.* and *A.D.* to describe time
     Examples: *B.C.E.*, *C.E.*
   - Identifying terms used to describe characteristics of early societies and family structures
     Examples: *monogamous*, *polygamous*, *nomadic*

E	G	H	CG
✓	✓	✓	✓

2. Analyze characteristics of early civilizations in respect to technology, division of labor, government, calendar, and writings.
   - Comparing significant features of civilizations that developed in the Tigris-Euphrates, Nile, Indus, and Huang He River Valleys
     Examples: natural environment, urban development, social hierarchy, written language, ethical and religious belief systems, government and military institutions, economic systems
   - Identifying on a map locations of cultural hearths of early civilizations
     Examples: Mesopotamia, Nile River Valley

E	G	H	CG
		✓	

3. Compare the development of early world religions and philosophies and their key tenets.

   Examples: Judaism, Hinduism, Confucianism, Taoism, Christianity, Buddhism, Islam, Greek and Roman gods

   - Identifying cultural contributions of early world religions and philosophies
     Examples: Judaism, Hinduism, Confucianism, Taoism, Christianity, Buddhism, Islam, Greek and Roman gods, Phoenicians

E	G	H	CG
		✓	✓

4. Identify cultural contributions of Classical Greece, including politics, intellectual life, arts, literature, architecture, and science.

E	G	H	CG
✓	✓	✓	✓

5. Describe the role of Alexander the Great in the Hellenistic world.
   Examples: serving as political and military leader, encouraging cultural interaction, allowing religious diversity

- Defining boundaries of Alexander the Great's empire and its economic impact
- Identifying reasons for the separation of Alexander the Great's empire into successor kingdoms
- Evaluating major contributions of Hellenistic art, philosophy, science, and political thought

E	G	H	CG
✓	✓	✓	✓

6. Trace the expansion of the Roman Republic and its transformation into an empire, including key geographic, political, and economic elements.
   Examples: expansion—illustrating the spread of Roman influence with charts, graphs, timelines, or maps
   transformation—noting reforms of Augustus, listing effects of Pax Romana

- Interpreting spatial distributions and patterns of the Roman Republic using geographic tools and technologies

E	G	H	CG
✓	✓	✓	✓

7. Describe the widespread impact of the Roman Empire.
   Example: spread of Roman law and political theory, citizenship and slavery, architecture and engineering, religions, sculptures and paintings, literature, and the Latin language

- Tracing important aspects of the diffusion of Christianity, including its relationship to Judaism, missionary impulse, organizational development, transition from persecution to acceptance in the Roman Empire, and church doctrine
- Explaining the role of economics, societal changes, Christianity, political and military problems, external factors, and the size and diversity of the Roman Empire in its decline and fall

E	G	H	CG
	✓	✓	

8. Describe the development of a classical civilization in India and China.
   Examples: India—religions, arts and literature, philosophies, empires, caste system
   China—religions, politics, centrality of the family, Zhou and Han Dynasties, inventions, economic impact of the Silk Road and European trade, dynastic transitions

- Identifying the effect of monsoons on India
- Identifying landforms and climate regions of China
  Example: marking landforms and climate regions of China on a map

E	G	H	CG
		✓	✓

9. Describe the rise of the Byzantine Empire, its institutions, and its legacy, including the influence of the Emperors Constantine and Justinian and the effect of the Byzantine Empire on art, religion, architecture, and law.

- Identifying factors leading to the establishment of the Eastern Orthodox Church

E	G	H	CG
✓	✓	✓	✓

10. Trace the development of the early Russian state and the expansion of its trade systems.

Examples: rise of Kiev and Muscovy, conversion to Orthodox Christianity, movement of peoples of Central Asia, Mongol conquest, rise of czars

E	G	H	CG
	✓	✓	✓

11. Describe early Islamic civilizations, including the development of religious, social, and political systems.

- Tracing the spread of Islamic ideas through invasion and conquest throughout the Middle East, northern Africa, and western Europe

E	G	H	CG
✓	✓	✓	✓

12. Describe China's influence on culture, politics, and economics in Japan, Korea, and Southeast Asia.

Examples: culture—describing the influence on art, architecture, language, and religion
politics—describing changes in civil service
economics—introducing patterns of trade

E	G	H	CG
✓	✓	✓	✓

13. Compare the African civilizations of Ghana, Mali, and Songhai to include geography, religions, slave trade, economic systems, empires, and cultures.

- Tracing the spread of language, religion, and customs from one African civilization to another
- Illustrating the impact of trade among Ghana, Mali, and Songhai
  Examples: using map symbols, interpreting distribution maps, creating a timeline

E	G	H	CG
✓	✓	✓	✓

14. Describe key aspects of pre-Columbian cultures in the Americas including the Olmecs, Mayas, Aztecs, Incas, and North American tribes.

Examples: pyramids, wars among pre-Columbian people, religious rituals, irrigation, Iroquois Confederacy

- Locating on a map sites of pre-Columbian cultures
  Examples: Maya, Inca, Inuit, Creek, Cherokee

E	G	H	CG
✓		✓	✓

15. Describe military and governmental events that shaped Europe in the early Middle Ages (600-1000 A.D.).

Examples: invasions, military leaders

- Describing the role of the early medieval church
- Describing the impact of new agricultural methods on manorialism and feudalism

E	G	H	CG
✓	✓	✓	✓

16. Describe major cultural changes in Western Europe in the High Middle Ages (1000-1300 A.D.).

Examples: the Church, scholasticism, the Crusades

- Describing changing roles of church and governmental leadership
- Comparing political developments in France, England, and the Holy Roman Empire, including the signing of the Magna Carta
- Describing the growth of trade and towns resulting in the rise of the middle class

E	G	H	CG
✓		✓	✓

17. Explain how events and conditions fostered political and economic changes in the late Middle Ages and led to the origins of the Renaissance.

Examples: the Crusades, Hundred Years' War, Black Death, rise of the middle class, commercial prosperity

- Identifying changes in the arts, architecture, literature, and science in the late Middle Ages (1300-1400 A.D.)

NINTH – TWELFTH GRADE
OVERVIEW

Ninth- through twelfth-grade students are sophisticated learners who are developmentally capable of abstract reasoning, critical thinking, and creative problem solving. At the high school level, a comprehensive curriculum of fundamental social studies content builds on prior knowledge gained in earlier grades to challenge students to be knowledgeable and engaged citizens. The four strands of economics, geography, history, and civics and government are interwoven into the Grades 9-12 social studies program to help students further develop the essential base of knowledge and critical-thinking skills required for responsible civic participation at local, state, and national levels. All social studies content at the high school level is aligned with standards addressed by national social studies organizations.

All Alabama high school students must earn four credits in social studies for graduation. Requirements stipulate that students must successfully complete the one-credit World History: 1500 to the Present course, the one-credit United States History I: Beginnings to the Industrial Revolution course, the one-credit United States History II: The Industrial Revolution to the Present course, the half-credit United States Government course, and the half-credit Economics course. These required courses contain the fundamental content that must be learned in order for students to become responsible citizens and active participants in local, state, national, and global societies. In addition to the courses required for Grades 9-12, local school systems may offer elective social studies courses. These may include, but are not limited to, a study of psychology, sociology, contemporary world issues and civic engagement, and human geography. Content for these four elective courses, designed to enrich development of civic responsibility, is included in Appendix A of this document.

High school students learn best in an effective instructional environment that provides opportunities for authentic learning through analyzing and debating complex issues, conducting social studies research, participating in civic affairs, and developing historical-thinking skills. Students also benefit from differentiated instruction that includes student presentations, use of primary sources, written analyses of information, collaborative group activities, simulations, and interactions with electronic and print media.

NINTH GRADE

World History: 1500 to the Present

In the ninth grade, students develop strong personal opinions, beliefs, or positions on current issues and events of the past. Teachers capitalize on this developmental stage to stress the importance of grounding positions and opinions in knowledge. As students transition from middle school to high school, they can understand and use complex concepts such as adaptation, assimilation, acculturation, diffusion, and historical knowledge and inquiry to study the past, including its relationship to the present and its impact on the future. Students in Grade 9 are able to think critically and logically about personal, national, and global issues. This enables them to apply and utilize their knowledge and curiosity to develop informed opinions about issues such as the quest for peace, human rights, trade, and global ecology.

At this grade level, students continue the study of world history from 1500 to the present. Through historical inquiry, students gain an understanding and appreciation of history as a story of people much like themselves, and they become increasingly able to understand global interdependence and connections among world societies. The course directs students to think critically about the forces that combined to shape the world today. It allows them to analyze development and changes in the European, Asian, African, and American civilizations and ways in which interactions of these cultures have influenced the formation of today's world. Knowledge of other cultures enables students to develop a better appreciation for the unique American heritage of liberty. Geographic concepts increase learners' comprehension of global connections as they expand their knowledge and understanding of a wide variety of cultures, both historical and contemporary.

Ninth-grade students continue to have preferred learning styles. Therefore, the use of a variety of instructional strategies and techniques is effective in helping students gain the knowledge and skills this course requires. Well-equipped classrooms include an array of visual stimuli such as charts, globes, graphs, and maps whereby multiple opportunities are provided for students to participate in instructional activities that include the use of electronic and print media and small-group interaction.

Students will:

E	G	H	CG
✓	✓	✓	

1. Describe developments in Italy and Northern Europe during the Renaissance period with respect to humanism, arts and literature, intellectual development, increased trade, and advances in technology.

E	G	H	CG
✓	✓	✓	✓

2. Describe the role of mercantilism and imperialism in European exploration and colonization in the sixteenth century, including the Columbian Exchange.
    - Describing the impact of the Commercial Revolution on European society
    - Identifying major ocean currents, wind patterns, landforms, and climates affecting European exploration
        Example: marking ocean currents and wind patterns on a map

E	G	H	CG
✓		✓	✓

3. Explain causes of the Reformation and its impact, including tensions between religious and secular authorities, reformers and doctrines, the Counter-Reformation, the English Reformation, and wars of religion.

E	G	H	CG
✓	✓	✓	

4. Explain the relationship between physical geography and cultural development in India, Africa, Japan, and China in the early Global Age, including trade and travel, natural resources, and movement and isolation of peoples and ideas.

- Depicting the general location of, size of, and distance between regions in the early Global Age
  Example: drawing sketch maps

E	G	H	CG
✓		✓	✓

5. Describe the rise of absolutism and constitutionalism and their impact on European nations.

- Contrasting philosophies of Thomas Hobbes and John Locke and the belief in the divine right of kings
- Comparing absolutism as it developed in France, Russia, and Prussia, including the reigns of Louis XIV, Peter the Great, and Frederick the Great
- Identifying major provisions of the Petition of Rights and the English Bill of Rights

E	G	H	CG
		✓	✓

6. Identify significant ideas and achievements of scientists and philosophers of the Scientific Revolution and the Age of Enlightenment.

Examples: Scientific Revolution—astronomical theories of Nicolaus Copernicus and Galileo Galilei, Sir Isaac Newton's law of gravity
Age of Enlightenment—philosophies of Charles de Montesquieu, François-Marie Arouet (Voltaire), and Jean-Jacques Rousseau

E	G	H	CG
	✓	✓	✓

7. Describe the impact of the French Revolution on Europe, including political evolution, social evolution, and diffusion of nationalism and liberalism.

- Identifying causes of the French Revolution
- Describing the influence of the American Revolution on the French Revolution
- Identifying objectives of different groups participating in the French Revolution
- Describing the role of Napoléon Bonaparte as an empire builder

E	G	H	CG
	✓	✓	✓

8. Compare revolutions in Latin America and the Caribbean, including Haiti, Colombia, Venezuela, Argentina, Chile, and Mexico.

- Identifying the location of countries in Latin America

E	G	H	CG
✓		✓	✓

9. Describe the impact of technological inventions, conditions of labor, and the economic theories of capitalism, liberalism, socialism, and Marxism during the Industrial Revolution on the economies, societies, and politics of Europe.

- Identifying important inventors in Europe during the Industrial Revolution
- Comparing the Industrial Revolution in England to later revolutions in Europe

E	G	H	CG
✓	✓	✓	✓

10. Describe the influence of urbanization on the Western World during the nineteenth century.

Examples: interaction with the environment, provisions for public health, increased opportunities for upward mobility, changes in social stratification, development of Romanticism and Realism, development of Impressionism and Cubism

- Describing the search for political democracy and social justice in the Western World

  Examples: European Revolution of 1848, slavery and emancipation in the United States, emancipation of serfs in Russia, universal manhood suffrage, women's suffrage

E	G	H	CG
✓	✓	✓	✓

11. Describe the impact of European nationalism and Western imperialism as forces of global transformation, including the unification of Italy and Germany, the rise of Japan's power in East Asia, economic roots of imperialism, imperialist ideology, colonialism and national rivalries, and United States' imperialism.

- Describing resistance to European imperialism in Africa, Japan, and China

E	G	H	CG
✓	✓	✓	✓

12. Explain causes and consequences of World War I, including imperialism, militarism, nationalism, and the alliance system.

- Describing the rise of Communism in Russia during World War I
  Examples: return of Vladimir Lenin, rise of the Bolsheviks
- Describing military technology used during World War I
- Identifying problems created by the Treaty of Versailles of 1919
  Examples: Germany's reparations and war guilt, international controversy over the League of Nations
- Identifying alliances during World War I and boundary changes after World War I

E	G	H	CG
✓	✓	✓	✓

13. Explain challenges of the post-World War I period.

Examples: 1920s cultural disillusionment, colonial rebellion and turmoil in Ireland and India, attempts to achieve political stability in Europe

- Identifying causes of the Great Depression
- Characterizing the global impact of the Great Depression

E	G	H	CG
✓	✓	✓	✓

14. Describe causes and consequences of World War II.

Examples: causes—unanswered aggression, Axis goal of world conquest
consequences—changes in political boundaries; Allied goals; lasting issues such as the Holocaust, Atomic Age, and Nuremberg Trials

- Explaining the rise of militarist and totalitarian states in Italy, Germany, the Soviet Union, and Japan
- Identifying turning points of World War II in the European and Pacific Theaters
- Depicting geographic locations of world events between 1939 and 1945
- Identifying on a map changes in national borders as a result of World War II

E	G	H	CG
✓	✓	✓	✓

15. Describe post-World War II realignment and reconstruction in Europe, Asia, and Latin America, including the end of colonial empires.

Examples: reconstruction of Japan; nationalism in India, Pakistan, Indonesia, and Africa; Chinese Communist Revolution; creation of the Jewish state of Israel; Cuban Revolution; Central American conflicts

- Explaining origins of the Cold War
  Examples: Yalta and Potsdam Conferences, "Iron Curtain," Truman Doctrine, Marshall Plan, United Nations, North Atlantic Treaty Organization (NATO), Warsaw Pact
- Tracing the progression of the Cold War
  Examples: nuclear weapons, European power struggles, Korean War, Berlin Wall, Cuban Missile Crisis, Vietnam War

E	G	H	CG
✓	✓	✓	✓

16. Describe the role of nationalism, militarism, and civil war in today's world, including the use of terrorism and modern weapons at the close of the twentieth and the beginning of the twenty-first centuries.

- Describing the collapse of the Soviet Empire and Russia's struggle for democracy, free markets, and economic recovery and the roles of Mikhail Gorbachev, Ronald Reagan, and Boris Yeltsin
  Examples: economic failures, demands for national and human rights, resistance from Eastern Europe, reunification of Germany
- Describing effects of internal conflict, nationalism, and enmity in South Africa, Northern Ireland, Chile, the Middle East, Somalia and Rwanda, Cambodia, and the Balkans
- Characterizing the War on Terrorism, including the significance of the Iran Hostage Crisis; the Gulf Wars; the September 11, 2001, terrorist attacks; and the Israeli-Palestinian conflict

- Depicting geographic locations of major world events from 1945 to the present

E	G	H	CG
✓	✓	✓	✓

17. Describe emerging democracies from the late twentieth century to the present.
    - Discussing problems and opportunities involving science, technology, and the environment in the late twentieth century
      Examples: genetic engineering, space exploration
    - Identifying problems involving civil liberties and human rights from 1945 to the present and ways in which these problems have been addressed
    - Relating economic changes to social changes in countries adopting democratic forms of government

TENTH GRADE

United States History I: Beginnings to the Industrial Revolution

The study of the early history of the United States in Grade 10 forms the foundation for understanding the development and principles of modern American society. Beginning with the earliest explorations of American continents, this course offers a chronological study of major events, issues, movements, individuals, and diverse groups of people in the United States from a national and an Alabama perspective. In addition to gaining essential knowledge regarding this period of our nation's past, students develop historical-thinking skills, which include chronological thinking, historical comprehension, historical analysis and interpretation, historical research, and analysis and decision making. Content standards build on foundational knowledge and skills learned in the study of United States history in Grade 5 and world history in Grade 8. In addition, content rigor is designed to be developmentally appropriate in order to prepare students for increasingly challenging courses at the high school level.

Students in Grade 10 benefit from a classroom environment that provides activities to facilitate historical inquiry. Teachers challenge students with a variety of instructional methods to enhance the development of critical-thinking skills. Methods include analysis of historical documents, map-reading activities, and the use of current technologies. Students are encouraged to explore historical topics and begin thinking like historians while studying key events, people, and ideas in this period of American history.

Process skills are an important part of the content of this course. Students are able to understand the importance of learning history and have a deeper understanding of history by using these skills. These process skills, located in Appendix B of this document, are incorporated into this course and are referenced in brackets following each content standard.

Students will:

E	G	H	CG
✓	✓	✓	✓

1. Compare effects of economic, geographic, social, and political conditions before and after European explorations of the fifteenth through seventeenth centuries on Europeans, American colonists, Africans, and indigenous Americans. [A.1.a., A.1.b., A. 1.d., A.1.g., A.1.i.]
    - Describing the influence of the Crusades, Renaissance, and Reformation on European exploration
    - Comparing European motives for establishing colonies, including mercantilism, religious persecution, poverty, oppression, and new opportunities
    - Analyzing the course of the Columbian Exchange for its impact on the global economy
    - Explaining triangular trade and the development of slavery in the colonies

E	G	H	CG
✓	✓	✓	✓

2. Compare regional differences among early New England, Middle, and Southern colonies regarding economics, geography, culture, government, and American Indian relations. [A.1.a., A.1.b., A.1.d., A.1.g., A.1.i.]

- Explaining the role of essential documents in the establishment of colonial governments, including the Magna Carta, the English Bill of Rights, and the Mayflower Compact
- Explaining the significance of the House of Burgesses and New England town meetings in colonial politics
- Describing the impact of the Great Awakening on colonial society

E	G	H	CG
✓	✓	✓	✓

3. Trace the chronology of events leading to the American Revolution, including the French and Indian War, passage of the Stamp Act, the Boston Tea Party, the Boston Massacre, passage of the Intolerable Acts, the Battles of Lexington and Concord, the publication of *Common Sense*, and the signing of the Declaration of Independence. [A.1.a., A.1.b., A.1.d., A.1.g., A.1.i.]

- Explaining the role of key revolutionary leaders, including George Washington; John Adams; Thomas Jefferson; Patrick Henry; Samuel Adams; Paul Revere; Crispus Attucks; and Gilbert du Motier, Marquis de Lafayette
- Explaining the significance of revolutionary battles, including Bunker Hill, Trenton, Saratoga, and Yorktown
- Summarizing major ideas of the Declaration of Independence, including the theories of John Locke, Charles de Montesquieu, and Jean-Jacques Rousseau
- Comparing perspectives of differing groups in society and their roles in the American Revolution, including men, women, white settlers, free and enslaved African Americans, and American Indians
- Describing how provisions of the Treaty of Paris of 1783 affected relations of the United States with European nations and American Indians

E	G	H	CG
✓		✓	✓

4. Describe the political system of the United States based on the Constitution of the United States. [A.1.a., A.1.b., A.1.d., A.1.g., A.1.i.]

- Interpreting the Preamble to the Constitution of the United States; separation of powers; federal system; elastic clause; the Bill of Rights; and the Thirteenth, Fourteenth, Fifteenth, and Nineteenth Amendments as key elements of the Constitution of the United States
- Describing inadequacies of the Articles of Confederation
- Distinguishing personalities, issues, ideologies, and compromises related to the Constitutional Convention and the ratification of the Constitution of the United States, including the role of the Federalist papers
- Identifying factors leading to the development and establishment of political parties, including Alexander Hamilton's economic policies, conflicting views of Thomas Jefferson and Alexander Hamilton, George Washington's Farewell Address, and the election of 1800

E	G	H	CG
		✓	✓

5. Explain key cases that helped shape the United States Supreme Court, including *Marbury versus Madison, McCulloch versus Maryland,* and *Cherokee Nation versus Georgia.*
[A.1.a., A.1.b., A.1.d., A.1.g., A.1.i.]
- Explaining concepts of loose and strict interpretations of the Constitution of the United States

E	G	H	CG
✓	✓	✓	✓

6. Describe relations of the United States with Britain and France from 1781 to 1823, including the XYZ Affair, the War of 1812, and the Monroe Doctrine.
[A.1.a., A.1.b., A.1.d., A.1.g, A.1.i.]
Examples: Embargo Act, Alien and Sedition Acts, impressment

E	G	H	CG
✓	✓	✓	✓

7. Describe causes, courses, and consequences of United States' expansionism prior to the Civil War, including the Treaty of Paris of 1783, the Northwest Ordinance of 1785, the Northwest Ordinance of 1787, the Louisiana Purchase, the Indian Removal Act, the Trail of Tears, Manifest Destiny, the Mexican War and Cession, Texas Independence, the acquisition of Oregon, the California Gold Rush, and the Western Trails.
[A.1.a., A.1.c., A.1.e., A.1.f., A.1.g., A.1.i., A.1.j.]

E	G	H	CG
✓	✓	✓	✓

8. Compare major events in Alabama from 1781 to 1823, including statehood as part of the expanding nation, acquisition of land, settlement, and the Creek War, to those of the developing nation.
[A.1.a., A.1.c., A.1.e., A.1.f., A.1.g., A.1.i., A.1.j.]

E	G	H	CG
✓		✓	✓

9. Explain dynamics of economic nationalism during the Era of Good Feelings, including transportation systems, Henry Clay's American System, slavery and the emergence of the plantation system, and the beginning of industrialism in the Northeast. [A.1.a., A.1.c., A.1.e., A.1.f., A.1.g., A.1.i., A.1.j.]
Examples: Waltham-Lowell system, "old" immigration, changing technologies

E	G	H	CG
✓	✓	✓	✓

10. Analyze key ideas of Jacksonian Democracy for their impact on political participation, political parties, and constitutional government.
[A.1.a., A.1.c., A.1.e., A.1.f., A.1.g., A.1.i., A.1.j.]
- Explaining the spoils system, nullification, extension of voting rights, the Indian Removal Act, and the common man ideal

E	G	H	CG
		✓	✓

11. Evaluate the impact of American social and political reform on the emergence of a distinct culture. [A.1.a., A.1.c., A.1.e., A.1.f., A.1.g., A.1.i., A.1.j.]
- Explaining the impact of the Second Great Awakening on the emergence of a national identity
- Explaining the emergence of uniquely American writers
  Examples: James Fenimore Cooper, Henry David Thoreau, Edgar Allen Poe
- Explaining the influence of Elizabeth Cady Stanton, Dorothea Lynde Dix, and Susan B. Anthony on the development of social reform movements prior to the Civil War

E	G	H	CG
	✓	✓	✓

12. Describe the founding of the first abolitionist societies by Benjamin Rush and Benjamin Franklin and the role played by later critics of slavery, including William Lloyd Garrison, Frederick Douglass, Sojourner Truth, Angelina and Sarah Grimké, Henry David Thoreau, and Charles Sumner.
[A.1.a., A.1.c., A.1.e., A.1.f., A.1.g., A.1.i., A.1.j.]

- Describing the rise of religious movements in opposition to slavery, including objections of the Quakers
- Explaining the importance of the Northwest Ordinance of 1787 that banned slavery in new states north of the Ohio River
- Describing the rise of the Underground Railroad and its leaders, including Harriet Tubman and the impact of Harriet Beecher Stowe's *Uncle Tom's Cabin,* on the abolitionist movement

E	G	H	CG
✓	✓	✓	✓

13. Summarize major legislation and court decisions from 1800 to 1861 that led to increasing sectionalism, including the Missouri Compromise of 1820, the Compromise of 1850, the Fugitive Slave Acts, the Kansas-Nebraska Act, and the Dred Scott decision. [A.1.a., A.1.c., A.1.e., A.1.f., A.1.g., A.1.i., A.1.j.]

- Describing Alabama's role in the developing sectionalism of the United States from 1819 to 1861, including participation in slavery, secession, the Indian War, and reliance on cotton 
- Analyzing the Westward Expansion from 1803 to 1861 to determine its effect on sectionalism, including the Louisiana Purchase, Texas Annexation, and the Mexican Cession
- Describing tariff debates and the nullification crisis between 1800 and 1861
- Analyzing the formation of the Republican Party for its impact on the 1860 election of Abraham Lincoln as President of the United States

E	G	H	CG
✓	✓	✓	✓

14. Describe how the Civil War influenced the United States, including the Anaconda Plan and the major battles of Bull Run, Antietam, Vicksburg, and Gettysburg and Sherman's March to the Sea.
[A.1.a., A.1.b., A.1.c., A.1.d., A.1.e., A.1.i., A.1.k.]

- Identifying key Northern and Southern Civil War personalities, including Abraham Lincoln, Jefferson Davis, Ulysses S. Grant, Robert E. Lee, Thomas Jonathan "Stonewall" Jackson, and William Tecumseh Sherman
  - Example: President Abraham Lincoln's philosophy of union, executive orders, and leadership
- Analyzing the impact of the division of the nation during the Civil War regarding resources, population distribution, and transportation
- Explaining reasons border states remained in the Union during the Civil War
- Describing nonmilitary events and life during the Civil War, including the Homestead Act, the Morrill Act, Northern draft riots, the Emancipation Proclamation, and the Gettysburg Address
- Describing the role of women in American society during the Civil War, including efforts made by Elizabeth Blackwell and Clara Barton
- Tracing Alabama's involvement in the Civil War 

E	G	H	CG
✓	✓	✓	✓

15. Compare congressional and presidential reconstruction plans, including African-American political participation.
[A.1.a., A.1.b., A.1.c., A.1.d., A.1.e., A.1.i., A.1.k.]

- Tracing economic changes in the post-Civil War period for whites and African Americans in the North and South, including the effectiveness of the Freedmen's Bureau
- Describing social restructuring of the South, including Southern military districts, the role of carpetbaggers and scalawags, the creation of the black codes, and the Ku Klux Klan
- Describing the Compromise of 1877
- Summarizing post-Civil War constitutional amendments, including the Thirteenth, Fourteenth, and Fifteenth Amendments
- Explaining causes for the impeachment of President Andrew Johnson
- Explaining the impact of the Jim Crow laws and *Plessey versus Ferguson* on the social and political structure of the New South after Reconstruction
- Analyzing political and social motives that shaped the Constitution of Alabama of 1901 to determine their long-term effect on politics and economics in Alabama 

E	G	H	CG
✓	✓	✓	✓

16. Explain the transition of the United States from an agrarian society to an industrial nation prior to World War I.
[A.1.a., A.1.b., A.1.c., A.1.d., A.1.e., A.1.h., A.1.i., A.1.k.]

- Describing the impact of Manifest Destiny on the economic and technological development of the post-Civil War West, including mining, the cattle industry, and the transcontinental railroad
- Identifying the changing role of the American farmer, including the establishment of the Granger movement and the Populist Party and agrarian rebellion over currency issues
- Evaluating the Dawes Act for its effect on tribal identity, land ownership, and assimilation of American Indians between Reconstruction and World War I
- Comparing population percentages, motives, and settlement patterns of immigrants from Asia, Africa, Europe, and Latin America, including the Chinese Exclusion Act regarding immigration quotas

ELEVENTH GRADE

United States History II: The Industrial Revolution to the Present

This course builds upon the foundation of knowledge and skills gained in the Grades 9 and 10 United States history curricula by providing a study of the modern history of the United States that expands students' understanding of the principles of American society. Beginning with America's shift to a more industrialized society, this course offers a chronological study through the twenty-first century of major events, issues, movements, individuals, and diverse groups of people in the United States from a national and an Alabama perspective. While learning essential knowledge regarding this period in America's past, students develop historical-thinking skills, including chronological thinking, historical comprehension, historical analysis and interpretation, historical research, and analysis and decision making. In addition, content rigor is developmentally appropriate and prepares students for increasingly challenging courses at the high school level.

Students in Grade 11 benefit from a classroom environment that provides activities to facilitate historical inquiry. Teachers challenge students with a variety of instructional methods to enhance development of critical-thinking skills. Methods include analysis of historical documents, map-reading activities, creative problem solving, simulations, and use of current technologies such as interactive digital video sources. Students are encouraged to explore historical topics and continue thinking like historians while studying key events, people, and ideas in this period of American history.

Process skills are an important part of the content of this course. Students are able to understand the importance of learning history and have a deeper understanding of history by using these skills. These process skills are incorporated into this course and are referenced in brackets following each content standard.

Students will:

E	G	H	CG
✓	✓	✓	✓

1. Explain the transition of the United States from an agrarian society to an industrial nation prior to World War I.
   [A.1.a., A.1.b., A.1.c., A.1.d., A.1.e., A.1.f., A.1.i., A.1.k.]
   - Interpreting the impact of change from workshop to factory on workers' lives, including the New Industrial Age from 1870 to 1900, the American Federation of Labor-Congress of Industrial Organizations (AFL-CIO), the Industrial Workers of the World (IWW), the Pullman Strike, the Haymarket Square Riot, and the impact of John D. Rockefeller, Andrew Carnegie, Samuel Gompers, Eugene V. Debs, A. Philip Randolph, and Thomas Alva Edison

E	G	H	CG
✓		✓	✓

2. Evaluate social and political origins, accomplishments, and limitations of Progressivism. [A.1.a., A.1.b., A.1.c., A.1.d., A.1.e., A.1.f., A.1.i., A.1.k.]

- Explaining the impact of the Populist Movement on the role of the federal government in American society
- Assessing the impact of muckrakers on public opinion during the Progressive movement, including Upton Sinclair, Jacob A. Riis, and Ida M. Tarbell
  Examples: women's suffrage, Ida B. Wells-Barnett, temperance movement
- Explaining national legislation affecting the Progressive movement, including the Sherman Antitrust Act and the Clayton Antitrust Act
- Determining the influence of the Niagara Movement, the National Association for the Advancement of Colored People (NAACP), Booker T. Washington, W. E. B. Du Bois, Marcus Garvey, and Carter G. Woodson on the Progressive Era
- Assessing the significance of the public education movement initiated by Horace Mann
- Comparing the presidential leadership of Theodore Roosevelt, William Howard Taft, and Woodrow Wilson in obtaining passage of measures regarding trust-busting, the Hepburn Act, the Pure Food and Drug Act, the Federal Trade Commission, the Federal Reserve Act, and conservation

E	G	H	CG
✓	✓	✓	✓

3. Explain the United States' changing role in the early twentieth century as a world power. [A.1.a., A.1.b., A.1.c., A.1.d., A.1.e., A.1.f., A.1.i., A.1.k.]

- Describing causes of the Spanish-American War, including yellow journalism, the sinking of the Battleship USS *Maine*, and economic interests in Cuba
- Identifying the role of the Rough Riders on the iconic status of President Theodore Roosevelt
- Describing consequences of the Spanish-American War, including the Treaty of Paris of 1898, insurgency in the Philippines, and territorial expansion in the Pacific and Caribbean
- Analyzing the involvement of the United States in the Hawaiian Islands for economic and imperialistic interests
- Appraising Alabama's contributions to the United States between Reconstruction and World War I, including those of William Crawford Gorgas, Joseph Wheeler, and John Tyler Morgan
- Evaluating the role of the Open Door policy and the Roosevelt Corollary on America's expanding economic and geographic interests
- Comparing the executive leadership represented by William Howard Taft's Dollar Diplomacy, Theodore Roosevelt's Big Stick Diplomacy, and Woodrow Wilson's Moral Diplomacy

E	G	H	CG
✓	✓	✓	✓

4. Describe causes, events, and the impact of military involvement of the United States in World War I, including mobilization and economic and political changes. [A.1.a., A.1.b., A.1.d., A.1.f., A.1.i., A.1.j., A.1.k.]
   - Identifying the role of militarism, alliances, imperialism, and nationalism in World War I
   - Explaining controversies over the Treaty of Versailles of 1919, Woodrow Wilson's Fourteen Points, and the League of Nations
   - Explaining how the Treaty of Versailles led to worsening economic and political conditions in Europe, including greater opportunities for the rise of fascist states in Germany, Italy, and Spain
   - Comparing short- and long-term effects of changing boundaries in pre- and post-World War I in Europe and the Middle East, leading to the creation of new countries

E	G	H	CG
✓		✓	✓

5. Evaluate the impact of social changes and the influence of key figures in the United States from World War I through the 1920s, including Prohibition, the passage of the Nineteenth Amendment, the Scopes Trial, limits on immigration, Ku Klux Klan activities, the Red Scare, the Harlem Renaissance, the Great Migration, the Jazz Age, Susan B. Anthony, Margaret Sanger, Elizabeth Cady Stanton, W. C. Handy, and Zelda Fitzgerald. 
[A.1.a., A.1.b., A.1.d., A.1.f., A.1.i., A.1.j., A.1.k.]
   - Analyzing radio, cinema, and print media for their impact on the creation of mass culture
   - Analyzing works of major American artists and writers, including F. Scott Fitzgerald, Ernest Hemingway, Langston Hughes, and H. L. Mencken, to characterize the era of the 1920s
   - Determining the relationship between technological innovations and the creation of increased leisure time

E	G	H	CG
✓		✓	✓

6. Describe social and economic conditions from the 1920s through the Great Depression regarding factors leading to a deepening crisis, including the collapse of the farming economy and the stock market crash of 1929. [A.1.a., A.1.b., A.1.d., A.1.f., A.1.i., A.1.j., A.1.k.]
   - Assessing effects of overproduction, stock market speculation, and restrictive monetary policies on the pending economic crisis
   - Describing the impact of the Smoot-Hawley Tariff Act on the global economy and the resulting worldwide depression
   - Identifying notable authors of the 1920s, including John Steinbeck, William Faulkner, and Zora Neale Hurston 
   - Analyzing the Great Depression for its impact on the American family
     Examples: Bonus Army, Hoovervilles, Dust Bowl, Dorothea Lange

E	G	H	CG
✓	✓	✓	✓

7. Explain strengths and weaknesses of the New Deal in managing problems of the Great Depression through relief, recovery, and reform programs, including the Tennessee Valley Authority (TVA), the Works Progress Administration (WPA), the Civilian Conservation Corps (CCC), and the Social Security Act. [A.1.a., A.1.b., A.1.d., A.1.f., A.1.i., A.1.j., A.1.k.]
    - Analyzing conditions created by the Dust Bowl for their impact on migration patterns during the Great Depression

E	G	H	CG
✓	✓	✓	✓

8. Summarize events leading to World War II, including the militarization of the Rhineland, Germany's seizure of Austria and Czechoslovakia, Japan's invasion of China, and the Rape of Nanjing. [A.1.b., A.1.c., A.1.d., A.1.e., A.1.g., A.1.i., A.1.k.]
    - Analyzing the impact of fascism, Nazism, and communism on growing conflicts in Europe
    - Explaining the isolationist debate as it evolved from the 1920s to the bombing of Pearl Harbor and the subsequent change in United States' foreign policy
    - Identifying roles of significant World War II leaders
        Examples: Franklin D. Roosevelt, Harry S. Truman, Dwight D. Eisenhower, George S. Patton, Sir Winston Churchill, Bernard Montgomery, Joseph Stalin, Benito Mussolini, Emperor Hirohito, Hedeki Tōjō, Erwin Rommel, Adolf Hitler
    - Evaluating the impact of the Munich Pact and the failed British policy of appeasement resulting in the invasion of Poland

E	G	H	CG
✓	✓	✓	✓

9. Describe the significance of major battles, events, and consequences of World War II campaigns, including North Africa, Midway, Normandy, Okinawa, the Battle of the Bulge, Iwo Jima, and the Yalta and Potsdam Conferences. [A.1.b., A.1.c., A.1.d., A.1.e., A.1.g., A.1.i., A.1.k.]
    - Locating on a map or globe the major battles of World War II and the extent of the Allied and Axis territorial expansion
    - Describing military strategies of World War II, including blitzkrieg, island-hopping, and amphibious landings
    - Explaining reasons for and results of dropping atomic bombs on Japan
    - Explaining events and consequences of war crimes committed during World War II, including the Holocaust, the Bataan Death March, the Nuremberg Trials, the post-war Universal Declaration of Human Rights, and the Genocide Convention

E	G	H	CG
✓	✓	✓	✓

10. Describe the impact of World War II on the lives of American citizens, including wartime economic measures, population shifts, growth in the middle class, growth of industrialization, advancements in science and technology, increased wealth in the African-American community, racial and ethnic tensions, Servicemen's Readjustment Act of 1944 (G. I. Bill of Rights), and desegregation of the military.
[A.1.b., A.1.c., A.1.d., A.1.e., A.1.g., A.1.i., A.1.k.]

- Describing Alabama's participation in World War II, including the role of the Tuskegee Airmen, the Aliceville Prisoner of War (POW) camp, growth of the Port of Mobile, production of Birmingham steel, and the establishment of military bases 

E	G	H	CG
✓	✓	✓	✓

11. Describe the international role of the United States from 1945 through 1960 relative to the Truman Doctrine, the Marshall Plan, the Berlin Blockade, and the North Atlantic Treaty Organization (NATO).
[A.1.b., A.1.c., A.1.d., A.1.e., A.1.g., A.1.i., A.1.k.]

- Describing Cold War policies and issues, the domino theory, McCarthyism, and their consequences, including the institution of loyalty oaths under Harry S. Truman, the Alger Hiss case, the House Un-American Activities Committee, and the execution of Julius and Ethel Rosenberg
  Examples: G.I. Bill of Rights, consumer economy, Sputnik, rock and roll, bomb shelters, Federal-Aid Highway Act
- Locating areas of conflict during the Cold War from 1945 to 1960, including East and West Germany, Hungary, Poland, Cuba, Korea, and China

E	G	H	CG
✓	✓	✓	✓

12. Describe major initiatives of the John F. Kennedy and Lyndon B. Johnson Administrations. [A.1.b., A.1.c., A.1.d., A.1.e., A.1.g., A.1.i., A.1.k.]
Examples: President Kennedy—New Frontier
President Johnson—Great Society

- Describing Alabama's role in the space program under the New Frontier 
  Examples: National Aeronautics and Space Administration (NASA), space race, satellites
- Describing major foreign events and issues of the John F. Kennedy Administration, including construction of the Berlin Wall, the Bay of Pigs invasion, and the Cuban missile crisis

E	G	H	CG
	✓	✓	✓

13. Trace the course of the involvement of the United States in Vietnam from the 1950s to 1975, including the Battle of Dien Bien Phu, the Gulf of Tonkin Resolution, the Tet Offensive, destabilization of Laos, secret bombings of Cambodia, and the fall of Saigon.
[A.1.b., A.1.c., A.1.d., A.1.e., A.1.g., A.1.i., A.1.k.]

- Locating on a map or globe the divisions of Vietnam, the Ho Chi Minh Trail, and major battle sites
- Describing the creation of North and South Vietnam

E	G	H	CG
✓	✓	✓	✓

14. Trace events of the modern Civil Rights Movement from post-World War II to 1970 that resulted in social and economic changes, including the Montgomery Bus Boycott, the desegregation of Little Rock Central High School, the March on Washington, Freedom Rides, the Sixteenth Street Baptist Church bombing, and the Selma-to-Montgomery March.
[A.1.c., A.1.d., A.1.f., A.1.i., A.1.j., A.1.k.]

- Tracing the federal government's involvement in the modern Civil Rights Movement, including the abolition of the poll tax, the nationalization of state militias, *Brown versus Board of Education* in 1954, the Civil Rights Acts of 1957 and 1964, and the Voting Rights Act of 1965
- Explaining contributions of individuals and groups to the modern Civil Rights Movement, including Martin Luther King, Jr.; James Meredith; Medgar Evers; Thurgood Marshall; the Southern Christian Leadership Conference (SCLC); the Student Nonviolent Coordinating Committee (SNCC); the Congress of Racial Equality (CORE); the National Association for the Advancement of Colored People (NAACP); and the civil rights foot soldiers
- Appraising contributions of persons and events in Alabama that influenced the modern Civil Rights Movement, including Rosa Parks, Autherine Lucy, John Patterson, George C. Wallace, Vivian Malone Jones, Fred Shuttlesworth, the Children's March, and key local persons and events
- Describing the development of a Black Power movement, including the change in focus of the SNCC, the rise of Malcolm X, and Stokely Carmichael and the Black Panther movement
- Describing the economic impact of African-American entrepreneurs on the modern Civil Rights Movement, including S. B. Fuller and A. G. Gaston

E	G	H	CG
✓	✓	✓	✓

15. Describe changing social and cultural conditions in the United States during the 1950s, 1960s, and 1970s. [A.1.c., A.1.d., A.1.f., A.1.i., A.1.j., A.1.k.]

Examples: economic impact on the culture, feminist movement, recession, Arab oil embargo, technical revolution

E	G	H	CG
✓	✓	✓	✓

16. Describe significant foreign and domestic issues of presidential administrations from Richard M. Nixon to the present.
[A.1.a., A.1.b., A.1.c., A.1.d., A.1.e., A.1.g., A.1.h., A.1.i., A.1.k.]

Examples: Nixon's policy of détente; Cambodia; Watergate scandal; pardon of Nixon; Iranian hostage situation; Reaganomics; Libyan crisis; end of the Cold War; Persian Gulf War; impeachment trial of William "Bill" Clinton; terrorist attack of September 11, 2001; Operation Iraqi Freedom; war in Afghanistan; election of the first African-American president, Barack Obama; terrorism; global warming; immigration

TWELFTH GRADE

United States Government

United States Government is a one-semester required course for students in Grade 12. The course goal is for students to develop the civic knowledge necessary for becoming active participants as citizens of this nation. Achievement of this goal prepares students to participate as informed citizens through voting, serving on a jury, holding political office, and deliberating public policy.

In this course, students broaden knowledge and critical-thinking skills learned in Grades 9-11 and deepen their understanding of the origin, structure, and function of government at all levels. Content focuses on intellectual, political, and economic factors that influenced the development of a republic based on rule of law, freedom of opportunity, individual liberty, and representative government. Democratic principles that served as a foundation for the development of our nation are embedded in a detailed study of the Constitution of the United States, a key component of the course.

Twelfth-grade students are developing a sense of maturity necessary for analysis of the role of government in the lives of individuals and in the nation. An effective instructional environment promotes critical thinking and research and provides opportunities for civic participation. Classroom activities that include debate, creative problem solving, collaborative group work, and evaluation of electronic and print media foster long-term learning of content and encourage students to understand the value of their roles as citizens in a democracy.

Students will:

E	G	H	CG
✓		✓	✓

1. Explain historical and philosophical origins that shaped the government of the United States, including the Magna Carta, the Petition of Rights, the English Bill of Rights, the Mayflower Compact, the Virginia Declaration of Rights, and the influence of Thomas Hobbes, John Locke, Charles de Montesquieu, Jean-Jaques Rousseau, and the Great Awakening.
    - Comparing characteristics of limited and unlimited governments throughout the world, including constitutional, authoritarian, and totalitarian governments

        Examples: constitutional—United States
        authoritarian—Iran
        totalitarian—North Korea

E	G	H	CG
		✓	✓

2. Summarize the significance of the First and Second Continental Congresses, the Declaration of Independence, Shays' Rebellion, and the Articles of Confederation of 1781 on the writing and ratification of the Constitution of the United States of 1787 and the Bill of Rights of 1791.

E	G	H	CG
		✓	✓

3. Analyze major features of the Constitution of the United States and the Bill of Rights for purposes, organization, functions, and principles, including rule of law, federalism, limited government, popular sovereignty, judicial review, separation of powers, and checks and balances.
   - Explaining main ideas of the debate over ratification that included the Federalist papers
   - Analyzing the Bill of Rights for its application to historical and current issues
   - Outlining the formal process of amending the Constitution of the United States

E	G	H	CG
✓		✓	✓

4. Explain how the federal system of the United States divides powers between national and state governments.
   - Summarizing obligations that the Constitution of the United States places on a nation for the benefit of the states, including admitting new states and cooperative federalism
   - Evaluating the role of the national government in interstate relations

E	G	H	CG
✓		✓	✓

5. Compare specific functions, organizations, and purposes of local and state governments, including implementing fiscal and monetary policies, ensuring personal security, and regulating transportation.
   - Analyzing the Constitution of Alabama of 1901 to determine its impact on local funding and campaign funding
   - Describing the influence of special interest groups on state government

E	G	H	CG
		✓	✓

6. Analyze the expansion of suffrage for its effect on the political system of the United States, including suffrage for non-property owners, women, African Americans, and persons eighteen years of age.
   - Describing implications of participation of large numbers of minorities and women in parties and campaigns
   - Analyzing the black codes, the Jim Crow laws, and the Selma-to-Montgomery March for their impact on the passage of the Voting Rights Act of 1965

E	G	H	CG
✓	✓	✓	✓

7. Describe the process of local, state, and national elections, including the organization, role, and constituency of political parties.
   - Explaining campaign funding and spending
   - Evaluating the impact of reapportionment, redistricting, and voter turnout on elections

E	G	H	CG
✓		✓	✓

8. Describe functions and the development of special interest groups and campaign contributions by political action committees and their impact on state and national elections.
   - Analyzing rulings by the United States Supreme Court, including *Buckley versus Valeo*, regarding campaign financing to determine the effect on the election process

E	G	H	CG
✓	✓	✓	✓

9. Trace the impact of the media on the political process and public opinion in the United States, including party press, penny press, print media, yellow journalism, radio, television, and electronic media.

- Describing regional differences in public opinion in the United States
- Analyzing television and electronic media for their impact on the election process and campaign spending from the John F. Kennedy-Richard M. Nixon debate to the election of Barack Obama as President of the United States
- Explaining the effect of attack advertisements on voter selection of candidates

E	G	H	CG
		✓	✓

10. Evaluate roles political parties play in the functioning of the political system of the United States.

- Describing the role of third-party candidates in political elections in the United States
- Explaining major characteristics of contemporary political parties in the United States, including the role of conventions, party leadership, formal and informal memberships, and regional strongholds
- Describing the influence of political parties on individuals and elected officials, including the development of party machines, rise of independent voters, and disillusionment with party systems

E	G	H	CG
		✓	✓

11. Evaluate constitutional provisions of the legislative branch of the government of the United States, including checks by the legislative branch on other branches of government.

- Comparing rules of operations and hierarchies of Congress, including roles of the Speaker of the House, the Senate President Pro Tempore, majority and minority leaders, and party whips
- Identifying the significance of Congressional committee structure and types of committees
- Tracing the legislative process, including types of votes and committee action, from a bill's presentation to presidential action

E	G	H	CG
✓		✓	✓

12. Evaluate constitutional provisions of the executive branch of the government of the United States, including checks by the executive branch on other branches of government and powers, duties as head of state and head of government, the electoral process, and the Twenty-fifth Amendment.

- Critiquing informal powers of the President of the United States, including press conferences, State of the Union addresses, total media access, head of party, and symbolic powers of the Oval Office
- Identifying the influence of White House staff on the President of the United States
- Ranking powers held by the President's Cabinet, including roles of Cabinet secretaries, appropriations by Congress, appointment and confirmation, and operation of organization
- Comparing diverse backgrounds, socioeconomic status, and levels of education of United States' presidents

E	G	H	CG
✓		✓	✓

13. Evaluate constitutional provisions of the judicial branch of government of the United States, including checks by the judicial branch on other branches of government, limits on judicial power, and the process by which cases are argued before the United States Supreme Court.

- Explaining the structure and jurisdiction of court systems of the United States, including lower courts and appellate courts
- Identifying the impact of landmark United States Supreme Court cases on constitutional interpretation

  Examples: *Marbury versus Madison, Miranda versus Arizona, Tinker versus Des Moines, Gideon versus Wainwright, Reno versus American Civil Liberties Union, United States versus Nixon, McCulloch versus Maryland, Wallace versus Jaffree, Wyatt versus Stickney, Powell versus Alabama*
- Describing the shifting political balance of the court system, including the appointment process, the ideology of justices, influences on court decisions regarding executive and legislative opinion, public opinion, and the desire for impartiality
- Contrasting strict and loose constructionist views of the Constitution of the United States

E	G	H	CG
		✓	✓

14. Describe the role of citizens in American democracy, including the meaning, rights, and responsibilities of citizenship; due process and other rights guaranteed by the Constitution of the United States; and participation in the election process.

- Explaining how the balance between individual versus majority rule and state versus national authority is essential to the functioning of the American democratic society

  Examples: majority rule and minority rights, liberty and equality, state and national authority in a federal system, civil disobedience and rule of law, freedom of the press, right to a fair trial, relationship of religion and government

E	G	H	CG
✓	✓	✓	✓

15. Explain the role and consequences of domestic and foreign policy decisions, including scientific and technological advancements and humanitarian, cultural, economic, and political changes.

Examples: isolationism versus internationalism, policy of containment, policy of détente, multilateralism, war on terrorism

- Evaluating financial, political, and social costs of national security

TWELFTH GRADE

Economics

Economics is a one-semester required course for students in Grade 12 that addresses essential concepts necessary for students to completely and effectively participate in a complex global society. Content encompasses both microeconomic and macroeconomic principles. Key elements include the study of scarcity, supply and demand, market structures, the role of government, national income determination, money and the role of financial institutions, economic stabilization, and trade. Students use knowledge and critical-thinking skills learned in previous social studies courses to analyze issues and problems and contemporary economic systems. They examine consequences of public policies and their impact on a free market economy. Mastering economics knowledge and skills enables students to anticipate changes in economic conditions and take appropriate action to improve not only their lives, but also society in general.

Students in Grade 12 are developmentally capable of sophisticated analytical thinking and are active participants in the current economy as consumers, employees, or both. Instruction that combines required content and effective strategies encourages students to develop skills for understanding how economies function, recognizing economic and social problems, and evaluating costs and benefits of choices. Instructional activities address decisions made regarding public policy, including their impact on current economic issues. Grade 12 economics instruction includes an analysis of primary sources and economic data, economic research using technological resources, group presentations using computer technology, and other active learning opportunities.

Students will:

E	G	H	CG
✓			

1. Explain why productive resources are limited and why individuals, businesses, and governments have to make choices in order to meet needs and wants.
    - Explaining scarcity as a basic condition that exists when unlimited wants exceed limited productive resources
    - Explaining land (an example of a natural resource), labor (an example of a human resource), capital (an example of a physical or human resource), and entrepreneurship to be the factors of production
    - Explaining opportunity cost as the next best alternative to relinquish when individuals, businesses, and governments confront scarcity by making choices

E	G	H	CG
✓			✓

2. Explain how rational decision making entails comparing additional costs of alternatives to additional benefits.
    - Illustrating on a production-possibilities curve how rational decision making involves trade-offs between two options
    - Explaining rational decision making as the comparison between marginal benefits and marginal costs of an action

E	G	H	CG
✓			✓

3. Describe different economic systems used to allocate scarce goods and services.
   - Defining command, market, and mixed economic systems
   - Describing how different economic systems answer the three basic economic questions of what to produce, how to produce, and for whom to produce
   - Evaluating how each type of system addresses private ownership, profit motive, consumer sovereignty, competition, and government regulation

E	G	H	CG
✓			✓

4. Describe the role of government in a market economy, including promoting and securing competition, protecting private property rights, promoting equity, providing public goods and services, resolving externalities and other market failures, and stabilizing growth in the economy.
   - Explaining how government regulation and deregulation policies affect consumers and producers

E	G	H	CG
✓			✓

5. Explain that a country's standard of living depends upon its ability to produce goods and services.
   - Explaining productivity as the amount of outputs, or goods and services, produced from inputs, or factors of production
   - Describing how investments in factories, equipment, education, new technology, training, and health improve economic growth and living standards

E	G	H	CG
✓			

6. Describe how specialization and voluntary exchange between buyers and sellers lead to mutually beneficial outcomes.
   - Illustrating on a circular-flow diagram the product market; the factor market; the real flow of goods and services between and among businesses, households, and government; and the flow of money
   - Constructing examples of specialization and exchange
   - Illustrating on a table and graph the law of supply and demand
   - Describing the role of buyers and sellers in determining market clearing price
   - Illustrating on a table and graph how supply and demand determine equilibrium price and quantity
   - Illustrating on a graph of supply and demand how price movements eliminate shortages and surpluses
   - Illustrating on a graph how different factors cause changes in a market supply and demand
   - Explaining how prices serve as incentives in a market economy

E	G	H	CG
✓			

7. Describe the organization and role of business.
   - Comparing types of business firms, including sole proprietorships, partnerships, and corporations
   - Explaining the role of profit as an incentive, including short-term versus long-run decisions, for all firms
   - Describing basic characteristics of pure competition, monopoly, monopolistic competition, and oligopoly
   - Explaining ways firms finance operations, including retained earnings, stocks, and debt, and the advantages and disadvantages of each
   - Explaining ways firms engage in price and nonprice competition
   - Recognizing the role of economic institutions, including labor unions and nonprofit organizations, in market economies

E	G	H	CG
✓		✓	✓

8. Explain the impact of the labor market on the United States' economy.
   - Identifying regional characteristics of the labor force of the United States, including gender, race, socioeconomic background, education, age, and regional specialization
   - Explaining how supply of and demand for labor affect wages
   - Describing characteristics that are most likely to increase wage and nonwage benefits, including skill, productivity, education, occupation, and mobility
   - Explaining how unemployment and inflation impose costs on individuals and nations
   - Determining the relationship of Alabama and the United States to the global economy regarding current technological innovations and industries 
     Examples: World Wide Web, peanut industry, telecommunications industry, aerospace industry
   - Tracing the history of labor unions and methods of contract negotiation by labor and management 

E	G	H	CG
✓			✓

9. Describe methods used to measure overall economic activity, including the Gross Domestic Product (GDP), the Consumer Price Index (CPI), inflation, and unemployment.
   - Explaining how overall levels of income, employment, and prices are determined by spending decisions of households, businesses, and government; net exports in the short run; and production decisions of firms and technology in the long run
   - Identifying structural, cyclical, and frictional unemployment
   - Describing stages of the business cycle and how employment and inflation change during those stages

E	G	H	CG
✓			✓

10. Explain the structure, role, and functions of the United States Federal Reserve System.

- Describing how the United States Federal Reserve System oversees the banking system and regulates the quantity of money in the economy
- Defining monetary policy
- Describing how the central bank uses its tools of monetary policy to promote price stability, full employment, and economic growth

E	G	H	CG
✓			✓

11. Explain how the government uses fiscal policy to promote the economic goals of price stability, full employment, and economic growth.

- Defining fiscal policy and the use of taxation and government purchases
- Comparing government deficits and the national debt

E	G	H	CG
✓			✓

12. Explain why individuals, businesses, and governments trade goods and services in the global economy.

- Defining absolute advantage and comparative advantage
- Explaining how gains from trade, whether between two individuals or two countries, are based on the principle of comparative advantage
- Defining exchange rates
- Explaining how changes in exchange rates impact purchasing powers of individuals and businesses
- Explaining tariffs, quotas, embargoes, standards, and subsidies as trade barriers
- Explaining why countries sometimes impose trade barriers and sometimes advocate free trade

HIGH SCHOOL ELECTIVE COURSES OVERVIEW

Alabama students in the twenty-first century are uniquely equipped to investigate the social studies. They are experiencing great social and technological changes that challenge them to inquire about the world in which they live, including societal groups within that world. Elective courses for Grades 9-12 provide students with opportunities to pursue interests in the social studies through four additional courses. These courses are Psychology, Sociology, Contemporary World Issues and Civic Engagement, and Human Geography. Content standards for these elective courses are designed to enhance student learning in the social studies, provide an in-depth study in these four areas, and establish consistency in social studies elective course content among school systems throughout the state. Additionally, local education agencies (LEAs) are encouraged to offer a variety of elective courses that may include, but are not limited to, the courses listed above. Other courses could be History Through Film, Money and Banking, the Constitutional History of the United States, or an Alabama Web-based learning course offered through Alabama Connecting Classrooms, Educators, and Students Statewide (ACCESS).

While elective courses may provide additional social studies options for students, they do not replace any of the courses required for graduation from high school. All students must successfully complete the Grade 9 World History: 1500 to the Present course; the Grade 10 United States History I: Beginnings to the Industrial Revolution course; the Grade 11 United States History II: The Industrial Revolution to the Present course; and the Grade 12 United States Government course and the Economics course.

High School Elective Course

PSYCHOLOGY

The national standards for teaching psychology, developed by the American Psychological Association, greatly influenced the development of the content of this course. Psychology acquaints students with psychological theories, principles, and practices associated with the major subfields or domains, including Scientific Inquiry, Biopsychology, Consciousness Development and Learning, Social Interactions, Cognition, Individual Variations, and Applications of Psychological Science.

The study of psychology requires a flexible, investigative classroom environment that allows for experimentation and participatory activities. Students are encouraged to use critical-thinking skills employed by psychologists in the practice of their science. They also apply knowledge of the brain and its functioning to the understanding of human behavior. As a general psychology elective, this course is particularly beneficial to students as they endeavor to understand themselves and others.

Local school systems have great flexibility regarding the scheduling of a psychology course. Some systems offer a one-year course while others offer only a semester-long course. When designing content for a high school psychology course, it is essential to include the minimum required content described in this document as well as follow guidelines of the American Psychological Association's *National Standards for High School Psychology Curricula*, which recommends psychology courses contain at least one topic area per domain in order to represent the breadth of the field of psychology for students.

Students will:

1. Trace the development of psychology as a scientific discipline evolving from other fields of study.
    - Describing early psychological and biological inquiries that led to contemporary approaches and methods of experimentation, including ideologies of Aristotle, John Locke, Wilhelm Wundt, Charles Darwin, William James, Frantz Fanon, and G. Stanley Hall
    - Differentiating among various modern schools of thought and perspectives in psychology that have evolved since 1879, including each school's view on concepts of aggression or appetite
    - Illustrating how modern psychologists utilize multiple perspectives to understand behavior and mental processes
    - Identifying major subfields and career opportunities related to psychology

2. Describe research strategies used by psychologists to explore mental processes and behavior.
    - Describing the type of methodology and strategies used by researchers in different psychological studies
        Examples: surveys, naturalistic observations, case studies, longitudinal studies, cross-sectional studies
    - Contrasting independent, dependent, and confounding variables and control and experimental groups

- Identifying systematic procedures necessary for conducting an experiment and improving the validity of results
- Describing the use of statistics in evaluating research, including calculating the mean, median, and mode from a set of data; conducting a simple correlational analysis using either calculators or computer software; and explaining the meaning of statistical significance

3. Explain how processes of the central and peripheral nervous systems underlie behavior and mental processes, including how neurons are the basis for neural communication.
    - Describing how neurons communicate, including the role of neurotransmitters in behavior and the electrochemical process
    - Comparing the effect of drugs and toxins on the brain and neurotransmitters
    - Describing how different sections of the brain have specialized yet interdependent functions, including functions of different lobes and hemispheres of the cerebral cortex and consequences of damage to specific sections of the brain
    - Describing different technologies used to study the brain and nervous system
    - Analyzing behavior genetics for its contribution to the understanding of behavior and mental processes, including differentiating between deoxyribonucleic acid (DNA), chromosomes, and genes; identifying effects of chromosomal abnormalities; and explaining how genetics and environmental factors work together to determine inherited traits

4. Describe the interconnected processes of sensation and perception.
    - Explaining the role of sensory systems in human behavior, including sight, sound, smell, touch, and pain
    - Explaining how what is perceived can be different from what is sensed, including how attention and environmental cues can affect the ability to accurately sense and perceive the world
    - Describing the role of Gestalt principles and concepts in perception

5. Explain ways to promote psychological wellness.
    - Describing physiological processes associated with stress, including hormones associated with stress responses
    - Describing Hans Selye's general adaptation syndrome (GAS)
    - Describing the flight-or-fight response in terms of the autonomic and somatic nervous systems
    - Contrasting positive and negative ways of coping with stress related to problem-focused coping, aggression, and emotion-focused coping
    - Explaining approach-approach, approach-avoidance, and avoidance-avoidance conflicts
    - Identifying various eating disorders and conditions
        Examples: anorexia nervosa, bulimia nervosa, obesity

6. Describe the physical, cognitive, and social development across the life span of a person from the prenatal through aging stages.
    - Outlining the stage-of-development theories of Jean Piaget, Erik H. Erikson, Sigmund Freud, Carol Gilligan, and Lawrence Kohlberg

7. Describe the processes and importance of memory, including how information is encoded and stored, mnemonic devices, schemas related to short-term memory, working memory, and long-term memory.
    - Distinguishing between surface and deep processing in memory development
    - Comparing ways memories are stored in the brain, including episodic and procedural
    - Identifying different parts of the brain that store memory
    - Differentiating among different types of amnesia
    - Describing how information is retrieved from memory
    - Explaining how memories can be reconstructed and misremembered

8. Describe ways in which organisms learn, including the processes of classical conditioning, operant conditioning, and observational conditioning.
    - Identifying unconditioned stimuli (UCS), conditioned stimuli (CS), unconditioned responses (UCR), and conditioned responses (CR)
    - Describing the law of effect
    - Describing original experiments conducted by B. F. Skinner, Albert Bandura, Ivan Pavlov, John B. Watson, and Rosalie Rayner
    - Differentiating between reinforcement and punishment, positive and negative reinforcement, and various schedules of reinforcement
    - Describing biological limitations on operantly conditioned learning
    - Differentiating between observational learning and modeling
    - Analyzing watching violent media for effects on violent behavior

9. Describe how organisms think and solve problems, including processes involved in accurate thinking.
    - Identifying the role of mental images and verbal symbols in the thought process
    - Explaining how concepts are formed
    - Differentiating between algorithms and heuristics
    - Analyzing different types of heuristics to determine effects on problem solving

10. Describe the qualities and development of language.
    - Identifying common phonemes and morphemes of language
    - Describing how understanding syntax and grammar affect language comprehension
    - Demonstrating how qualities of sign language are similar to spoken language
    - Describing how infants move from babbling to usage of complete sentences
    - Explaining how hearing loss in infants and children can affect the development of spoken language

11. Compare various states of consciousness evident in human behavior, including the process of sleeping and dreaming.
    - Explaining states of sleep throughout an average night's sleep, including nonrapid eye movement (NREM) and rapid eye movement (REM)
    - Describing the mechanism of the circadian rhythm
    - Evaluating the importance of sleep to good performance
    - Comparing theories regarding the use and meaning of dreams
    - Analyzing the use of psychoactive drugs for effects on people, including the mechanisms of addiction, withdrawal, and tolerance
    - Evaluating the phenomenon of hypnosis and its possible uses

12. Describe the role of motivation and emotion in human behavior.
    - Identifying theories that explain motivational processes, including cognitive, biological, and psychological reasons for motivational behavior, and Abraham Maslow's hierarchy of needs and arousal theory
    - Describing situational cues that cause emotions, including anger, curiosity, and anxiety
    - Differentiating among theories of emotion
    - Identifying universally recognized emotions

13. Describe methods of assessing individual differences and theories of intelligence, including Charles E. Spearman's general (g) factor of intelligence, Howard Gardner's multiple intelligences, and Robert J. Sternberg's triarchic theory of intelligence.
    - Describing different types of intelligence tests, including the Flynn effect
    - Describing how intelligence may be influenced by differences in heredity and environment and by biases toward ethnic minority and socioeconomic groups

14. Explain the role of personality development in human behavior.
    - Differentiating among personality theories, including psychoanalytic, sociocognitive, trait, and humanistic theories of personality
    - Describing different measures of personality, including the Neuroticism-Extroversion-Openness Personality Inventory (NEO-PI), the Minnesota Multiphasic Personality Inventory (MMPI), and projective tests

15. Describe major psychological disorders and their treatments.
    - Differentiating between normal and abnormal behavior
    - Describing different approaches for explaining mental illness, including biological and medical, cognitive, and sociocultural models
    - Differentiating types of mental illness, including mood, anxiety, somatoform, schizophrenic, dissociative, and personality disorders

16. Describe how attitudes, conditions of obedience and conformity, and other influences affect actions and shape human behavior, including actor-observer, self-server, social facilitation, social loafing, bystander effect, groupthink, and group polarization.
    - Explaining the fundamental attribution error
    - Critiquing Stanley Milgram's work with obedience and S. E. Asch's work with conformity

17. Describe various careers pursued by psychologists, including medical and mental health care fields, the business world, education, law and criminal justice, and research.

18. Explain how culture and gender influence behavior.
    - Identifying gender differences and similarities
    - Explaining ways in which gender differences are developed
    - Describing ways in which gender roles are assigned in different cultures

High School Elective Course

SOCIOLOGY

Sociology is the study of human society that focuses on the formation and action of human groups. A general study of sociology includes topics such as culture and society, social inequality, social institutions, and social change. These topics require students to possess a general knowledge of the world in which they live and an understanding of how individuals interact in various kinds of groups. In order to address issues involved in living together in societal groups, students examine the importance of tolerance and respect for others and are challenged to actively research and discuss influences of genetics, demographics, religion, and personal behaviors upon society.

High school students are capable of the abstract thinking required by this course and can conduct mature analyses on a wide variety of topics. Effective classroom instruction includes small- and large-group discussions, in-depth projects, and research activities. Utilization of primary sources and technological resources are valuable to the success of all students in this elective course. With adequate instructional materials and appropriate methodologies, the study of sociology helps create citizens who are informed, responsible, active, and cooperative individuals.

Students will:

1. Describe the development of sociology as a social science field of study.
    - Identifying important figures in the field of sociology, including Karl Marx, Émile Durkheim, Max Weber, George Herbert Mead, and W. E. B. Du Bois
    - Identifying characteristics of sociology, including functional integration, power, social action, social structure, and culture

2. Explain methods and tools of research used by sociologists to study human society, including surveys, polls, statistics, demographic information, case studies, participant observations, and program evaluations.
    - Differentiating between qualitative and quantitative research methods

3. Describe how values and norms influence individual behavior.
    - Comparing ways in which cultures differ, change, and resist change, including countercultures, subcultures, and ethnocentric beliefs
    - Comparing the use of various symbols within and across societies
      Examples: objects, gestures, sounds, images
    - Explaining the significance of socialization in human development
    - Illustrating key concepts of socialization, including self-concept, looking-glass self, significant others, and role-taking
    - Determining the role of family, school, peer groups, and the media in socializing young people
    - Explaining the process of socialization in adulthood

4. Identify antisocial behaviors, including social deviance, addiction, terrorism, anomie, and related arguments for the strain theory and the conflict theory.
    - Contrasting violent crime, property crime, and victimless crime with white-collar crime
    - Comparing methods for dealing with antisocial behavior, including imprisonment, restitution, community service, rehabilitation, education, and therapy

5. Describe how environment and genetics affect personality, including self-concept and temperament.

6. Identify stages of development across the life cycle, including birth, childhood, adolescence, adulthood, parenthood, middle age, and late adulthood.
    - Describing the value of birth cohorts as a research device

7. Describe types and characteristics of groups.
    - Explaining the relationship between social stratification and social class, including status ascription versus achievement, intergenerational social mobility, and structural occupational change
    - Relating the importance of group dynamics, including size, leadership, decision making, and gender roles
    - Distinguishing between the terms, *race* and *ethnicity* and *prejudice* and *discrimination*
    - Describing social inequalities experienced as related to gender and age

8. Describe the structure and function of the family unit, including traditional, extended, nuclear, single-parent, and blended families involving the roles of parent, child, and spouse.
    - Identifying problems facing families, including abuse, divorce, teen pregnancy, poverty, addiction, family violence, and care of elderly family members

9. Explain the purpose of social systems and institutions, including schools, churches, voluntary associations, and governments.
    - Describing origins and beliefs of various religions
    - Distinguishing among the concepts of power, coercion, and authority
    - Comparing charismatic, traditional, and rational-legal authority

10. Describe social movement and social change.
    - Comparing various forms of collective behavior, including mobs, riots, fads, and crowds
    - Identifying major ethical and social issues facing modern society
        Examples: technological, governmental, medical
    - Explaining the impact of the modern Civil Rights Movement, the women's movement, the gun rights movement, the green movement, and other minority movements in the United States

11. Contrast population patterns using the birth rate, death rate, migration rate, and dependency rate.
    - Identifying the impact of urbanization on human social patterns
    - Analyzing factors that affect the depletion of natural resources for their impact on social and economic development
    - Projecting future population patterns

High School Elective Course

CONTEMPORARY WORLD ISSUES AND CIVIC ENGAGEMENT

Contemporary World Issues and Civic Engagement is a one-semester elective course designed to acquaint students with current events of local, state, national, and international interest. Knowledge about and analysis of current events are vital elements in students' educational development as they prepare for their roles as active citizens. This course allows students to acquire knowledge of key contemporary personalities and events that impact their lives. Daily and weekly news sources serve as primary references for organization of the content of this course.

As students study current issues from historical and geographical perspectives, utilization of up-to-date technology is crucial for them to strengthen research and analytical skills. Using a variety of resources, students are able to evaluate news for content, fact, opinion, reliability, and validity and to analyze different elements of news sources to develop an understanding of events and issues of the present. Mastering the content standards in this course requires students to investigate issues by looking beyond presentations given in the media.

An essential component of course instruction is the inclusion of a variety of strategies that actively engage students. This course requires comprehension of editorials, graphic materials, media text, and statistical data. A classroom environment that incorporates discussion and research, as well as problem-solving projects that are community-based, enhances the development of democratic ideals and citizenship and facilitates the learning of content in this area.

Students will:

1. Describe current news stories from various perspectives, including geographical, historical, political, social, and cultural.
    - Evaluating the impact of current news stories on the individual and on local, state, national, and international communities 
    - Comparing current news stories to related past events
    - Analyzing news stories for implications regarding nations of the world
    - Locating on a map areas affected by events described in news stories
    - Interpreting statistical data related to political, social, and economic issues in current events

2. Compare the relationship of governments and economies to events occurring in specific nations.
    - Identifying recurring historical patterns in regions around the world
    - Describing costs and benefits of trade among nations in an interdependent world
    - Comparing ways different countries address individual and national economic and social problems, including child care, tax rates, economic regulations, health care, national debt, and unemployment

3. Compare civic responsibilities, individual rights, opportunities, and privileges of citizens of the United States to those of citizens of other nations.

4. Analyze scientific and technological changes for their impact on the United States and the world.

5. Analyze cultural elements, including language, art, music, literature, and belief systems, to determine how they facilitate global understanding or misunderstanding.

6. Compare information presented through various media, including television, newspapers, magazines, journals, and the Internet.
    - Explaining the reliability of news stories and their sources
    - Describing the use, misuse, and meaning of different media materials, including photographs, artwork, and film clips
    - Critiquing viewpoints presented in editorial writing and political cartoons, including the use of symbols that represent viewpoints
    - Describing the role of intentional and unintentional bias and flawed samplings

7. Identify strategies that facilitate public discussion on societal issues, including debating various positions, using a deliberative process, blogging, and presenting public forums.

8. Organize a service-learning project, including research and implementation, that addresses an identified community or global issue having an impact on the quality of life of individuals and groups.

High School Elective Course

HUMAN GEOGRAPHY

This course provides students with opportunities to survey and explore a range of perspectives regarding the nature of human geography, including how human activities help shape Earth's surface. Students should understand population characteristics, characteristics and distribution of cultural mosaics, spatial patterns of economic interaction, processes and patterns of human settlement, and the division of Earth's surface through the forces of cooperation and conflict.

Course content requires the use of a thematic approach to instruction. Teachers should select various places, regions, or countries from which to draw examples. The course objective is for students to develop a deeper, more multidimensional understanding of world geography as it relates to culture.

Students will:

1. Describe spatial patterns of world populations to discern major clusters of population density and reasons for these patterns.
   Examples: East Asia, India

2. Identify world migration patterns caused by displacement issues.
   Example: African refugees relocating from the Republic of Sierra Leone to Scandinavia

   - Explaining how Southeast Asian ethnic minorities, including Hmong, Lhasa, and Akha, adapt to life in the United States
   - Tracing the migration of ethnic minorities in Kunming to urban cities in China
   - Explaining how the displacement of American Indians to reservations affected many areas of the United States, including Alabama 

3. Identify the characteristics, distribution, and complexity of Earth's cultural mosaics.
   - Explaining essential aspects of culture, including social structure, languages, belief systems, customs, religion, traditions, art, food, architecture, and technology

4. Describe elements of the landscape as a mirror of culture.
   - Explaining how landscapes reflect cultural traits and preferences
   - Distinguishing various types of architecture, including rural, urban, and religious structures
     Examples: religious land uses, advertisements for ethnic restaurants

5. Compare the geographic distribution of linguistic features around the world.
   - Identifying the world's most widely spoken languages
   - Describing how linguistic diversity creates cultural conflict

6. Explain how religion influences cultures around the globe.
    - Identifying major religions, their source areas, and spatial expansion
    - Interpreting different ceremonies based on religious traditions, including marriages, funerals, and coming-of-age
    - Describing how religion influences political views around the world

7. Describe patterns of settlement in different regions of the world.
    Examples: linear, grid, cluster, urban sprawl

8. Analyze the interaction of urban places for their impact on surrounding regions.
    - Describing urban hinterlands
    - Explaining dimensions of urban sprawl

9. Explain how economic interdependence and globalization impact many countries and their populations.
    - Tracing the flow of commodities from one region to another
    - Comparing advantages and disadvantages of global trade agreements

10. Recognize how human-environmental interaction affects culture in today's society.
    Examples: population growth in the Galapagos Islands damaging the environment of endemic plant and animal species, deforestation in the Pantanal affecting the world's largest freshwater ecosystem, green technologies affecting humans and the environment

11. Interpret human geography as it relates to gender.
    - Contrasting roles of men and women around the world
    - Describing ways the diffusion of ideas affects gender roles within societies
        Example: effects of Grameen Bank loans

12. Distinguish among cultural health patterns around the world.
    Example: exercise patterns and mortality rates in Asia, the United States, Europe, South America, and Australia

    - Comparing dietary trends in Africa, Asia, the United States, Europe, and South America
    - Tracing disease prevalence and efficiency of treatment around the world, including malaria, dengue fever, acquired immunodeficiency syndrome (AIDS), parasites, and obesity

13. Critique music, art, and dance as vehicles for understanding world cultures.
    - Categorizing musical instruments as a means to understanding culture, including the didgeridoo in the aboriginal culture in Australia
    - Identifying music genres and dance styles around the world
        Examples: genres—Naxi, Peruvian, pop
        dance styles—reggae, folk
    - Explaining how culture from various countries is expressed through adornments
        Examples: jewelry, clothing
    - Relating artwork and artists to history
        Examples: Fabergé eggs, commissioned paintings and sculptures

14. Describe how tourism shapes cultural traditions and population growth.
    - Explaining how regions become major business centers of tourism and trade, including the cities of Dubai, Bangkok, New York, and Shanghai
    - Identifying how trends, including ecotourism and the cruise industry, affect island culture in tropical areas

ACT COURSE STANDARDS—U. S. HISTORY*

The QualityCore® ACT Course Standards represent a solid evidence-based foundation for the study of United States History. This set of empirically derived course standards were developed from an intensive study of high-performing high schools with significant minority and low-income enrollments that produced many graduates who met or exceeded ACT College Readiness Benchmark Scores. (See http://www.act.org/path/policy/reports/success.html.)

A. Exploring the Skills and Strategies Underlying U.S. History	
1. Process Skills	
a.	Apply terms relevant to the content appropriately and accurately
b.	Identify and interpret different types of primary and secondary sources of fundamental importance and relevance to topical inquiry and understanding
c.	Interpret timelines of key historical events, people, and periods; locate significant historical places and events on maps
d.	Analyze the importance of context and point of view in historical interpretation (e.g., interpret past events and issues in historical context rather than in terms of present norms and values); recognize that historians interpret the same events differently due to personal values and societal norms
e.	Analyze and evaluate historical sources and interpretations (e.g., credibility, perspective, bias, and authenticity; verifiable or un verifiable; fact or interpretation)
f.	Utilize research strategies, methods, and sources to obtain, organize, and interpret historical data
g.	Compose arguments/position papers, and participate in debates on different interpretations of the same historical events; synthesize primary and secondary sources to justify position
h.	Compose an analytical, historical essay containing a thesis, supporting evidence, and a conclusion
i.	Identify, analyze, and understand elements of historical cause and effect; recognize and understand patterns of change and continuity in history
j.	Develop open-ended historical questions that can be addressed through historical research and interpretation
k.	Analyze how the past influences the lives of individuals and the development of societies

LITERACY STANDARDS FOR GRADES 6-12: HISTORY/SOCIAL STUDIES, SCIENCE, AND TECHNICAL SUBJECTS

College and Career Readiness Anchor Standards for Reading

The Grades 6-12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.*
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

*See College and Career Readiness Anchor Standards for Writing, "Research to Build and Present Knowledge," on page 131 for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Reading Standards for Literacy in History/Social Studies 6–12

The standards below begin at Grade 6; standards for K-5 reading in history/social studies, science, and technical subjects are integrated into the K-5 Reading standards. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 6-8 Students:	Grades 9-10 Students:	Grades 11-12 Students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of primary and secondary sources.	1. Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.	1. Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.
3. Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).	3. Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.	3. Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.	4. Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social studies.	4. Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).
5. Describe how a text presents information (e.g., sequentially, comparatively, causally).	5. Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.	5. Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.
6. Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).	6. Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.	6. Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.
Integration of Knowledge and Ideas		
7. Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.	7. Integrate visual information (e.g., in charts).	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.
8. Distinguish among fact, opinion, and reasoned judgment in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claims.	8. Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information.
9. Analyze the relationship between a primary and secondary source on the same topic.	9. Compare and contrast treatments of the same topic in several primary and secondary sources.	9. Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.
Range of Reading and Level of Text Complexity		
10. By the end of Grade 8, read and comprehend history/social studies texts in the Grades 6-8 text complexity band independently and proficiently.	10. By the end of Grade 10, read and comprehend history/social studies texts in the Grades 9-10 text complexity band independently and proficiently.	10. By the end of Grade 12, read and comprehend history/social studies texts in the Grades 11-CCR text complexity band independently and proficiently.

Reading Standards for Literacy in Science and Technical Subjects 6–12

Grades 6-8 Students:	Grades 9-10 Students:	Grades 11-12 Students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of science and technical texts.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.	2. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.	2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.	3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
Craft and Structure		
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *Grades 6-8 texts and topics.*	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *Grades 9-10 texts and topics.*	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *Grades 11-12 texts and topics.*
5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	5. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).	5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
Integration of Knowledge and Ideas		
7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).	7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.	8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
Range of Reading and Level of Text Complexity		
10. By the end of Grade 8, read and comprehend science/technical texts in the Grades 6-8 text complexity band independently and proficiently.	10. By the end of Grade 10, read and comprehend science/technical texts in the Grades 9-10 text complexity band independently and proficiently.	10. By the end of Grade 12, read and comprehend science/technical texts in the Grades 11-CCR text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The Grades 6-12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes*

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

*These broad types of writing include many subgenres.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12

The standards below begin at Grade 6; standards for K-5 writing in history/social studies, science, and technical subjects are integrated into the K-5 Writing standards. The CCR anchor standards and high school standards in literacy work in tandem to define college- and career-readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 6-8 Students:	Grades 9-10 Students:	Grades 11-12 Students:
Text Types and Purposes		
1. Write arguments focused on *discipline-specific content*.	1. Write arguments focused on *discipline-specific content*.	1. Write arguments focused on *discipline-specific content*.
a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.	a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.	a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.
b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.	b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns.	b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.
c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.	c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
d. Establish and maintain a formal style.	d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
e. Provide a concluding statement or section that follows from and supports the argument presented.	e. Provide a concluding statement or section that follows from or supports the argument presented.	e. Provide a concluding statement or section that follows from or supports the argument presented.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12 (Continued)

Grades 6-8 Students:	Grades 9-10 Students:	Grades 11-12 Students:
Text Types and Purposes (continued)		
2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style and objective tone. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)

Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science and technical subjects, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work so others can replicate them and (possibly) reach the same results.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12 (Continued)

Grades 6-8 Students:	Grades 9-10 Students:	Grades 11-12 Students:
Production and Distribution of Writing		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Research to Build and Present Knowledge		
7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9. Draw evidence from informational texts to support analysis, reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.
Range of Writing		
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for range of discipline-specific tasks, purposes, and audiences.

ALABAMA HIGH SCHOOL GRADUATION REQUIREMENTS

(Alabama Administrative Code 290-3-1-02(8) and (8)(a))

Effective for students in the ninth grade in the 2013-2014 school year, all students shall earn the required credits for the Alabama High School Diploma. A local board of education may establish requirements for receipt of diplomas and endorsements, but any diploma or endorsement shall include the requirements of the Alabama High School Diploma. The Alabama courses of study shall be followed in determining minimum required content in each discipline.

COURSE REQUIREMENTS		
English Language Arts	**Four credits to include:**	**Credits**
	English 9	**1**
	English 10	**1**
	English 11	**1**
	English 12	**1**
	Equivalent options may include: Advanced Placement/International Baccalaureate/postsecondary	
	English Language Arts Total Credits	**4**
Mathematics	**Three credits to include:**	**Credits**
	Algebra I or its equivalent	**1**
	Geometry or its equivalent	**1**
	Algebra II w/Trigonometry or Algebra II, or its equivalent	**1**
	One credit from:	
	Alabama Course of Study: Mathematics or Career and Technical Education/Advanced Placement/International Baccalaureate/postsecondary equivalent courses	**1**
	Mathematics Total Credits	**4**
Science	**Two credits to include:**	**Credits**
	Biology	**1**
	A physical science (Chemistry, Physics, Physical Science)	**1**
	Two credits from:	
	Alabama Course of Study: Science or Career and Technical Education/Advanced Placement/International Baccalaureate/postsecondary equivalent courses	**2**
	Science Total Credits	**4**
Social Studies*	**Four credits to include:**	**Credits**
	World History	**1**
	United States History I	**1**
	United States History II	**1**
	United States Government	**0.5**
	Economics	**0.5**
	Equivalent options may include: Advanced Placement/International Baccalaureate/postsecondary	
	Social Studies Total Credits	**4**
Physical Education	Lifelong Individualized Fitness Education (LIFE)	**1**
Health Education		**0.5**
Career Preparedness		**1**
Career and Technical Education and/or Foreign Language and/or Arts Education		**3**
Electives		**2.5**
Local boards shall offer foreign languages, arts education, physical education, wellness education, career and technical education, and driver education as electives.		
	Total Credits	**24**

*All four credits shall comply with the current *Alabama Course of Study: Social Studies*

GUIDELINES AND SUGGESTIONS FOR LOCAL TIME REQUIREMENTS AND HOMEWORK

Total Instructional Time

The total instructional time of each school day in all schools and at all grade levels shall be not less than 6 hours or 360 minutes, exclusive of lunch periods, recess, or time used for changing classes (*Code of Alabama,* 1975, §16-1-1).

Suggested Time Allotments for Grades 1 - 6

The allocations below are based on considerations of a balanced educational program for Grades 1-6. Local school systems are encouraged to develop a general plan for scheduling that supports interdisciplinary instruction. Remedial and enrichment activities should be a part of the time schedule for the specific subject area.

Subject Area	Grades 1-3	Grades 4-6
Language Arts	150 minutes daily	120 minutes daily
Mathematics	60 minutes daily	60 minutes daily
Science	30 minutes daily	45 minutes daily
Social Studies	30 minutes daily	45 minutes daily
Physical Education	30 minutes daily*	30 minutes daily*
Health	60 minutes weekly	60 minutes weekly
Technology Education (Computer Applications)	60 minutes weekly	60 minutes weekly
Character Education	10 minutes daily**	10 minutes daily**
Arts Education		
Dance Music Theatre Visual Arts	*Daily instruction with certified arts specialists in each of the arts disciplines is the most desirable schedule. However, schools unable to provide daily arts instruction in each discipline are encouraged to schedule in Grades 1 through 3 two 30- to 45-minute arts instruction sessions per week and in Grades 4 through 6 a minimum of 60 minutes of instruction per week. Interdisciplinary instruction within the regular classroom setting is encouraged as an alternative approach for scheduling time for arts instruction when certified arts specialists are not available.*	

* Established by the Alabama State Department of Education in accordance with *Code of Alabama*, 1975, §16-40-1

** Established by the Alabama State Department of Education in accordance with *Code of Alabama*, 1975, §16-6B-2(h)

Kindergarten

In accordance with *Alabama Administrative Code* r. 290-5-1-.01(5) Minimum Standards for Organizing Kindergarten Programs in Alabama Schools, the daily time schedule of the kindergartens shall be the same as the schedule of the elementary schools in the systems of which they are a part since kindergartens in Alabama operate as full-day programs. There are no established time guidelines for individual subject areas for the kindergarten classroom. The emphasis is on large blocks of time that allow children the opportunity to explore all areas of the curriculum in an unhurried manner.

It is suggested that the full-day kindergarten program be organized utilizing large blocks of time for large groups, small groups, center time, lunch, outdoor activities, snacks, transitions, routines, and afternoon review. Individual exploration, small-group interest activities, interaction with peers and teachers, manipulation of concrete materials, and involvement in many other real-world experiences are needed to provide a balance in the kindergarten classroom.

Grades 7-12

One credit may be granted in Grades 9-12 for required or elective courses consisting of a minimum of 140 instructional hours or in which students demonstrate mastery of Alabama course of study content standards in one-credit courses without specified instructional time (*Alabama Administrative Code* r. 290-3-1-.02 (9)(a)).

In those schools where Grades 7 and 8 are housed with other elementary grades, the school may choose the time requirements listed for Grades 4-6 or those listed for Grades 7-12.

Character Education

For all grades, not less than 10 minutes of instruction per day shall focus upon students' development of the following character traits: courage, patriotism, citizenship, honesty, fairness, respect for others, kindness, cooperation, self-respect, self-control, courtesy, compassion, tolerance, diligence, generosity, punctuality, cleanliness, cheerfulness, school pride, respect of the environment, patience, creativity, sportsmanship, loyalty, and perseverance.

Homework

Homework is an important component of every student's instructional program. Students, teachers, and parents should have a clear understanding of the objectives to be accomplished through homework and the role it plays in meeting curriculum requirements. Homework reflects practices that have been taught in the classroom and provides reinforcement or remediation for students. It should be student-managed, and the amount should be age-appropriate, encouraging learning through problem solving and practice.

At every grade level, homework should be meaning-centered and mirror classroom activities and experiences. Independent and collaborative projects that foster creativity, problem-solving abilities, and student responsibility are appropriate. Parental support and supervision reinforce the quality of practice or product as well as skill development.

Each local board of education shall establish a policy on homework consistent with the Alabama State Board of Education resolution adopted February 23, 1984, (Action Item #F-2).

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ALABAMA HIGH SCHOOL GRADUATION REQUIREMENTS

Clarified April 2018

(Alabama Administrative Code 290-3-1-02(8) and (8)(a))

Effective for students in the ninth grade in the 2013-2014 school year, all students shall earn the required credits for the Alabama High School Diploma. A local board of education may establish requirements for receipt of diplomas and endorsements, but any diploma or endorsement shall include the requirements of the Alabama High School Diploma. The Alabama courses of study shall be followed in determining minimum required content in each discipline.

COURSE REQUIREMENTS

English Language Arts	**Four credits to include:**	**Credits**
	English 9	**1**
	English 10	**1**
	English 11	**1**
	English 12	**1**
	English Language Arts-credit eligible options may include: Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	
	English Language Arts Total Credits	**4**
Mathematics	**Three credits to include:**	**Credits**
	Algebra I or its equivalent/substitute	**1**
	Geometry or its equivalent/substitute	**1**
	Algebra II w/Trigonometry or Algebra II, or its equivalent/substitute	**1**
	Mathematics-credit eligible options may include: *Career and Technical Education*/Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	
	One credit from:	
	Alabama Course of Study: Mathematics or mathematics-credit eligible courses from Career and Technical Education/Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	**1**
	Mathematics Total Credits	**4**
Science	**Two credits to include:**	**Credits**
	Biology	**1**
	A physical science (Chemistry, Physics, Physical Science)	**1**
	Science-credit eligible options may include: Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	
	Two credits from:	
	Alabama Course of Study: Science or science-credit eligible courses from Career and Technical Education/Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	**2**
	Science Total Credits	**4**
Social Studies* The (*) means that these history courses must be taken in this sequence. Government and Economics are to be taken after the history courses but not in any given sequence.	**Four credits to include:**	**Credits**
	World History	**1**
	United States History I	**1**
	United States History II	**1**
	United States Government	**0.5**
	Economics	**0.5**
	Social Studies-credit eligible options may include: Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	
Civics Test Requirement	Students are required to pass the *Civics Test* in the United States Government class effective the 2018-2019 school year.	
	Social Studies Total Credits	**4**
Physical Education	Lifelong Individualized Fitness Education (LIFE) or one JROTC Credit	**1**
Health Education		**0.5**
Career Preparedness		**1**
Career and Technical Education (CTE) and/or Foreign Language and/or Arts Education		**3**
Electives		**2.5**
Distance Learning: Effective for students entering the ninth grade in the 2009-2010 school year, Alabama students will be required to complete one online/technology enhanced course or experience prior to graduation. Exceptions through Individualized Education Plans will be allowed.		
	Total Credits	**24**

The Alabama High School Graduation requirements provide the opportunity for students to pursue multiple pathways to earn a diploma. Students will have options to pursue areas of interest through expansion of elective credits. Flexibility in course offerings allows for personalized education plans for all students. Though these options allow increased flexibility, high expectations for Alabama students remain the standard. The ninth graders of 2013-2014 are **required** to follow the new graduation requirements; however, these same options are available to **all** students.

Each high school student is required to have a four-year plan. It is critical that the plan reflects the student's aspirations for life after high school. Careful consideration should be given to the selection of electives and specific credit-eligible courses to ensure that a student is prepared for postsecondary school, four-year college, and work. Administrators and counselors should continue to review NCAA requirements for prospective student athletes before approving their electives and specific credit eligible courses.

For clarification purposes, the following definition below will apply to specific credit eligible courses:

- Credit eligible course – the course is approved as an appropriate replacement, but may not include a 90% match in standards.

The Alabama Department of Education (ALSDE) will continue to expand credit eligible course offerings. Local Education Agencies (LEAs) that would like to have a course considered for a specific credit should follow the process below for approval:

- Locally-developed Career and Technical Education (CTE) courses must be submitted to the CTE Section.
- Locally-developed core courses (Mathematics, English, Science, and Social Studies) must be submitted to the Instructional Services Section.
- Once submitted to either section, a cross-sectional team will review courses for alignment to standards and approval for credit.

Other clarifications:

Mathematics

It is imperative that a student's plans for college or postsecondary should be considered when selecting a mathematics-credit eligible course. The Mathematics Pathways memo http://www.alsde.edu/sec/sct/COS/Mathematics%20Pathways.pdf is a document that provides possible mathematics pathways for students, parents, and counselors to consider when preparing for high school mathematics course credits. In an effort to offer more flexibility to school systems, the Flexibility in Awarding Credit for Algebra I and Geometry memo, http://www.alsde.edu/sites/memos/Memoranda/FY13-2121.pdf#search=Flexibility%20in%20Algebra%20I explains how Algebra I and Geometry may be offered to students in Grades 7 and 8, respectively, for high school credit and to meet graduation requirements.

If you have questions, please contact Michele Matin at mmatin@alsde.edu or Dawn Morrison at dmorrison@alsde.edu .

Arts (includes Dance, Music, Theater, and Visual Arts)

The current *Alabama Course of Study: Arts Education* was written to satisfy the previous graduation requirements of 0.5 credit for Arts. There are several options (listed below) for students currently wishing to follow an arts pathway and/or take their electives in arts.

- Students may take the half-credit courses back-to-back in one year to meet the one-full credit course.
- Teachers may add new content to the 0.5 credit course to allow it to count as a one credit course. (A sufficient amount of additional/new content must be documented and kept on file.)
- Courses that are used as arts-credit eligible options must contain the three strands—Produce, Respond, and Understand as found in the *Alabama Course of Study: Arts Education.* These courses may serve for any of the three credits required under the "CTE, Foreign Language, or Arts" category. Arts courses lacking these three strands may serve only as a general elective credit (the 2.5 credit category).

Please contact Andy Meadows at ameadows@alsde.edu.

Science

The following Career and Technical Education courses are science-credit eligible. Teachers holding the appropriate science certifications and those with appropriate Career and Technical Education certification may teach the courses below for science credit.

- Forensic and Criminal Investigations (410025)
- Plant Biotechnology (420053)
- Aquaculture Science (420037)
- Introduction to Biotechnology (490041)
- PLTW Principles of Engineering (560016)

The following Career and Technical Education courses contain similar content as courses in the *2015 Alabama Course of Study: Science*. Students may not receive science credit for both courses.

- Chemistry of Food (510013)—similar content as Chemistry (220061)
- Environmental Management (420026)—similar content as Environmental Science (220029)
- Human Body Structures and Functions (490015)–similar content as Human Anatomy and Physiology (220026)
- PLTW Human Body Systems (490043)–similar content as Human Anatomy and Physiology (220026)

Please contact Collie Wells at cwells@alsde.edu or Michal Robinson at mrobinson@alsde.edu for additional information.

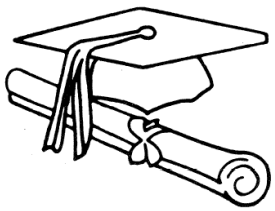
Essentials/Life Skills Pathway

Students with disabilities may enroll in Essentials Pathway Courses. Careful consideration should be given before a student is allowed to enroll in one of the Essentials Pathway courses. Students taking any core coursework under the Essentials Pathway will not be counted as a graduate under the federal four-year adjusted cohort graduation rate. If a student takes four or more core courses on the Essentials Pathway he or she is required to complete the work component requirements of this pathway. It is important for each student to pursue the coursework that is appropriate for his or her desired post-school outcome. These courses may or may not be accepted by four-year colleges and/or the **National Collegiate Athletic Association (NCAA)**. Students who plan to attend a postsecondary institution must meet the admission requirements of the selected institution. *The Courses for the Alabama High School Diploma Pathways* and the *Work Component Requirements* can be found in the *Transition Engagement Series 1: Helping Students Achieve Post-School Outcomes – A Handbook for Engaging Secondary Transition Professionals,* http://www.alsde.edu/sec/ses/ts/Resources/Engagement%20Series%20Handbook%201Completed%20with%20page%20numbers.pdf. Students who pursue the Essentials Pathway may continue to receive free appropriate public education (FAPE) until the age of 21, as the Essentials Pathway is not fully aligned with the Alabama High School Courses of Study. Please contact Cindy Augustine at caugustine@alsde.edu for additional information.

Waivers

Waivers for the LIFE PE course are still required to substitute Band, Athletics, etc. The standards from the LIFE PE course must be included in the course. A student roster is no longer required to be included in the waiver letter. Please contact Nancy Ray with any questions at nray@alsde.edu.

Some districts are pursuing innovative schedules, instructional delivery models, etc., that require permission to waive certain policies. Please contact Robin Nelson with questions regarding these options at rnelson@alsde.edu.



High School Graduation Requirements

To graduate, students must complete a minimum of 24 units of credit. Students must have completed at least 40 clock hours of simulation, job shadowing, apprenticeship, and/or internship time per their respective flight-plan. Students will also meet at least three of six college and career readiness indicators/targets as outlined by Alabama's Plan 2020

1. a benchmark score on any section of the ACT test;

2. a qualifying score on an AP or IB exam;

3. approved college or postsecondary credit while in high school;

4. a benchmark level on the ACT WorkKeys;

5. an approved industry credential; or

6. documented acceptance for enlistment into the military).

Students with Limited English Proficiency (LEP) and students with disabilities

Students with LEP will be required to meet all aforementioned requirements. They will receive accommodations and additional support to mitigate language barriers. Students with disabilities will meet modified or accommodated standards reflecting their documented needs. Their "flight plans" will be based on their Individual Education Programs (IEPs); students whose IEPs indicate an alternative mastery process receive a document of graduation. Special consideration will be given for their industry-based track options; alternative options will be available based on need.

Credit Recovery

AAHS realizes some students may not pass all initially planned courses or may decide to change their aerospace/aviation track; AAHS students will have an opportunity to retake or replace courses as needed. AAHS will have a credit recovery program that includes online courses, dual enrollment, and summer program options to meet student credit recovery needs.

Student and Parent Communication

AAHS students (pilots) will meet with their "flight crew" weekly to discuss their flight plan progress. Their flight crew will include at least one core teacher and an advisor. During weekly meetings, attendance, behavior, and coursework grades will be reviewed. The crew will celebrate successes and address concerns; additional supports will be assigned as needed. AAHS parents will participate in mandatory conferences each 9-weeks to review their student's flight plan progress. Translated *Flight Plans* will also be available to accommodate our ELL students. SPED and ELL teachers will attend all of their "pilot's" meetings for additional support. AAHS has included early release days in its master schedule to accommodate meeting schedules. Parents will have options to meet in person or through video conferencing.

AAHS students will be required to meet both the AHSG requirements, at least 40 clock-hours of industry-based simulation, apprenticeship, and/or internship time, and the completion of an industry-based credentialing program. The industry-based credentialing program can be changed based on a student's ability level; AAHS will offer credentialing programs that reflect accommodating levels.

AAHS will provide multiple pathways for students to earn a diploma. Students will explore distinct aviation, aerospace, and defense related career pathways in introductory elective courses and choose a specific industry related pathway by 10th grade. Each pathway will consist of a corresponding elective track. Flexibility in course offerings allows for personalized education plans for all students. Students will earn course credit by demonstrating mastery in each course. Mastery will be earned by demonstrating a 70% or higher mastery rate.

AAHS is providing 6 semesters for all students to earn a CTE endorsed Alabama High School diploma. Additionally, students will have the opportunity to take an industry-aligned credentialing examination their senior year. In college, entire campuses shift their focus to prepare students for final exams. At AAHS, we also focus on industry-based credentialing examinations and create the conditions for students to successfully pass these exams leading to the opportunity for students to be hired directly after graduation. This allows AAHS to meet its goal of 100% of students graduating with a CTE endorsed Alabama High School diploma and 90% of students graduating with a professional license/credential in aviation, aerospace, or defense.

Grade Point Average (GPA) will be calculated using a 4.0 scale with 4.0 representing an "A". 3.0 representing a "B", 2.0 representing a "C", 1.0 representing "D" and 0.0 representing failure. AAHS students must earn a 70% to demonstrate mastery of the course content. Anything below 70% will result in no credit assigned to the course. Upon successful completion of a course, the teacher will enter the final grade. Transcripts will include the semester the course was completed, the state identified course number, the course name, and the final grade. AAHS transcripts will include a cumulative GPA.

In order for low-income students to be successful in college, they need to be exposed to college level rigor in high school. AP courses whether college credit is earned or not, increase students of color's chances to succeed in college. AAHS will close the college persistence gap by setting more rigorous graduation requirements:

AAHS students must meet and exceed the requirements for the Alabama High School Diploma. Students must earn 26 credits and:

- Earn one math credit in a math course higher than Algebra II *with* Trigonometry
- Earn one foreign language credit as evidenced by passing with an average of "C" or higher each semester
- ***Successfully*** complete two of four core credits as evidenced by passing with an average of "C" or higher each semester in advanced or Pre-AP coursework in grade 10.
- ***Successfully*** earn at least one Advanced Placement credit as evidenced by an average of "C" or higher each **semester, or**
    - one Dual Enrollment credit as evidenced by an average of "C" or higher each **semester** …must complete a minimum of one AP.

****In order to receive the Alabama Diploma with Career and Technical Endorsement, AAHS students must meet the minimum requirements for the Alabama High School diploma in addition to **three sequential** Career and Technical Courses in the same pathway ***and*** earn credentialing in that area.

Course	Credits	Alabama High School Diploma	Diploma with Merit*	CTE Endorsement**
English Language Arts	4	• English 9 • English 10 • English 11 • English 12 *Or any Advanced/Pre-AP/IB/Postsecondary **equivalent** option of these courses		
Mathematics	4	• Geometry or its equivalent/substitute • Algebra I or its equivalent/substitute • Algebra II w/Trigonometry Or Algebra II or its equivalent/substitute *Equivalent/substitute options may include: CTE/ AP/IB/approved postsecondary courses/SDE approved	MUST ACHIEVE one course **above** Algebra II with Trig	
Science	4	• Biology • A physical science (Chemistry, Physics, Physical Science) • The third and fourth science credits must be chosen from the Alabama Course of Study *Equivalent/substitute options may include: CTE approved courses, AP, IB/approved postsecondary courses/SDE approved courses		

History	4	• World History • United States History I • United States History II • United States Government • Economics *Equivalent/substitute options may include: AP, IB/approved postsecondary courses/SDE approved courses		
Physical Education	1	Lifelong Individualized Fitness Education (LIFE) or one JROTC Credit		
Health Education	.5			
Career Preparedness	1			
Career and technical Education and or Foreign Language and/or Arts Education	3		Must earn two credits of the same Foreign Language	Must complete three sequential CTE courses in the same pathway AND EARN Credentialing for that pathway
Electives	2.5	**A variety of electives will be provided online by our IHE and industry partners. Having this option gives AAHS students the freedom to make culturally relevant electives that satisfy both AHSG and "Flight Plan" requirements.**		
Total		**24**	26	24

Across the country, many high school graduates face the challenge of successfully satisfying the requirements for graduation in their state but still falling short of the basic enrollment requirements for postsecondary institutions.[1] However, in Alabama, students who follow the diploma with merit graduation requirements will place themselves in position to meet the basic enrollment requirements for most Alabama colleges and universities. At AAHS, our students will be prepared to compete for scholarships and exceed basic enrollment requirements. We also will exceed the career readiness

[1] Venezia, A., Kirst, M., & A. Antonio (2005). *Betraying the College Dream: How Disconnected K-12 and Postsecondary Education Systems Undermine Student Aspirations*, Stanford University Bridge Project Policy Brief.

requirements with students earning 25 hours of dual enrollment college credit in our aviation and aircraft mechanic pathways. Students will also graduate with an industry recognized credential opening up actual employment opportunities upon graduation.

	GPA	ACT	
University of Alabama	2.8-2.9	18-19	• 4 units of English • 4 units of social sciences, including world history or a comparable course (second foreign language will satisfy one of the four required social science requirements) • 3 units of mathematics (must include algebra I, algebra II, and one unit of either geometry, trigonometry, or calculus) • 3 units of natural sciences, including two courses with lab components • 1 unit of foreign language • 5 additional units of academic courses (We recommend courses in fine arts or computer literacy, with additional courses in mathematics, natural sciences, and foreign language.)
University of Alabama at Birmingham	2.8-2.9	18-19	• 4 units of English • 4 units of social sciences, including world history or a comparable course (second foreign language will satisfy one of the four required social science requirements) • 3 units of mathematics (must include algebra I, algebra II, and one unit of either geometry, trigonometry, or calculus) • 3 units of natural sciences, including two courses with lab components • 1 unit of foreign language • 5 additional units of academic courses (We recommend courses in fine arts or computer literacy, with additional courses in mathematics, natural sciences, and foreign language.)
Auburn	3.0-3.1	22-23	
Birmingham Southern	3.0	18-19	

Samford University	3.2-3.3	23-24	

In support of consistent focus on college and career readiness, AAHS students will engage in a wide range of exposure experiences for students. A significant part of the challenge for many underserved students in achieving high school graduation and beyond can be associated with the very limited experience students have with transformational exposure opportunities. The degree to which we establish identity is inextricably connected to what we have been exposed to. Unfortunately, if a child is saturated with experiences and identity types that are stereotypical to one environment, this may lead to "identity foreclosure", the premature adoption of a way of thinking, believing, acting and experiencing the world – usually an identity that is given to them because they fit a narrow set of locally interpreted and external criteria. This limited mindset is contrary to the global nature of aviation and aerospace industry.

AAHS believes that students who are in environments where exposure is limited need to be given access to people, places, things and ideas that challenge the notions developing in the bubble of their own experience. These culturally enriching experiences are a key part of our strategy in keeping students engaged and ensuring students graduate. and can be as simple as bringing in unique individuals to interact with students and as complex as securing international travel. Youth participating in one culturally enriching exposure showed a 14% increase in their desire for additional exposures.[2] A US Travel Association report in NEAchieve showed that students who participate in field trips have 59% higher grades, 95% higher high school graduation rates, 63% higher college graduation rates and 12% higher average annual salary. In total, 89% of those surveyed said that a field trip had a lasting impact on their education and ultimately supported their final career choice. Learning or service-oriented field trips led by schools have been shown to result in higher test scores, greater critical thinking, better recall, deeper interest in and more rigorous pursuit of classroom content, better contextualization of curriculum, better team engagement, and stronger professional identification.[3]

AAHS plans to implement the following strategies to support student engagement and high school completion:

- Culminating Experiences – students plan and engage a field experience as a part of each official project that is a part of the curriculum
- Speaker Series – a series of rotational visits where individuals speak at the school followed by a small group visiting the workplace of the individual speakers
- Outdoor Learning camp/retreat – students will engage in at least one overnight/outdoor retreat
- End-of-Year Field Trips – students earn participation on one end-of-year trip
- Annual International Trip – students may participate in one international trip each year

Community Centered Service Learning – students will complete a series of small community-based service-learning engagements

[2] Jay P. Green and Brian Kisida, Education Next 2013

[3] Trails.com. 2016

ALABAMA HIGH SCHOOL GRADUATION REQUIREMENTS

Clarified April 2018

(Alabama Administrative Code 290-3-1-02(8) and (8)(a))

Effective for students in the ninth grade in the 2013-2014 school year, all students shall earn the required credits for the Alabama High School Diploma. A local board of education may establish requirements for receipt of diplomas and endorsements, but any diploma or endorsement shall include the requirements of the Alabama High School Diploma. The Alabama courses of study shall be followed in determining minimum required content in each discipline.

COURSE REQUIREMENTS

English Language Arts	**Four credits to include:**	**Credits**
	English 9	**1**
	English 10	**1**
	English 11	**1**
	English 12	**1**
	English Language Arts-credit eligible options may include: Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	
	English Language Arts Total Credits	**4**
Mathematics	**Three credits to include:**	**Credits**
	Algebra I or its equivalent/substitute	**1**
	Geometry or its equivalent/substitute	**1**
	Algebra II w/Trigonometry or Algebra II, or its equivalent/substitute	**1**
	Mathematics-credit eligible options may include: *Career and Technical Education*/Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	
	One credit from:	
	Alabama Course of Study: Mathematics or mathematics-credit eligible courses from Career and Technical Education/Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	**1**
	Mathematics Total Credits	**4**
Science	**Two credits to include:**	**Credits**
	Biology	**1**
	A physical science (Chemistry, Physics, Physical Science)	**1**
	Science-credit eligible options may include: Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	
	Two credits from:	
	Alabama Course of Study: Science or science-credit eligible courses from Career and Technical Education/Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	**2**
	Science Total Credits	**4**
Social Studies* The (*) means that these history courses must be taken in this sequence. Government and Economics are to be taken after the history courses but not in any given sequence.	**Four credits to include:**	**Credits**
	World History	**1**
	United States History I	**1**
	United States History II	**1**
	United States Government	**0.5**
	Economics	**0.5**
	Social Studies-credit eligible options may include: Advanced Placement/International Baccalaureate/postsecondary courses/SDE-approved courses.	
Civics Test Requirement	Students are required to pass the *Civics Test* in the United States Government class effective the 2018-2019 school year.	
	Social Studies Total Credits	**4**
Physical Education	Lifelong Individualized Fitness Education (LIFE) or one JROTC Credit	**1**
Health Education		**0.5**
Career Preparedness		**1**
Career and Technical Education (CTE) and/or Foreign Language and/or Arts Education		**3**
Electives		**2.5**
Distance Learning: Effective for students entering the ninth grade in the 2009-2010 school year, Alabama students will be required to complete one online/technology enhanced course or experience prior to graduation. Exceptions through Individualized Education Plans will be allowed.		
	Total Credits	**24**

The Alabama High School Graduation requirements provide the opportunity for students to pursue multiple pathways to earn a diploma. Students will have options to pursue areas of interest through expansion of elective credits. Flexibility in course offerings allows for personalized education plans for all students. Though these options allow increased flexibility, high expectations for Alabama students remain the standard. The ninth graders of 2013-2014 are **required** to follow the new graduation requirements; however, these same options are available to **all** students.

Each high school student is required to have a four-year plan. It is critical that the plan reflects the student's aspirations for life after high school. Careful consideration should be given to the selection of electives and specific credit-eligible courses to ensure that a student is prepared for postsecondary school, four-year college, and work. Administrators and counselors should continue to review NCAA requirements for prospective student athletes before approving their electives and specific credit eligible courses.

For clarification purposes, the following definition below will apply to specific credit eligible courses:

- Credit eligible course – the course is approved as an appropriate replacement, but may not include a 90% match in standards.

The Alabama Department of Education (ALSDE) will continue to expand credit eligible course offerings. Local Education Agencies (LEAs) that would like to have a course considered for a specific credit should follow the process below for approval:

- Locally-developed Career and Technical Education (CTE) courses must be submitted to the CTE Section.
- Locally-developed core courses (Mathematics, English, Science, and Social Studies) must be submitted to the Instructional Services Section.
- Once submitted to either section, a cross-sectional team will review courses for alignment to standards and approval for credit.

Other clarifications:

Mathematics

It is imperative that a student's plans for college or postsecondary should be considered when selecting a mathematics-credit eligible course. The Mathematics Pathways memo http://www.alsde.edu/sec/sct/COS/Mathematics%20Pathways.pdf is a document that provides possible mathematics pathways for students, parents, and counselors to consider when preparing for high school mathematics course credits. In an effort to offer more flexibility to school systems, the Flexibility in Awarding Credit for Algebra I and Geometry memo, http://www.alsde.edu/sites/memos/Memoranda/FY13-2121.pdf#search=Flexibility%20in%20Algebra%20I explains how Algebra I and Geometry may be offered to students in Grades 7 and 8, respectively, for high school credit and to meet graduation requirements.

If you have questions, please contact Michele Matin at mmatin@alsde.edu or Dawn Morrison at dmorrison@alsde.edu .

Arts (includes Dance, Music, Theater, and Visual Arts)

The current *Alabama Course of Study: Arts Education* was written to satisfy the previous graduation requirements of 0.5 credit for Arts. There are several options (listed below) for students currently wishing to follow an arts pathway and/or take their electives in arts.

- Students may take the half-credit courses back-to-back in one year to meet the one-full credit course.
- Teachers may add new content to the 0.5 credit course to allow it to count as a one credit course. (A sufficient amount of additional/new content must be documented and kept on file.)
- Courses that are used as arts-credit eligible options must contain the three strands—Produce, Respond, and Understand as found in the *Alabama Course of Study: Arts Education.* These courses may serve for any of the three credits required under the "CTE, Foreign Language, or Arts" category. Arts courses lacking these three strands may serve only as a general elective credit (the 2.5 credit category).

Please contact Andy Meadows at ameadows@alsde.edu.

Science

The following Career and Technical Education courses are science-credit eligible. Teachers holding the appropriate science certifications and those with appropriate Career and Technical Education certification may teach the courses below for science credit.

- Forensic and Criminal Investigations (410025)
- Plant Biotechnology (420053)
- Aquaculture Science (420037)
- Introduction to Biotechnology (490041)
- PLTW Principles of Engineering (560016)

The following Career and Technical Education courses contain similar content as courses in the *2015 Alabama Course of Study: Science*. Students may not receive science credit for both courses.

- Chemistry of Food (510013)—similar content as Chemistry (220061)
- Environmental Management (420026)—similar content as Environmental Science (220029)
- Human Body Structures and Functions (490015)–similar content as Human Anatomy and Physiology (220026)
- PLTW Human Body Systems (490043)–similar content as Human Anatomy and Physiology (220026)

Please contact Collie Wells at cwells@alsde.edu or Michal Robinson at mrobinson@alsde.edu for additional information.

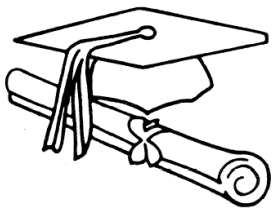
Essentials/Life Skills Pathway

Students with disabilities may enroll in Essentials Pathway Courses. Careful consideration should be given before a student is allowed to enroll in one of the Essentials Pathway courses. Students taking any core coursework under the Essentials Pathway will not be counted as a graduate under the federal four-year adjusted cohort graduation rate. If a student takes four or more core courses on the Essentials Pathway he or she is required to complete the work component requirements of this pathway. It is important for each student to pursue the coursework that is appropriate for his or her desired post-school outcome. These courses may or may not be accepted by four-year colleges and/or the **National Collegiate Athletic Association (NCAA)**. Students who plan to attend a postsecondary institution must meet the admission requirements of the selected institution. *The Courses for the Alabama High School Diploma Pathways* and the *Work Component Requirements* can be found in the *Transition Engagement Series 1: Helping Students Achieve Post-School Outcomes – A Handbook for Engaging Secondary Transition Professionals,* http://www.alsde.edu/sec/ses/ts/Resources/Engagement%20Series%20Handbook%201Completed%20with%20page%20numbers.pdf. Students who pursue the Essentials Pathway may continue to receive free appropriate public education (FAPE) until the age of 21, as the Essentials Pathway is not fully aligned with the Alabama High School Courses of Study. Please contact Cindy Augustine at caugustine@alsde.edu for additional information.

Waivers

Waivers for the LIFE PE course are still required to substitute Band, Athletics, etc. The standards from the LIFE PE course must be included in the course. A student roster is no longer required to be included in the waiver letter. Please contact Nancy Ray with any questions at nray@alsde.edu.

Some districts are pursuing innovative schedules, instructional delivery models, etc., that require permission to waive certain policies. Please contact Robin Nelson with questions regarding these options at rnelson@alsde.edu.



HIGH SCHOOL

ATTACHMENT 6

School Calendar

School Calendar

At AAHS, our students, teachers, and parents are informed and prepared. Our academic calendar will as much as possible corroborate with the surrounding Jefferson County school districts to help parents with scheduling needs. It will include adequate professional development days so our teachers are well trained in best practices.

Our calendar will also embed days for parent/teacher conferences providing teachers and parents with opportunities to review their student's data and collaborate on supportive measures. Using our innovative 90-minute block semester scheduling (136.5 instructional hours per course) and 182 instructional days (91 days per semester), students will not only engage in rigorous coursework, but will have consistent time for hands-on activities, technology use, collaborative projects, and simulation experiences designed to lock-in learning.

Extended intentional efforts, through summer bridge programs, will be made to fill in college and career readiness gaps; this includes both academic and social-emotional deficiencies. The AAHS Summer Bridge Program will also help to minimize summer learning losses. AAHS students and teachers are always prepared, ready for continuous building on a solid foundation. See Year 1's calendar below.

Alabama Aerospace & Aviation High School 2022-2023 School Calendar

July 2022

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

August

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

September

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

October

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

November

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

December

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	1	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

July 4	Independence Day Observed
July 18-Aug 5	Summer Learning Institute
August 8-12	Summer Bridge Program
August 15	**First Day of School for All Students**
September 5	Labor Day
Oct. 14-17	Fall Break
Oct. 20	End of 1st Grading Period
Nov. 11	Veterans Day
Nov. 21-25	Thanksgiving Holiday
Dec. 22-31	Mid-Year Holiday
Jan. 3	**Professional Development Day**
Jan. 4	Students Return
Jan. 6	End of 1st Semester
Jan. 16	Martin Luther King Jr. Day
Jan. 27	PD Day
Feb. 20	President's Day
March 16	End of 3rd Grading Period
March 20-24	Spring Breaks
May 26	**End of 2nd Semester/Last Day for Student**
May 29	Memorial Day
May 30	PD Day

Holidays

Sept. 5, October 14-17, Nov. 11, Nov. 21-25 Dec. 19-Jan. 2, Jan. 16, Feb. 20, March 20-24, May 30

Totals

182 Instructional Days

18 Full PD Days (126 Hours)

31 Early Release PD Days (62 Hours)

188 Total Teacher PD Hours (27 Days)

Inclement Weather Days

State Assessment

Fridays are early release days for students.

Students are released at 1:00 p.m.

Faculty team meetings at 1:30 p.m.

Summer Bridge Program

PD Days-no students

School closed

End of grading period

January 2023

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

February

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

March

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

April

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

May

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

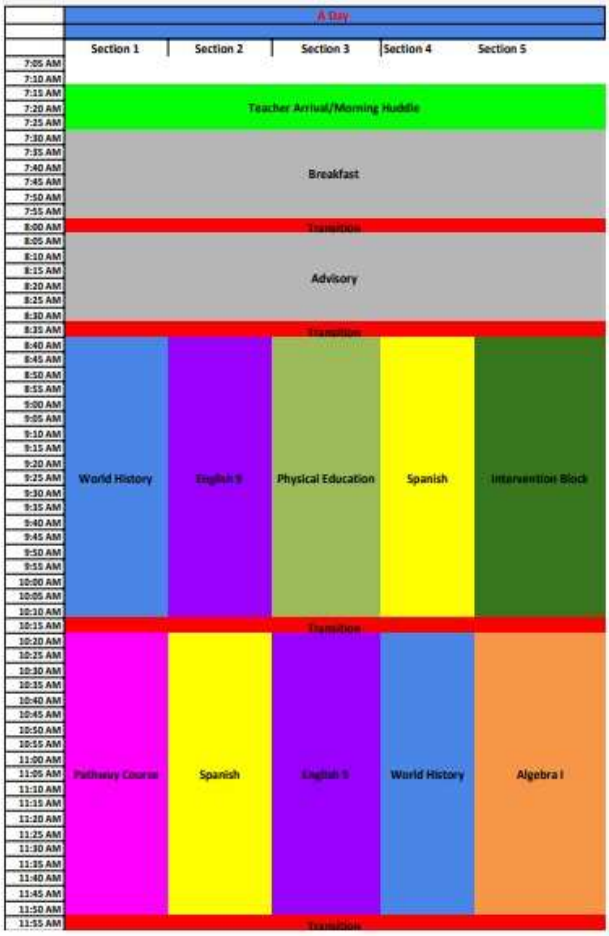
June

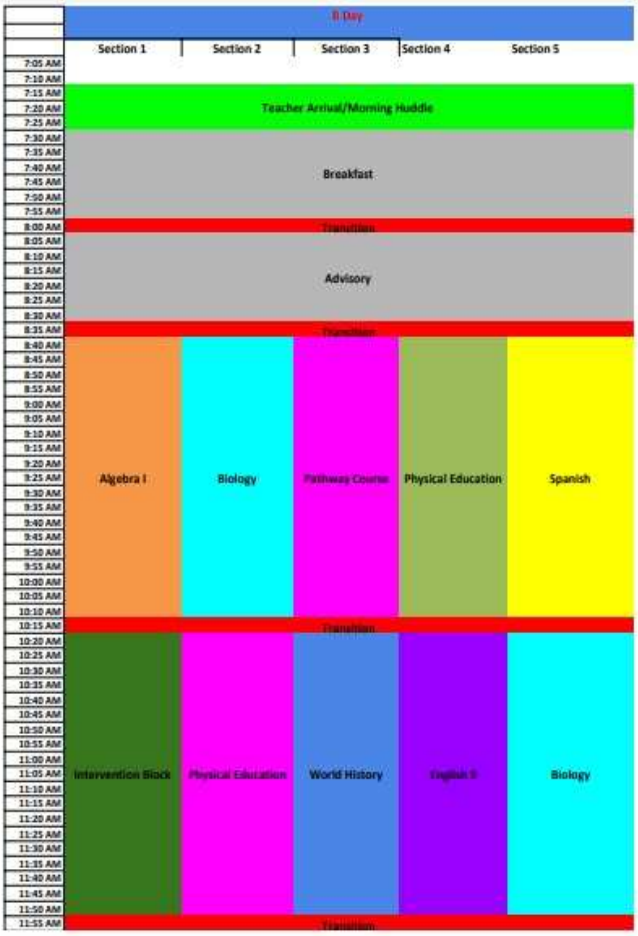
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

School Calendar and Schedule

At AAHS, our students, teachers, and parents are informed and prepared. Our academic calendar will as much as possible corroborate with the surrounding Jefferson County school districts to help parents with scheduling needs. It will include adequate professional development days so our teachers are well trained in best practices. Our calendar will also embed days for parent/teacher conferences providing teachers and parents with opportunities to review their student's data and collaborate on supportive measures. Using our innovative 90-minute block semester scheduling (136.5 instructional hours per course) and 182 instructional days (91 days per semester), students will not only engage in rigorous coursework, but will have consistent time for hands-on activities, technology use, collaborative projects, and simulation experiences designed to lock-in learning. Extended intentional efforts, through summer bridge programs, will be made to fill in college and career readiness gaps; this includes both academic and social-emotional deficiencies. The AAHS Summer Bridge Program will also help to minimize summer learning losses. AAHS students and teachers are always prepared, ready for continuous building on a solid foundation. See the attachment for Year 1's calendar.

The AAHS instructional day begins at 7:30AM and ends at 3:15PM. Students will be dismissed at 1:55PM for Teacher Professional Development every Friday. On days when students will be dismissed early, students will still receive the required instructional time set by the Alabama State Department of Education through asynchronous learning opportunities. AAHS will provide after school programming as well as extra-curricular programming for students who remain daily. Students will receive at minimum an average of 4 hours and 15 minutes of core content instruction weekly. Additionally, AAHS students will attend physical education, and other electives. As illustrated in the attached daily and weekly schedule, core subjects and intervention are prioritized to ensure we meet the stated goals and objectives.


A Day
Section 1
Section 2
Section 3
Section 4
Section 5
Teacher Arrival/Morning Huddle
Breakfast
Transition
Advisory
Transition
World History
English 9
Physical Education
Spanish
Intervention Block
Transition
Pathway Course
Spanish
English 9
World History
Algebra I
Transition
Lunch/Flex Bock
Transition
Biology
Algebra I
Intervention Block
Pathway Course
Physical Education
Transition
Physical Education
Intervention Block
Algebra I
Biology
World History
Dismissal


B Day
Section 1
Section 2
Section 3
Section 4
Section 5
Teacher Arrival/Morning Huddle
Breakfast
Transition
Advisory
Transition
Algebra I
Biology
Pathway Course
Physical Education
Spanish
Transition
Intervention Block
Physical Education
World History
English 9
Biology
Transition
Lunch/Flex Bock
Transition
English 9
World History
Spanish
Intervention Block
Pathway Course
Transition
Spanish
Pathway Course
Biology
Algebra I
English 9
Dismissal

School Culture

Alabama Aerospace and Aviation High school believes that a school's academic achievement is contingent upon and inextricably linked to its ability to establish a strong school culture, first. We believe that a strong school culture starts with clear expectations, strong relationships, a focus on student learning, and effective performance management systems. Justin Rosenstein in his article How to Lead With Clarity says that "there are three kinds of clarity high-performing teams have: clarity of purpose, clarity of plan, and clarity of responsibility." We believe that the foundation of a strong school culture starts with clarity. Every leader in our organization is clear on the mission and vision of AAHS and how our lived core values of Honor, Integrity, Gratitude, Humility, Effort, and Respect provide the vehicle for achieving our mission. This level of clarity of purpose translates into our hiring and professional development practices. We believe that investing in staff culture has a direct impact on the overall school culture. Leadership team members, especially in the school's opening years, will treat the development of staff culture as an essential priority. From the beginning, selection processes will ensure that the hired staff supports the school's mission, approach and desired culture. In the initial Summer Institute, school staff will establish faculty agreements and these will be revisited each year.

AAHS has a deep seeded conviction that all positive academic environments begin with strong relationships between students and teachers. Given this belief, we have created intentional structures and opportunities for teachers and students to create relationships rooted in student academic success. As soon as a student fills out an interest form for AAHS, they receive a personal thank you for them and their family. A staff member then invites them to an interest meeting to get to know that student and their personal, academic, and career goals. Student engagement does not stop throughout the recruitment process with numerous opportunities for learning demonstrations and skill explorations tied to our core academic model. These events lead up to a two-week summer bridge program where students and teachers work together, share their stories, and engage in team building activities that organically build common interests and shared commitments. This intentional community building is cultivated on a functional level by clear expectations, defined roles and responsibilities for students and teachers, and outlined named commitments. All students and staff sign a commitment to excellence culminating their transition into the school community.

Our approach to providing clarity, living out our core values, and establishing strong relationships make up the steel framework for the cultural foundation of student intellectual and social emotional development. However, the brick and mortar of AAHS's culture is found in a laser focus on student achievement formed by strong systems developed through the constant practice of building good habits.[1] We believe that all students can and will achieve at high levels. We believe that students will rise to the expectations we set for them. We also understand that the precise nature of the aviation and aerospace industry requires detail, complex thinking, and timeliness. For example, every classroom in our school will have a content objective, language objective, social emotional learning objective, and a college/career connection posted prominently so students and teachers will have a north star for every lesson. Just like every flight has a destination with specific checkpoints, our learning is focused and systematic. Teachers and students will follow meaningful daily routines that reinforce cultural systems including what students should do each time they enter a new learning space. We correct choices and behavior that do not reflect our lived core values and celebrate outstanding performance. Specific

[1] Bambrick-Santoyo, Paul. Leverage Leadership 2.0 (p. iv). Wiley. Kindle Edition, 2018

performance management systems are grounded in a shared belief in the value of feedback and learning from mistakes for both teachers and students.

We believe that establishing and implementing our school culture has to start in the student recruitment process. We want students and parents fully aware of commitments, expectations, and agreements before the start of school. Our leadership team will have already established specific goals that we are striving for by day one. An example could be 100% of students on time and prepared to learn on day one. With that said, the plan for implementing our culture for the first day of school launches in our Summer Institute with teachers and staff then our Summer Learning Academy with students. Each of these cultural bedrocks will follow the same formula for success. We follow Bambrick-Santoyo's core tenet that what works for adults works for children when it comes to establishing culture.[2]

Hook

Teachers and students are hooked with the "why" behind our cultural language, routines, expectations, and protocols. Our "why" is grounded in a laser focus on student achievement with the end goal of creating the next generation of aerospace and aviation professionals. Our students' achievement and access into high paying aerospace and aviation careers confirm the reality that individuals from diverse backgrounds can excel in any aviation or aerospace related occupation.

Frame

We will frame our school culture by outlining and defining the specific behaviors, routines, and common language connected to our lived core values as the vehicle for achieving our mission and vision. Students and staff will see the connection between our long term and short-term goals and how the ethos of how we operate as a school will determine how long it takes to reach those goals. Specifically, the school founder and CEO will set the cultural vision connecting school goals to individual student learning outcomes. Teachers and students in the two separate specifically designed school culture implementation spaces (Summer Learning Institute and the Student Summer Bridge Program) will unpack our mission and vision as well as core values. The groups will then construct a shared mantra personalizing the collective commitment to building the culture necessary to realize our mission.

Model

Our school culture will be modeled through the physical environment throughout the facility. Students and staff will see examples of diverse aviation and aerospace heroes and sheros pictured on walls throughout the facility. Reminders of being "On Time and On Point" will be prominent fixtures in classrooms and hallways. Most importantly, the leadership team will model the desired behavior of teachers, parents, staff, and students. Routines will be literally role played giving visual and voice to what success looks like and sounds like in all areas. We will also model how we will measure success. Explanations of feedback procedures and corrective error improvements will be laid out before the first day of school.

[2] Ibid

Debrief

Reflection and constant improvement are bedrocks of the AAHS culture as well. Students, staff, parents, and leaders will engage in specific reflective groups and individual periodic reflection exercises connected to ensuring organizational clarity and learning. We know that most things will not go right the first time. We want to capture what went wrong or what could have gone better and discuss solutions and suggestions on all stakeholder levels. This will be an intentional practice with student, staff, and parent focus groups that regularly debrief our commitment to living out our core values and filtering all decisions through our mission and vision. This enterprise-wide practice will be established during the Summer Institute and Summer Bridge programs including a full day AAHS Parent Boot Camp.

Practice

Precise practice is a cultural bedrock of AAHS. Our industry mandates precision given that lives are at stake every time a plane, helicopter, jet, rocket, or even an unmanned aircraft takes off. The FAA requires a pilot to have 1,500 flight hours or practice flying time before a pilot can become a first officer on a commercial jetliner.[3] Everyone expects their plane to land safely when they board a flight. The safety and interrater reliability we often take for granted comes from thousands of hours of practice. We practice routines like morning meetings and community circles with all stakeholders before the first school bell rings. We run through bell schedules and model precise transitions as a staff before students arrive. Students practice going to their lockers and walking through the lunch line over the summer. When the first day of school begins, we are in the feedback and monitoring phase. Students will know where their first class is located and who to talk to about additional tutoring. Teachers and leadership team members will be giving "lightning-quick" feedback on error correction and missed opportunities demonstrating a consistent and united front.

Students who move from the waitlist into our school after the beginning of the year will participate in a full day Saturday orientation along with their parents. This training will hook, frame, model, debrief, and practice the major cultural elements of our school. Each new student will also be paired with a "co-pilot". This person is another student who has demonstrated mastery of key cultural concepts and skills as observed by teachers and other members of their assigned advisory or "flight crew". "Flight Crews" or advisories are also school culture reinforcement systems. They connect student achievement and student wellness in one daily structure designed to reinforce norms, foster a culture of celebration, cultivate collaboration, and organize student activities.

Alabama Aerospace and Aviation High School's lived core values extend to every population in our school community including English Learners and students with disabilities. We believe that all students can reach HIGHER and achieve regardless of their background or current academic ability level. Our school culture is rooted in above average student achievement leading to a career in the aviation and aerospace industry. We also recognize that above average student achievement may look different for different students or may require additional supports. That is why we follow Marzano's tactic of creating a Highly Reliable School through intentionally fostering a safe, supportive, and collaborative culture for English learners, students with disabilities, and any students who are academically below grade level.[4] For us, this again begins with clarity. English learners know that every lesson taught in our school will

[3] www.faa.gov

[4] Marzano, Robert J.. Leading a High Reliability School (p. ii). Solution Tree Press. Kindle Edition, 2018

have a language objective. This objective will give a clear north star as to how they along with every other student in the class will practice listening, speaking, and writing with hands on tools to improve their mastery of the English language. We utilize Sheltered Instruction to reinforce language usage and development for all students not just our English language learners.[5] This shared commitment to language learning will support the already established inclusive culture and translate over to non-English language learners learning new languages as a part of our global approach to learning. Aviation and Aerospace is a global industry that will require all of our students to be language learners.

Our safe, supportive, and collaborative culture extends to students with disabilities and students with academic challenges. First and foremost, our physical facility will meet all Americans with Disabilities Act compliance protocols ensuring that all students can safely move about our building. We also will ensure that concrete systems and structures are embedded and practiced as a regular part of the ethos of our school that reinforce our core belief that all students can and will achieve at high levels. That starts with clearly defined and measurable goals for students with learning disabilities connected to their Individual Education Plans. Learning supports will be readily available and clearly defined for students and parents. For example, all students will participate in extended time for both math and literacy in their first year at AAHS. All students will participate in a mandatory math and literacy lab that will be personalized to remediate or extend learning. We also believe in supporting gifted and talented students as a special population in our school. Gifted/talented students will be supported in learning extensions and personalized learning opportunities. All students will be heterogeneously grouped for learning opportunities and school cultural events. Structured wellness check-ins will be embedded into Fly Crews supported by our school counselor. All students will understand and be able to articulate our focus on learning leading to long-term life success goals in the aviation and aerospace industry whether you are working to become a pilot, airframe and powerplant mechanic, military pilot, aerospace engineer, avionics technician, or an airport ground crew member.

[5] Vygotsky, 1978, 2002; Wertsch, 1991

Supplemental Programming

All incoming 9th grade students will participate in a Summer Bridge Program which serves as an orientation program for the AAHS high school experience. The Summer Bridge Program prepares students for college and career readiness; this includes filling both academic and social-emotional gaps. 9th graders will begin their AAHS career by attending a 9:00AM to 2:00PM orientation Monday through Thursday which allows them to take their baseline assessments through MAP testing, gain an introduction to AAHS programming, and receive gap closing interventions in Math and ELA instruction. Teachers will complete observation forms that include both academic and behavioral data points. The AAHS Summer Bridge Program will also help to minimize summer learning loss. The Summer Bridge Program helps provide incoming students with a safe and supportive onramp to their high school experience.

AAHS students will have the opportunity to engage in a diverse array of various extracurricular activities related to our school design model. On top of these opportunities, we will also be working toward including team sports and student led clubs and organizations. We plan to offer the following sports:

- Boys and Girls Golf
- Boys and Girls Indoor/Outdoor Track and Field
- Boys and Girls basketball

We also plan to pursue opportunities to offer JROTC and the Civil Air Patrol. Clubs and student led organizations will include student government and other industry related national student-based organizations including but not limited to:

- Technology Student Association (9^{th}-12^{th})
- National Honor Society (10^{th} -12^{th})
- National Society of Black Engineers (10^{th} -12^{th})
- Organization for Black Aerospace Professionals "Aerospace Career Academy" (10^{th} -12^{th})

All student led organizations, clubs, and affinity groups will conduct meetings and activities outside of the regular school day typically after or before school. Funding for sports will be raised through philanthropic support and fundraising that meets all applicable AHSAA guidelines and regulations.

AAHS will implement a comprehensive SEL curriculum called Overcoming Obstacles by the Community for Education Foundation. To date, 55 million students have benefited from the skills learned from this curriculum. Educators report that when students are taught Overcoming Obstacles, "grades and graduation rates go up, bullying goes down, and young people are better prepared for college and careers".[1]

This curriculum will focus on the development of life skills related to student mental, emotional, and social development. Students will engage in sequential lessons, providing a solid base of life skills development that will help them achieve social, emotional, and academic success during their first two years of high school and build upon that success in the last two years.

[1] Overcoming Obstacles, Community For Education Foundation (2019)

The AAHS SEL program will begin with the three fundamental skills upon which all others can be built—communication, decision making, and goal setting. After mastering these three core skills, students learn many other important concepts, including:

• Avoiding stereotypes
• Conflict resolution
• Controlling emotions
• Responsibility
• Stress management
• Study and test-taking techniques
• Teamwork
• Techniques for addressing bullying
• Time management

In addition, AAHS students will also focus on college and career readiness, and learn strategies that enable them to:

• Plan for higher education
• Develop financial responsibility

Our SEL program will be organized into 11 separate modules. Each module will contain a sequence of lessons designed to develop specific concepts and skills, which are reinforced throughout each lesson.

The program's modular structure is deliberately flexible, and allows our teachers to tailor the lessons to meet students' needs. 85% of our program implementation will take place daily in our morning student advisory or "Flight Crews". Flight Crews will engage daily modules each morning from 7:30AM to 8:00AM. AAHS teachers will also integrate our SEL program into core content classes by asking students to apply life skills to what they are learning. AAHS believes that our Flight Crew model in tandem with the Overcoming Obstacles SEL curriculum will help us achieve our stated non-academic goals of achieving an average 95% daily attendance rate, an 8 out of 10 quarterly rating on the positive school culture rubric, and a 90% rating of AAHS students "feeling safe in school" and "having an adult support system at school".

AAHS students will have the opportunity to choose and matriculate through an industry-based aviation or aerospace related elective pathway. During our students 9th grade year, they will each take an introductory elective course that will provide a broad survey of various aspects of aviation, aerospace, and computer science. At the beginning of their 10th grade year, students will select a specific pathway from the following choices:

- Aviation (6 Credit Hours)
- Aircraft Maintenance (6 Credit Hours)
- Aerospace Engineering (6 Credit Hours)
- Computer Science (6 Credit Hours)

By students 11th grade year, they will begin either college coursework with one of our pathways related post-secondary partners or work-based learning with one of our industry partners. Each pathway has a corresponding course of study or "Flight Plan" that outlines which electives students will take

sequentially leading to either a credential in a specific industry related career or college credit toward a post-secondary course of study.

Special Populations and At-Risk Students

At AAHS, intentionality is our mantra. Our student recruitment area will primarily come from Jefferson County, a diverse county with twelve public school districts. These districts range from A+ to D+ according to the Niche ranking system; data from the U.S Department of Education are used for ranking analyses. AAHS will use "Student Flight Plans" and a reflection, evaluation, and communication process to ensure our students' needs are being met. Personalized Student Flight Plans will comply with federal and state regulations for students with special needs. This includes special education, 504, ESL, and those showing risk-factors. Flight Plans will include modifications, accommodations, and any other additional supports needed to optimize student learning, retention, and well-being.

AAHS analyzed Alabama State Department of Education (ALSDE) and Alabama Council of Higher Education (ACHE) to gain insight into its student recruitment pool risk factors. ALSDE academic, absentee, and behavior data from districts close to the AAHS school site show compelling needs for deliberate support in all areas. ACHE provides remedial course enrollment and retention data of students from specific districts and schools who enrolled in 2 and 4-year Alabama public colleges/universities. Alarming rates of students from the AAHS' recruitment area must take non-credit bearing remedial math and English courses; some are not making it past their freshmen year. AAHS has identified industry-specific and risk-factor aligned partners to provide supplemental support to address learning gaps and mind-set shift needs. Collaborating with partners, parents/guardians, and students is essential to the holistic approach AAHS believes is necessary to adequately prepare students for college and career.

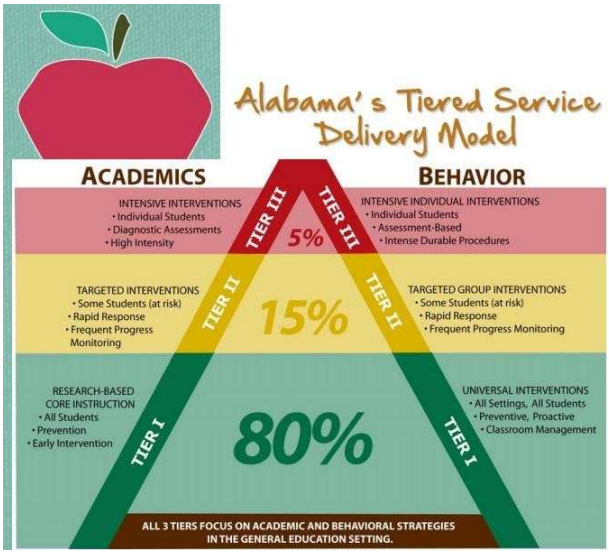
Highly skilled, resourceful, and thorough special education, ESL, general education, and career tech teachers will not only provide instruction, but the guidance and support needed for all AAHS students to succeed. Using an innovative block schedule, AAHS teachers will have time to incorporate various instructional strategies needed to differentiate instruction and reach students of varying ability levels. Using students' personal flight plans to determine modification and accommodation needs will be standard; student flight plans will include any documented IEP, 504, RTI, and/or advanced learning plan needs. Through teacher and partner facilitation, AAHS's schedule will include time for resource classes designed for remediation and enrichment, team and independent learning, online practice, labs and hands-on application assignments, simulations, and special projects. AAHS students will be encapsulated with support.

Using multiple data sources, AAHS will evaluate every student to determine his or her specific needs.

- Alabama Comprehensive Assessment Program (ACAP) scores, coursework, behavior, and attendance historical data will be considered during the personalized flight plan development process.
- To ensure proper placements prior to the official start of the school year, AAHS students will participate in a summer orientation program prior to the start of the official school year. Additional data, including the Measures of Academic Progress (MAP) and observation data, will be collected, analyzed, and considered in finalizing students' Year 1 flight plans.
- AAHS students entering with IEPs, Tier III-Response to Intervention (RTI) support, will be reevaluated during orientation. As required, parents/guardians will be a part of the reevaluation process. AAHS faculty, students, and parents will work together to determine any necessary IEP revisions and to ensure appropriate modifications and accommodations are included.

- AAHS students performing below grade level but do not qualify for SPED services, will follow the Tier I and II RTI model. These tiers integrate fluidly with AAHS' instructional model where our teachers use researched-based instructional strategies, incorporate various learning settings, and frequently monitor learning. The school's schedule has intervention resource time, reading, writing, and math labs built in to provide intensified support as needed.
- AAHS students will also receive interventions through online core curriculum support; teachers will be able to use student performance dashboard reports to help determine re-teaching and remediation needs.

Response to Intervention Model



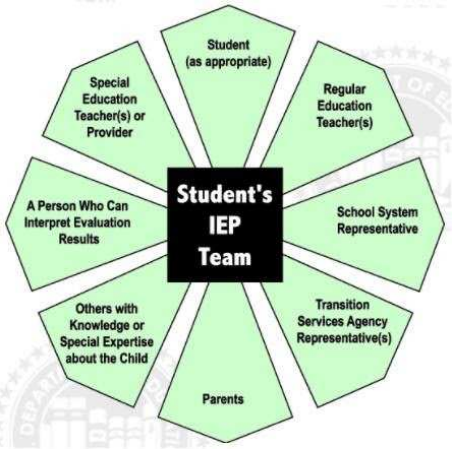
- AAHS students will review academic and behavioral progress during their weekly "flight crew" meetings; this will be a time for feedback, reflection, and "flight plan" adjustments as needed.
- Parents/guardians will have opportunities to participate in the process during monthly meetings including both the teachers and their students.

If a student receiving Tier II services continues to perform below grade level and special education services are recommended, AAHS will follow U.S Department of Education and ALSDE SPED required procedures.

- Knowing our students so we are able to personalize learning and provide additional needs as necessary is essential at AAHS. During the enrollment process, AAHS will request student school records from the previous three years. This will include SPED determination documents and IEPs, if applicable. All students will participate in a summer orientation program. During the program, students will complete formal and informal assessments. Teachers will complete observation forms that include both academic and behavioral data points. This process will continue throughout the school year and will be used during weekly student flight plan meetings and monthly parent meetings.

- For any enrolling student with an IEP, AAHS along with the student's complete IEP team will evaluate correlations between previous records and data obtained during orientation; any inconsistencies will be re-evaluated through collaborative measures using additional

assessments, observations, and parent/guardian feedback. AAHS will work to clear any inconsistencies and to ensure all students qualifying for special education services are placed in their least restrictive learning environment.

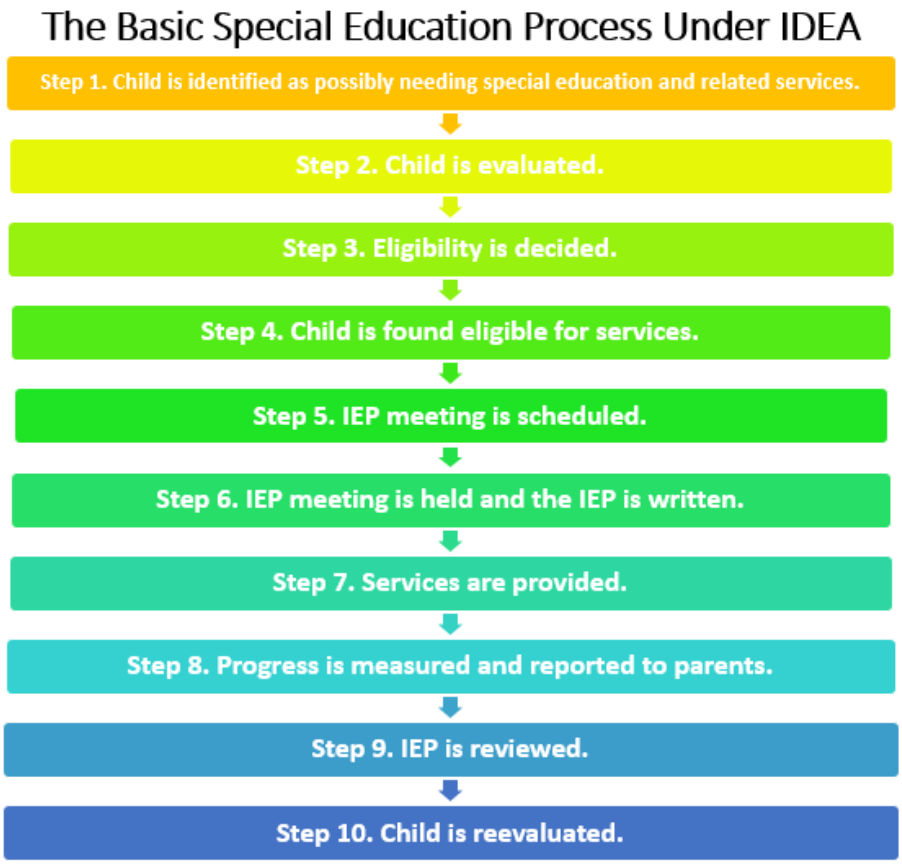


- Using historical data, summer program data, student, and parent feedback, AAHS will develop a personalized Student Flight Plan. The goal of the "flight plan" is to insure there is up-to-date documentation in place outlining each student's appropriate core courses, electives, aerospace/aviation connected track, and support measures, including SPED resource classes and external support if needed.

- Flight plans will be used during the weekly student/flight crew check-in meetings to assess progress and identify additional support needs. AAHS flight plans will be flexible enough to make adjustments if students are unable to meet certain requirements; flight plan changes must be approved by the Director of Teaching and Learning and the parent/guardian.

- AAHS believes its highly engaging industry-based approach, use of technology, and differentiated instruction using research-based strategies will address most of its students' needs, even those with IEPs. However, AAHS has also embedded supports like resource classes, reading, writing, and math labs to help students fill academic gaps. Our highly skilled special education teachers and relevant partnering agencies will be prepared to meet any severe needs that cannot be addressed in a general education setting.

- If a struggling student was not already receiving SPED services, after Tier I and II options have been exhausted and it is found that an AAHS student is not able to make adequate educational progress, the special education provision of service process will begin as outlined by the ALSDE Mastering the Maze guiding document. This includes a referral for evaluation by the student, parent, or teacher, the completion of a Notice of Consent for Initial Evaluation from the parent/guardian, an official and thorough evaluation that includes academic and behavioral data, an eligibility determination meeting with all required parties, an official decision of eligibility, IEP development for those who qualify to insure FAPE.



- Students who are not benefiting from instruction due to physical or mental impairments can be referred by a parent or legal guardian, teacher, physician, or therapist for 504 services . A 504 plan can help when a student returns to school after a serious injury or illness, or when a student is not eligible for special education services or an IEP, but still needs extra services to succeed academically. Once an educational concern is raised, the school 504 liaison sets up a meeting of a 504 planning team. The team usually consists of parents, an administrator, classroom teachers, and other school personnel (such as the school nurse, guidance counselor, psychologist, or social worker). After reviewing academic and medical records and interviewing the student and parents, the 504 team determines if the student is eligible to have a 504 plan put in place. If the school and parents disagree about eligibility or details within the 504 plan itself, parents can submit written appeals to the school or the U.S. Office for Civil Rights.

- AAHS's instructional leaders and faculty are well prepared for its diverse student population. The AAHS Director of Teaching and Learning has a PhD in Educational Leadership with a focus in Innovative Instructional Approaches and a Master's in special education. This provides the background necessary to help facilitate and evaluate special education processes. AAHS special education teachers are thoroughly vetted; they will hold at least a Master's in special education, have strong academic records, and experience working with students with special needs (i.e. learning, physical, and behavioral). AAHS SPED teachers are expected to assist with advising, planning, and instruction in both self-contained and inclusive settings. This is necessary to ensure SPED students are well-supported in their Least Restrictive Environment and able to meet industry-based credentialing requirements; this is an AAHS expectation.

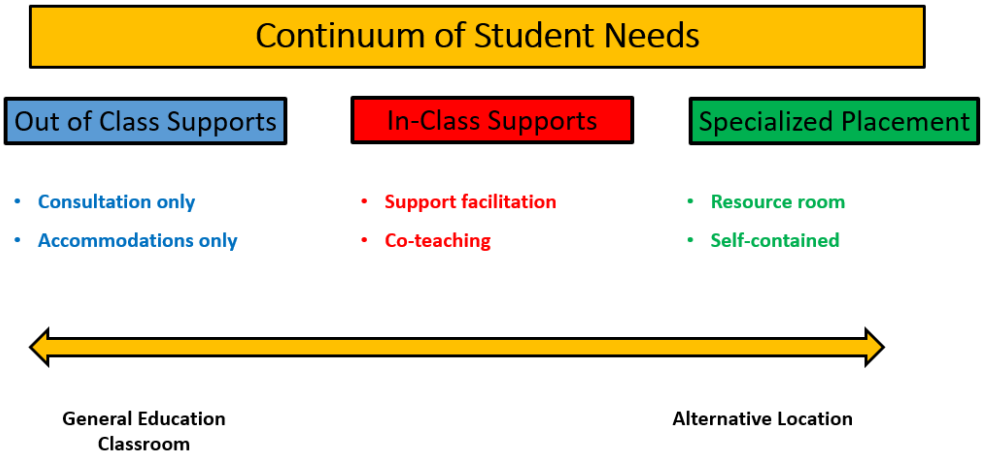
- SPED teachers' lesson plans and instructional practices through routine observations will be evaluated by the Director of Teaching and Learning to ensure AAHS individual student needs are being addressed.
- SPED student IEP progress will be reviewed weekly by the student's flight crew.
- To ensure SPED students receive the support they need, AAHS will work with partnering agencies to provide SPED related services that cannot be adequately addressed by the SPED and general education teachers. Related services, as listed under IDEA, include (but are not limited to):
    - ◊ Audiology services
    - ◊ Counseling services
    - ◊ Early identification and assessment of disabilities in children
    - ◊ Medical services
    - ◊ Occupational therapy
    - ◊ Orientation and mobility services
    - ◊ Parent counseling and training
    - ◊ Physical therapy
    - ◊ Psychological services
    - ◊ Recreation
    - ◊ Rehabilitation counseling services
    - ◊ School health services
    - ◊ Social work services in schools
    - ◊ Speech-language pathology services
    - ◊ Transportation

- All potential partners will be vetted and must provide letters of support from current and/or past partners/clients. They will complete background checks prior to working with students. The AAHS Director of Teaching and Learning along with faculty will perform routine observations. Partners will also submit monthly reports summarizing services provided and student outcomes. These data, along with student, teacher, and parent/guardian feedback, will be used for partner annual reviews to determine service continuation.

- AAHS will employ instructional strategies that are both teacher and student driven to differentiate and reach all sensory learning styles (i.e. visual, auditory, and kinesthetic). Direct, indirect, and interactive instructional strategies will aid in making content understandable and applicable for SPED students. It is particularly important for students with learning disabilities to experience core content using various strategies in order to make cognitive connections that are typically blocked by mundane approaches. AAHS will make learning come alive for its SPED students leveraging the school site at the Alabama Museum of Flight located near the Birmingham Shuttlesworth Airport to facilitate student discussions, simulations, projects, and hands-on experiences using industry-based equipment.

- To ensure SPED students are also exposed to rigorous coursework and industry-based connections, they will receive instruction in the general education setting with their peers to the greatest extent possible. The goal of special education services is to provide students with needed support and to train them to use strategies on their own leading to greater independence. Students will receive instruction in their least restrictive environment; SPED and general education teachers will work together for service provision. Weekly flight crew meetings and embedded collaborative planning opportunities will help these teachers make adjustments as needed to maximize student

learning and evaluate/adjust appropriate learning environments; self-contained and/or resource room options will be available if needed.

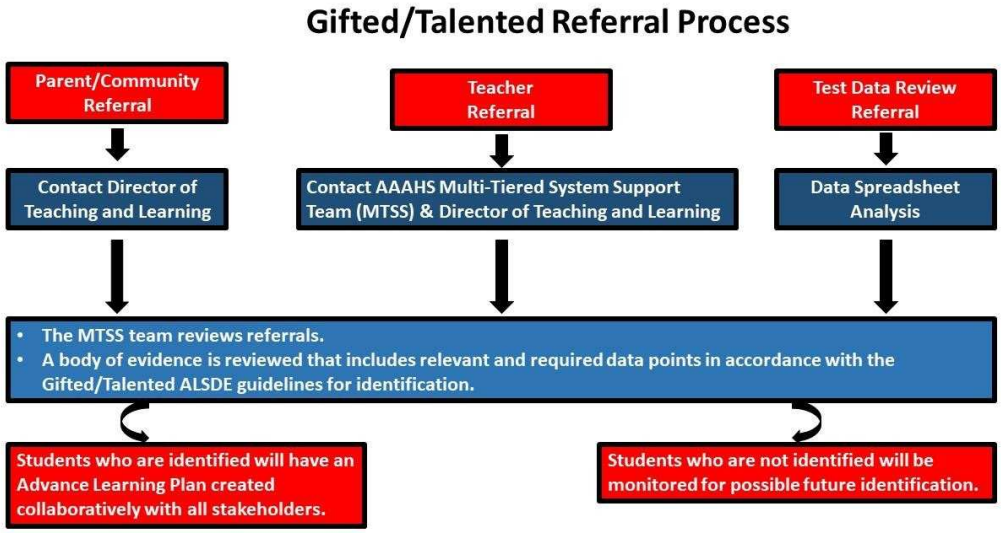


- Weekly flight crew meetings will provide time for students to meet with their advisors and discuss progress towards promotion and graduation requirements. Both AHSGE and AAHS aerospace/aviation pathways include not only academic indicators, but college- and career-readiness indicators. AAHS will work with ALSDE liaisons to make sure its SPED students have access to all transitional service resources available through Federal Vocational Rehabilitation services and state resource centers. AAHS career tech teachers and partnerships with the Alabama Community College System, Delta Airline, and The Kaiser Corporation will provide a plethora of college- and career-readiness experiences for its SPED students. SPED students will have opportunities to not only develop academic skills, but employability skills as well. Certain behaviors are necessary for post-secondary schooling success and to obtain and keep a job. AAHS students are expected to earn an industry-based credential; SPED students will work with their flight crew and an industry-based representative to determine appropriate credentialing options; this will further prepare SPED for gainful employment and independence-both are strong indicators of college- and career-readiness. Students' SPED case managers will make sure IEP documented modifications and accommodations are honored.

By providing multiple learning environments and experiences, SPED students will be better equipped to be productive citizens. They will learn the importance of soft-skills and appropriate behaviors. They will build relationships with their flight crew members who will serve as mentors and advisors. AAHS believes students' relationships with their flight crew members will result in open communication where students are able to discuss their issues and identify solutions leading to desirable outcomes. AAHS hopes this process along with supplemental supports will result in more exits from SPED, less referrals, and minimal disciplinary actions, suspensions, and expulsions. AAHS has a routine evaluation cycle where absentee, behavior, and coursework (ABC) data and federal/state regulation compliance are considered and addressed accordingly. Specialized group evaluation checkpoints are included in the evaluation plan; this includes SPED cases.

- AAHS students who are identified as intellectually gifted/talented will receive intentional support where they are challenged by rigorous coursework, enrichment, and extended experiences. The first cohort of AAHS students will be identified using previous school records and data collected

from the AAHS Summer Orientation Program. Gifted/talented identification can be based on test data, teacher, and/or parent referrals. AAHS will honor previously identified students. However, new referrals will be based on ACAP and MAP assessment data along with observations, work samples, and interviews. These data will be considered by the Director of Teaching and Learning and faculty team to help mitigate racial and gender biases.



- AAHS understands its diverse student population will include those who are "gifted and talented". In hiring a special education teacher, AAHS will employ one who has experience working with all special populations, including gifted and talented, and also has leadership/teacher training experience. At AAHS, special education teachers are deemed as experts in their field providing intensified support as needed, guided by assessment data, along with teacher and student feedback. The special education teacher will collaboratively work with both general education and elective teachers in prescribing and providing support. Specific supports that have been found to help gifted/talented students include:

1. Learning how gifted/talented students think
2. Creating tiered assignments to include basic, middle, and more complex tasks
3. Including a variety of textual reading level options
4. Providing opportunities for students to use their talents and interests to explore skills
5. Encouraging students to go beyond just learning skills by applying them to real-world situations

If needed, the special education teacher will provide teacher training and coaching. AAHS has planning and professional development time built into its schedule to facilitate this process. Weekly "flight crew" meetings, where the special education teacher is a member, provide the consistent feedback needed to ensure our gifted/talented students and their teachers are properly served.

- AAHS students who are identified as gifted/talented will have an advanced learning flight plan. This will include AP and/or dual enrollment core and elective courses, enrichment resource classes, and accelerated special interest group/internships options. AAHS teachers will receive professional development on best practices for addressing gifted/talented student needs. These practices should be evident through teachers' instructional strategies, student activities, and

formal/informal assessments. In addition to academic data, teachers will complete behavioral surveys for gifted students that will be used for cognitive growth analyses. Partnering agencies will also provide extending opportunities, including mentoring as needed. Students will meet weekly with their flight crew to discuss their data, progress, concerns, additional supplemental support needs, and flight plan change requests, as needed. They will also participate in monthly parent/guardian meetings. All flight plan changes must be approved by the Director of Teaching and Learning and parent/guardian.

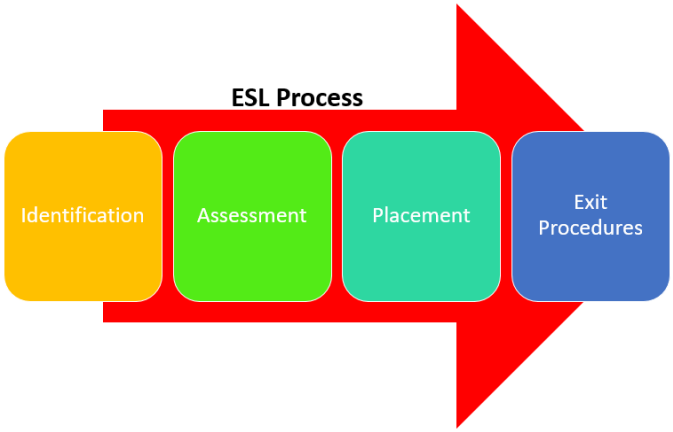
- AAHS's evaluation plan includes the review of gifted/talented student absentee, behavior, and coursework data. Using these data, AAHS will identify and address any teacher and/or student instructional and supplemental support needs. Additional teacher professional development will be provided as necessary. AAHS will also utilize this process to evaluate services provided by partners and to determine if additional partners are needed to address specific gifted/talented student needs.

- AAHS will actively recruit diverse students, this includes ESL students. Upon receiving an intent to enroll, AAHS will send out a Home Language Survey. Parents/guardians will be asked to submit the survey as soon as possible so the identification process can continue. If the survey is returned indicating a home language other than English, the referral and placement process will continue. An ELL Committee meeting will immediately be scheduled; parents/guardians will be notified. ESL personnel will administer the World- Class Instructional Design and Assessment (WIDA) ESL comprehensive assessment. WIDA results will be used by the ELL Committee to determine the most appropriate Limited English Proficient (LEP) plan for a student. This may or may not include ESL Program placement; minimal supplemental support may suffice.

- If it is determined that ESL program enrollment is needed, the parent/guardian must grant permission for the student to participate. Students will then be enrolled in an ESL resource class for targeted support. However, ESL accommodations will be provided in all classes regardless if permission is granted. Identified students will also be required to participate in the ACCESS for ELLs assessment until they are proficient in English.

- General and ESL teachers will collaboratively plan to ensure ESL students receive appropriate accommodations. These accommodations will be evident in the student's flight plan as well. AAHS core curriculum provides online ESL support. This includes translations and specific language building activities in all core content areas.

- ESL students will meet with their flight crew weekly to discuss progress, concerns, additional support needs. ESL students may exit the ESL program upon scoring a 4.8 or higher composite score on the ACCESS for ELLs along with the ELL committee's recommendation. However, the ESL student's performance will continue to be monitored and additional support will be provided as needed.


ESL Process
Identification
Assessment
Placement
Exit Procedures

AAHS's Unique/Innovative Approach

AAHS will offer a unique industry-based learning environment. Located on the Bessemer Airport campus; students will have ongoing opportunities to connect content to real-world applications. They only need to walk around campus or look up in the sky to see their future. However, along with the actual location and school facility, AAHS has developed strong, relevant partnerships to further support student engagement. AAHS is partnering with Delta Airlines, Kaiser Aircraft Industries, Tuskegee University, the Alabama Community College System, The Aircraft Owners and Pilots Association (AOPA), and several other local entities to provide unique experiences coupled with on-going support. AAHS students are properly trained and exposed to aerospace/aviation experiences.

Partnerships/Experiences

AAHS is proud to have several partners who share our core beliefs and are committed to help our students succeed. Both Delta Airlines and Kaiser Aircraft Industries are helping with curriculum development and materials, teacher, student, and parent training, simulation/practice equipment, special presentations, job shadowing, summer programming, apprenticeship, and internships. AOPA already has existing curriculum and teacher training programs; AAHS will use their curriculum for its introductory aerospace/aviation coursework. AOPA will also assist with scholarships for additional student training and flight time needed to satisfy pilot's license requirements.

Tuskegee University and the Alabama Community College System are providing dual enrollment courses/instructors, summer programming, and aerospace/aviation credentialing support. Tuskegee has also committed to provide scholarships to those who choose their university to complete a 4-year degree in an aerospace/aviation industry-aligned field.

AAHS's facility will be fully equipped with the latest technology, simulation rooms, and actual aerospace/aviation equipment for demonstrations and practice. This includes an actual airplane donated by Delta Airlines.

Advisement/Mentors

AAHS is providing unique personal advisement opportunities. Borrowing best practice procedures from Special Education, every student will have an individual education plan (i.e. flight plan) that documents his/her courses, additional supports, extra-curricular activities, and progress monitoring reflections. Students will meet with their "flight crew" weekly to discuss where they are and what they need; the flight crew is composed of at least one core teacher, elective teacher, and administrator. Parents will also have opportunities for input through parent/flight crew meetings every 9-weeks. Using this intentional advisement approach will help AAHS's diverse student populations with varying ability levels succeed.

AAHS will leverage its partnerships with AOPA, Delta, and Kaiser to provide industry-based mentors for every student. All have expressed interest and excitement about helping to fully support AAHS students with both academic and soft-skill development. AAHS has time built into its schedule to facilitate consistent advisement and mentoring sessions. This process is also a part of its evaluation plan for accountability measures.

Engaging Curriculum

AAHS is working with Carnegie Learning to provide additional engaging industry-based curriculum. Carnegie Learning Math Solutions received "meets expectations" ratings for all *EdReports* indicators. It also scored well for the inclusion of technology instructional materials. AAHS met with Carnegie to discuss the school's unique industry-based approach and requested additional support to address aerospace/aviation industry-based specific needs; Carnegie agreed-AAHS will be the **pilot program**! Carnegie has also agreed to provide additional teacher training to assure our teachers know how to maximize all support and assessment tools. It will work with Delta Airlines in creating authentic industry-based examples, practice problems, and project ideas. **AAHS is excited about being the catalyst for this inaugural partnership!**

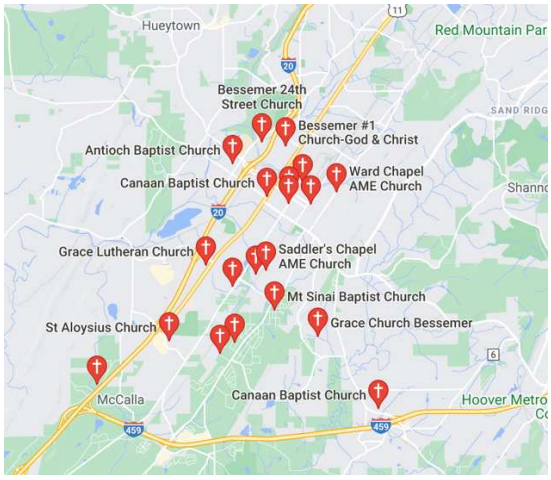
Recruitment and Enrollment

Recruitment Strategies

Alabama Aerospace and Aviation High School will employ an aggressive researching, recruitment, and marketing campaign based on proven strategies geared toward equal access for all students, including those with economic or academic disadvantages, students with special needs, and students who have limited English language proficiency. The goal is not only to attract a sufficient pool of applicants to meet AAHS enrollment projections but to equally ensure that Alabama Aerospace and Aviation High School accurately assesses the needs of the community and provides a high-quality educational option deserving of students in the Bessemer City area. In compliance with state and federal law, the school will target all middle school students in Bessemer and the surrounding area prioritizing students in the Bessemer community, regardless of race, disability, ethnicity, or gender. Socioeconomically and racially diverse schools are beneficial to all students who attend them because it builds both a cognitive capacity to value difference and process different perspectives as well the ability to recognize their own perspectives and to weigh others. Given the global nature of the world of aviation and aerospace, an appreciation for diversity, equity and inclusion will be critical to student success.

Engaging parents, students, community leaders, faith-based leaders, business owners, and non-profit leaders is the cornerstone of our comprehensive recruitment plan, thus AAHS has already begun actively engaging families and community members by:

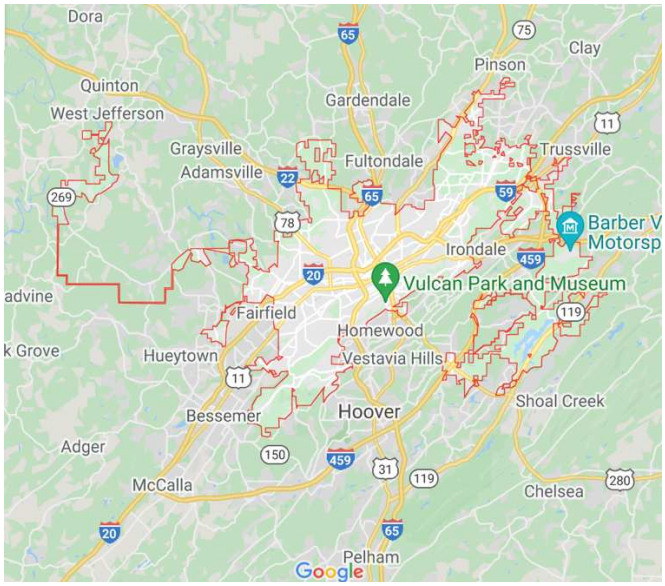
Visiting Community Churches. Bessemer and the surrounding area have a thriving faith-based community. Given that, AAHS supporters and volunteers will regularly attend church services to support local ministries, meet community members, and discuss the academic program and benefits of our proposed school.



Build Nonprofit Relationships. AAHS is excited about the opportunity to engage and partner with local Bessemer nonprofits with a proven track record of serving families in Bessemer and surrounding areas.

Neighborhood Canvassing. AAHS team members and volunteers will canvas the various apartment complexes and residential areas within a 5-mile radius of our proposed school to engage with potential

students and parents in their homes. Our goal is to explain how Alabama Aerospace and Aviation High School's mission and school design will have a positive impact on their child's future.



In the second phase of our researching, recruitment, and marketing campaign from school approval to opening, AAHS will conduct multiple informational meetings within the larger Bessemer community, at such locations as the Bessemer, Birmingham, Trussville, Hueytown, and Shelby County YMCAs, Bessemer/Hueytown and Trussville Boys & Girls Club, Bessemer apartment complex community rooms, Tarrant City Hall, and local churches. AAHS will host families at local parks, community centers, and neighborhoods, providing information sessions on a monthly basis.

Recruitment Objective:
Present Alabama Aerospace and Aviation High School Charter Schools to parents and students, positioning them as the best choice for college preparatory education in the Bessemer and surrounding area community, and to compel them to choose Alabama Aerospace and Aviation High School.

Target Audience:
All families in the 35022, 35023, 35111, 35226, and 35244 zip codes. Mothers/Grandmothers: primary – ages 25-34, secondary – ages 35-64. We are specifically focusing on 7th graders.

Student Recruitment Targets:

Grade	**Current Enrollment**	**Target**	**School**	**Number Goal**
7th	238	Yes	Bessemer	25
7th	124	Yes	Fairfield	10
7th	92	Yes	Midfield	10
7th	89	Yes	Tarrant HS	10
7th	1630	Yes	Birmingham City Schools	35
7th	3033	Yes	Jefferson County Schools	50

7th	1722	No	Shelby County Schools	35
Sub-total		Targeted		140
	Grand Total (Including Additional Non-Target Enrollees)			***175**

***This number reflects the target recruitment goal that includes a 50-student waitlist.**

Lottery
The lottery will be governed by a few basic rules:

- The number of applications will be counted, and if that number exceeds the number of spaces available within capacity, those applicants will be assigned a number, and a random drawing will be held to enroll the number of students who can be accommodated within the capacity limits.
- All students who applied but were not selected in the lottery will be automatically added to the waitlist.

Alabama Aerospace and Aviation High School has an interest in making sure that any prospective students and their families understand the particular mission and focus of the school they are interested in being a part of. Toward that end, Alabama Aerospace and Aviation High School may: Require students to complete the grade preceding the grade the student plans to enter, and strongly encourage parents/guardians to attend all informational sessions.

Admission
Alabama Aerospace and Aviation High School, as described above, will admit students via a regular enrollment process up until all seats are filled or the end of March 2022. If there are more applicants than seats available, an admissions lottery in April of 2022 will ensure that a random selection process is used to place students into the school. After all seats have been assigned, a waiting list will be established for the remaining students who have registered in the event that a seat should open up. Any additional students applying for enrollment will be placed at the end of the waitlist on a first-come, first-serve basis.

Enrollment Plan

Overview

Alabama Aerospace and Aviation High School is an open enrollment public charter school with Bessemer, Alabama, identified as the primary catchment area. In August 2022, Alabama Aerospace and Aviation High School will open its doors to grade 9 for year one and expand through grade 10 in year two, becoming a 9 through 12th grade public charter school by 2025. In accordance with Act 2015-3 Section 5(a)(3), Alabama Aerospace and Aviation High School will not limit admission based on ethnicity, national origin, religion, gender, income, disability, English language proficiency, or academic or athletic ability. Instead, the school will be open to all students whose grade level is served (according to the development phase) and will enroll all students who wish to attend as long as enrollment does not exceed facility capacity.

Rationale

Alabama Aerospace and Aviation High School has established an enrollment plan based on the perceived needs of the service area. As a reflection of the school's mission and vision, the rationale for starting with grade 9 for the first year is based on the theory that the first year of high school is the most critical year of high school. By beginning with 9th grade and building a strong foundation, students will be able to close any gaps from previous years preparing them for the more rigorous curriculum that will come in later years. Furthermore, having been prepared to excel in the high-school curriculum, students will have a strong advantage that will lead to success in college and our aerospace and aviation pathways. Community focus groups have been used to help gauge the estimated enrollment. In addition, extensive research by the founding team has shown the significant needs of the area, from workforce and economic development to college and career readiness.

See Figure 1: Projected Enrollment

Lottery

Ultimately, admission and enrollment will be dependent upon capacity. In the initial enrollment period, all students who meet residency requirements will be admitted as long as the school is under capacity. If more students apply than capacity will allow, a random public lottery will be held to determine admission. This lottery will not apply to currently-enrolled students, as those students will automatically have admission for the following school year. Following the initial enrollment period for Bessemer City residents, a subsequent enrollment period will open to all students who meet Alabama residency requirements. As with the previous enrollment period, if the number of students who apply exceeds the school's capacity, a random lottery will be held. If such a lottery is deemed necessary, applicants will be notified of such need, and instructions will be provided to them.

Alabama Aerospace and Aviation High School's Student Records Maintenance and Release Guidelines

Student records at Alabama Aerospace and Aviation High School will be maintained in accordance with all applicable reporting requirements. These records will be maintained in the state-adopted Alabama Student Information System (ASIM). Alabama Aerospace and Aviation High School will report the required data to the appropriate systems and the Alabama State Department of Education at the prescribed times and in the prescribed format. Alabama Aerospace and Aviation High School will comply with all applicable laws pertaining to data privacy and security, including the Family Educational Rights and Privacy Act (FERPA), the Children's Internet Protection Act (CIPA), Health Insurance Portability and Accountability Act (HIPPA), and Children's Online Privacy Protection Act (COPPA). School personnel will be expected to understand and follow these guidelines. Parents and guardians have the right to review their child's record, and divorced or separated parents of students will have equal access to their child's records, unless legal orders prevent access. In such a case, it is the parent's responsibility to provide Alabama Aerospace and Aviation High School with legal documents pertaining to records access. All requests for a student's records will be maintained in an access log. Student records may be released without parental or guardian consent if permitted by law. These organizations might include law enforcement and child and family services agencies. Aside from these permitted by law, only those specific persons authorized in writing by the parent(s) will be granted access to student records, and that written consent will be retained in the student's record.

Figure 1: Projected Enrollment for Alabama Aerospace and Aviation High School

Grade Level	Number of Students				
	Year 1	Year 2	Year 3	Year 4	At Capacity
9th	125	125	125	125	125
10th	0	125	125	125	125
11th	0	0	115	119	125
12th	0	0	0	113	125
Total	**125**	**250**	**365**	**482**	**500**

HIGH SCHOOL

ATTACHMENT 9

Student Discipline Policy and Plan

To create consistent outcomes for every student in every classroom, all AAHS teachers, leaders, and staff members work diligently to uphold key academic and cultural practices that, when done effectively, promote a higher rigor resulting in a college and career ready classroom environment. Intentionally using the techniques charted below in **Table 1** as part of Alabama Aerospace and Aviation High School's school programming and culture was inspired by Doug Lemov, President of School Performance, Founder of Rochester Prep in Rochester, NY, Founding Principal of the Academy of the Pacific Rim in Boston, and author of *Teach Like A Champion*. Mr. Lemov is among the most accomplished school leader trainers in school design, curriculum, assessment, and data driven instruction.

Table 1

Alabama Aerospace and Aviation High School		
Sweat the Details	Behavioral	Approach that encourages teachers to enforce compliance with every expectation, including aspects that may seem minor.
Do it Again	Behavioral	Technique in which a teacher instructs students to complete a procedure or process that has been practiced and demands that students repeat the process if it is not done well or by all students.
Stretch it	Academic	Many teachers respond to a correct answer by saying "good" or "right." With this technique a teacher can push students to higher standards by asking them to "stretch" their answer by explaining how they arrived at an answer or asking them to answer a more complex question that builds on that same concept or standard.
Ratio	**Academic**	Method in which the teacher purposefully minimizes the time spent talking to afford more opportunities for the class to lead instruction by answering questions as a group or individually.
No Opt Out	**Academic**	Process in which a student who answers incorrectly is not able to give up on the learning process. We have high expectations for student performance and a teacher should not accept "I don't know" for an answer. Instead, the teacher should prompt the student to answer a clarifying question, or push the student to attempt to answer. If the student genuinely does not know the answer the teacher will call on a fellow classmate to assist, and then the student will be asked the same question or be given a similar question to answer correctly.
Warm/Strict	**Academic/ Behavioral**	Strategy that combines a caring tone with a 'no exceptions' standard of behavioral expectations. Often used by teachers to build culture and set the tone inside their classrooms.

Precise Praise	**Academic/ Behavioral**	Technique used by teachers to reward students with praise using *very* specific examples that are meaningful and genuine. For example: "Lisa you did a great job using three distinct adjectives to describe the main character."

Classroom Learning Environment

Student behavior, lesson engagement, student-teacher relationship, and motivation to learn are each variables that, if not controlled and thoughtfully planned for, can derail student learning and create a less than ideal learning environment. Classrooms where these variables are not accounted for quickly become "classrooms on fire" that consistently drain administrative time and resources, minimize student learning, and (most immediately) place the social, emotional, and physical safety of everyone in the room in danger. Proactively controlling for the mentioned variables, Alabama Aerospace and Aviation High School plans with meticulous detail and develops teachers to meet the following standards:

- Learning Environment/ Physical Space
- Classroom Procedures & What To Dos
- Classroom Tone & Positive Framing
- 100% Engagement
- Relationships with students

For students who struggle to meet classroom behavioral expectations, a number of interventions are present to ensure that they (whether it be a recurring misbehavior or a single infraction) tap into their resiliency and rebound. These interventions include non-verbal and verbal warnings, group and personal corrections, use of proximity, personal reset conversations by teacher, adding merits and demerits, parent phone calls, parent meetings, standing or impromptu check-ins with school counselor, temporary removal from class and meeting with Dean, and public apologies to class community/advisory.

In-school detention and out-of-school suspension remain our most drastic measures and are rarely used. Incorporating aspects of the restorative justice approach to classroom management, increasing teacher development on effective classroom management strategies, encouraging greater involvement of our on-campus social workers and special populations team to closely support identified students, and carefully implementing the Behavior RTI program have greatly enumerated the opportunities for struggling students to rebound from mistakes, return to class in the proper mental space, and continue their daily academic pursuit of learning.

While all Alabama Aerospace and Aviation High School teachers are trained to uniformly hold a college and career ready bar behaviorally, the method of progress monitoring student behavior differs based on grade level appropriateness. Our students are rewarded via a detailed merit system.

To ensure that every teacher effectively creates a safe, organized, and rigorous learning environment for all students, Alabama Aerospace and Aviation High School teachers receive consistent and explicit development in the classroom management: Strong Entry Routines, Smooth Transitions, Explicit instructions, Achieving 100%, Using Strong Voice, Using Positive Framing, Positive Narration, Maximize Engagement, and De-escalation.

Table 2 Professional Development Tool for Classroom Management Strategies

Professional Development Tool for Classroom Management Strategies				
	4= Advanced	3=Proficient	2=Working Towards	1=Needs Improvement
Classroom Management				
Learning Environment (Physical Space)	• Neat/Clutter free • Desk configuration is neat, thoughtful, and conducive to learning • Student data is posted, visible, and updated • Exemplary student work is posted, visible, and updated • Alabama Aerospace and Aviation High School core beliefs are neatly, visibly, and attractively posted (via core values, mission, vision, or motto)	• Mostly clutter free • Desk configuration is neat and conducive to learning • Some student data or exemplary work is posted • Alabama Aerospace and Aviation High School core beliefs are visibly posted via core values, mission, vision, or motto.	• Visible clutter • Desk are sometimes neat or not always conducive to learning • Very little student data or exemplary work is posted • Alabama Aerospace and Aviation High School core beliefs are not neatly or visibly posted via core values, mission, vision, or motto.	• Cluttered • Desk are not orderly or are not conducive to learning • No student data or exemplary work is posted • Alabama Aerospace and Aviation High School core beliefs are not posted via core values, mission, vision, or motto.
Classroom Procedures and What to Do	• There is always a prompt start and a smooth finish to class. • The classroom is highly urgent, and procedures seem routine to all. • Gives What to Do directions that are specific,	• There is usually a prompt start and a smooth finish to class. • The classroom runs efficiently, and procedures	• The class may not have a prompt start or a smooth finish. • Some classroom routines are efficient, while others are not, causing a lack	• The classroom does not have a prompt start or a smooth finish. • There are no clear routines or routines are poorly executed, causing a lack of flow in the class.

	concrete, sequential, observable and student-friendly. • Always narrates compliance instead of narrating what not to do.	seem routine to all. • Gives What to Do directions that are specific, concrete, sequential, and observable, but sometimes directions need rephrasing. • Usually narrates compliance instead of narrating what not to do.	of flow in the classroom. • Sometimes gives directions that are not specific, concrete, sequential and/or observable. • Sometimes narrates what not to do.	• Gives directions that are vague and difficult to follow/understand. • Often narrates what not to do.
Classroom Tone: Strong Voice and Positive Framing	• The tone of the classroom is always efficient, respectful and positive. • Frequently narrates positive student behaviors (rather than calling out the negative). Uses praise, challenge, and encouragement, to motivate the students. • Always builds compliance through establishing the why, economy of language, quiet power, do not talk over, square up/stand still,	• The general tone of the classroom is efficient, respectful and positive. • Narrates positive student behaviors (rather than calling out the negative). Uses praise, challenge, and encouragement, to motivate the students. • Often builds compliance through establishing the why, economy of language,	• The general tone of the classroom is inconsistent in efficiency, respectfulness, and positivity. • Sometimes narrates negative student behaviors OR inconsistently uses praise, challenge or encouragement to motivate students. • Rarely builds compliance through establishing the why, economy of language, quiet power, do not	• The general tone of the classroom is inefficient and/or negative. • Does not use positive framing, and does not work to motivate students. • Does not establish the why or use economy of language, quiet power, do not talk over, square up/stand still, and nonverbal authority.

	and nonverbal authority.	quiet power, do not talk over, square up/stand still, and nonverbal authority.	talk over, square up/stand still, and nonverbal authority.	
100% Active Engagement	• 100% of students are actively/visibly engaging the content through reading, writing, responding, or tracking the speaker. • The teacher always notices and addresses off-task behavior. • If a student moves off task, the teacher immediately addresses the student always using the least invasive form of intervention and without major adjustments to the pace of instruction.	• 90% of students actively/visibly are engaging the content through reading, writing, responding, or tracking the speaker. • The teacher usually notices and addresses off-task behavior. • If a student moves off task, the teacher immediately addresses the student frequently using the least invasive form of intervention.	• 80% of students actively/visibly are engaging the content through reading, writing, responding, or tracking the speaker. • The teacher does not always notice and/or address off-task behavior • The teacher does not consistently use the least invasive form of intervention.	• Less than 80% of students actively/visibly are engaging the content through reading, writing, responding, or tracking the speaker. • The teacher usually does not notice off-task behavior and/or address off task behavior. • The teacher does not use the least invasive form of intervention, and much class time is wasted with efforts to refocus the class.
Relationships with Students	• Creates a climate of caring in the classroom by addressing students in a respectful and positive manner. • Positive relationships with students	• Addresses students in a respectful and professional manner. • Positive relationships with students usually support learning in the classroom.	• Does not consistently address students in a professional manner. • Struggles to establish positive relationships with students	• Does not address students in a professional manner. • Fails to establish positive relationships with students. • Relationships with students

	support learning in the classroom. • Demonstrates responsibility for students' academic and personal growth. • Teacher demonstrates that s/he will not give up on students.	• Willing to go above and beyond to help students.	that support learning.	lack AAHS professionalism
Culture of Error				
Discourse	• Students use established language to agree, disagree, clarify, question, or build on to teammate responses. • Students have multiple opportunities for discourse through partner talk, 3 Before Me, and answer building, etc. • Tone of discourse is respectful and advances the lesson.	• Students use appropriate/ respectful language to agree, disagree, clarify, question, or build on to teammate responses. • Students have multiple opportunities for discourse • Tone of discourse is respectful and advances the lesson.	• Students use appropriate/ respectful language to agree, disagree, clarify, question, or build on to teammate responses. • Students have minimal opportunity for discourse • Tone of discourse borders appropriately or does not advance the lesson.	• Students use appropriate/ respectful language to agree, disagree, clarify, question, or build on to teammate responses. • Students have no opportunity for discourse • Tone of discourse is inappropriate or counterproductive to lesson mastery.
Class-Wide Accountability	• Students are routinely held intellectually accountable through cold calls. • Teacher always circulates during partner talk, independent practice, and small group	• Students are held intellectually accountable through cold call. • Teacher often circulates during partner talk, independent practice, and	• Students are sometimes held intellectually accountable through cold call. • Teacher sometimes circulates during partner talk,	• Students are rarely held intellectually accountable through cold call. • Teacher rarely circulates during partner talk, independent practice, and

	discussion to monitor progress and on-task behavior	small group discussion to monitor progress and on-task behavior	independent practice, and small group discussion to monitor progress and on-task behavior	small group discussion to monitor progress and on-task behavior
Risk Taking & Student Support	• Students always encourage academic risk-taking by honoring teammate wait time, showing silent support, and extending forgiveness for wrong answers. • Students routinely take risk by attempting difficult tasks and responding to rigorous questioning. • Students routinely display perseverance by staying with difficult tasks longer. • Teachers routinely celebrate students for taking risks.	• Students often encourage academic risk-taking by honoring teammate wait time, showing silent support, and extending forgiveness for wrong answers. • Students often take risk by attempting difficult tasks and responding to rigorous questioning. • Students often display perseverance by staying with difficult tasks longer. • Teachers often celebrate students for taking risks.	• Students sometimes encourage academic risk-taking by honoring teammate wait time, showing silent support, and extending forgiveness for wrong answers. • Students sometimes take risk by attempting difficult tasks and responding to rigorous questioning. • Students sometimes display perseverance by staying with difficult tasks longer. • Teachers sometimes celebrate students for taking risks.	• Students rarely encourage academic risk-taking by honoring teammate wait time, showing silent support, and extending forgiveness for wrong answers. • Students rarely take risk by attempting difficult tasks and responding to rigorous questioning. • Students rarely display perseverance by staying with difficult tasks longer. • Teachers rarely celebrate students for taking risks.

A typical example of an interactive teacher PD at Alabama Aerospace and Aviation High School is detailed below as teachers strengthen their classroom management by establishing a highly engaging and accountable classroom of learners. Alabama Aerospace and Aviation High School refers to the phrasing of "getting 100%" which simply means teachers learn how to get 100% of students to meet 100% of the expectations, 100% of the time. They are trained to use a warm and demanding approach to ensure that

100% is being achieved throughout class. The following strategies below push teachers to use positive framing and an encouraging tone to help students meet academic and behavioral expectations.

Challenge
Example: “The ninth-grade girls are killing it boys. Can you keep the pace?”

Talk Aspiration
Example: (To a tenth grader) “Good job, Kaila. Now let’s make your response an “industry ready” response by using one today’s sentence starters.”

Build Momentum
Example: I see lots of hands. The left side of the room is really with it! I see five, six, seven hands…

- Question: What are the benefits of these Positive Framing strategies?
- Question: Which of these are you going to work to implement, especially when you are wearing down?
- Practice: Lay Up Lines…Choose one of the 3 Positive Framing strategies to use for practice. You will need to use positive framing to get the student in front of you to meet one of the following expectations on the board.

Genuine Positives
Talk to students directly (approach desk), “Thanks for being on point, Damani.” When sincere, you can even give constructive feedback with the complement. Be honest, candid, and encouraging.

Praising Recovery
When a student has struggled to meet expectations but improves after being corrected, look for the first opportunity to praise them for recovering.

- Prompt: Sincerity in praise makes all the difference. Name 3-4 things you can do as a teacher to make your praise to students sincere.
- Practice: Lay Up Lines…Choose one of the 2 Precise Praise strategies to use for practice. You will need to use Precise Praise to acknowledge that a student is now following one of the expectations on the board.

Warm/Strict
Teachers should strive to be warm and strict at the same time. You want your students to know that you care about them, but you also want them to know that you are in charge. Your students should know that you have set high expectations for them and you want them to reach those expectations. If a student is misbehaving and you reprimand them target the behavior, not their character. This is best as an individual correction and should be one on one.

- Prompt: When I am correcting a student for turning around to talk, I will not say… _____ but instead I will…_____

Practice: Lay Up Lines…Select one of the expectations on the board to correct, approach the student’s desk, and use the warm/strict taxonomy to help them meet expectations. First tell the class to independently respond to question #2. (this will give you the needed time to approach the struggling student). Remember, the key is to be caring, relational, and demanding at the same time. Ready…

Discipline of Students with Special Education Services

The Alabama Aerospace and Aviation High School Code of Conduct supports and explicitly requires the excellent behavior of all students within our school community. In the case of a special education student, or a student who receives 504 accommodations, Alabama Aerospace and Aviation High School ensures that we make the necessary adjustments to comply with all mandates of State and federal laws, including the IDEA and Section 504 of the Rehabilitation Plan of 1973, regarding the discipline of students with disabilities. Specifically, if addressing a major incident involving a Section 504 student or special education student, the Head of School convenes a review committee to determine all of the following: whether the student's misconduct was a manifestation of his or her disability; whether the student was appropriately placed and receiving the appropriate services at the time of the misconduct; and/or whether behavior intervention strategies were in effect and consistent with the student's IEP or 504 Plan. If it is determined that the student's misconduct was not a manifestation of his or her disability, that the student was appropriately placed, and was receiving appropriate services at the time of the misconduct, and that the behavior intervention strategies were in effect and consistent with the student's IEP, the student may receive the consequence aligned to the incident as documented in the handbook. If any element was not in place, the school works with the student and his/her family to ensure that all protected rights are secured as the school reworks and improves the implementation of the documented plan.

If a student continues to struggle academically or behaviorally, even with the specific supports and strategies put in place through the pre-referral process, the school requests a family's permission for evaluative testing. In situations in which AAHS has determined that an evaluation is necessary, Alabama Aerospace and Aviation High School staff issues a request for testing. This request will: (1) provide the reasons for the referral, including any applicable test results, reports, or records; (2) outline interventions taken prior to the referral under the Pre-Referral Process; and (3) describe the content of any parental involvement in the Pre-Referral Process. A copy of this request, along with the procedural safeguards notice, will be sent to the student's parents. If such testing should indicate the presence of a disability, and that student is identified as requiring special education services, we will with the IEP team write an IEP and follow the steps below to support that student's academic progress.

Ongoing school-wide IEP supports include learning techniques incorporated into every classroom to help all students achieve, regardless of disability, as well as training and professional development for all teachers on how to recognize and effectively support students with learning disabilities.

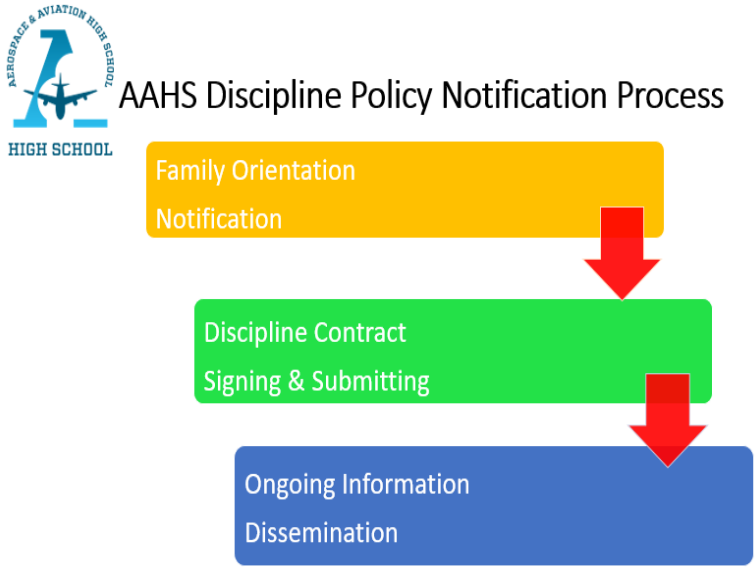
Parent Appeals Process

In the event that a student or parent would like to dispute or appeal a discipline/retention decision made at the school level, the parent is notified by the school administration to contact the CEO/Head of Schools of Alabama Aerospace and Aviation High School-Ruben Morris (and are provided the email address, phone number, and office address). The CEO, as an impartial party, affords the parent time and attention to express their concern about the matter. Before rendering a final decision, the CEO discusses the matter with school administration for a school-based understanding of the decision in question. Within 48 hours of the parent meeting, the CEO contacts both the school administration and the parent explaining the final decision. If the matter requires investigation to be extended beyond 48 hours, both parties will be notified. The parent may then appeal to the Governing Board President/Board if they would like to dispute the "final decision".

Plan to Inform Students and Parents of School Discipline Policy

AAHS is committed to ensuring that our students, families, faculty, and staff are knowledgeable about our academic and behavioral expectations. AAHS will communicate the details of our discipline policy to all parents and students in accordance with Alabama Code - Section 16-28A- 3 which states: To fully implement the provisions of this chapter, the State Board of Education shall require each local board of education to develop a written policy on student discipline and behavior and to broadly disseminate them following its adoption. Copies of the student discipline and behavior policy shall be given to all teachers, staff,
parents and students. Each family (students and parents) will attend orientation sessions together and separately where they will receive a written copy of AAHS's discipline policy. The policy and expectations will also be reviewed at this time. AAHS has created a statement of responsibility that the parent and student will sign to demonstrate that they have received and understand the discipline policy (Please see form below).

Finally, teachers and counselor(s) will monitor student behavior and enact any intervention measures necessary. Ongoing behavior monitoring and discipline policy reminders will be held with students as often as needed. Parents will also be reminded of the AAHS discipline policy during family conferences.



Parent-Student Acknowledgement of Receipt of Discipline Policy

Statement of Responsibility

The statement below must be signed and returned to University Charter School within one week after the student receives it. Documentation of the receipt of student discipline and student conduct policies by all parents and students is required by Alabama Aerospace and Aviation High School.

We have received the Alabama Aerospace and Aviation High School Discipline Policy for student conduct and disciplinary procedures and although we may not agree with all regulations we understand that the student must adhere to them while he/she is at school or in attendance at school sponsored activities.

In the event that we are not entirely certain of some aspect of school policy, we will contact the principal for clarification.

Student Signature: _____ Parent/Guardian Signature: _____ Date: _____

Family and Community Involvement

Alabama Aerospace and Aviation High School (AAHS) was designed to meet the needs and desires of the community and that will continue to be a priority for AAHS. Individuals serving on the application development team live, work, and take pride in the region in which the school will serve. The following demonstrate the ways in which future parents and community members have been involved to date in developing AAHS.

Community Forum- An in-person community engagement event provided opportunities for community members and parents to learn about school choice, charter schools, AAHS, and to ask questions in regards to planning and implementation. These individuals have also been asked to share their needs and desires in regards to the development of AAHS. The application team captured trends of any major desires, concerns, and needs of the community. The team took care to consider these elements while drafting the application.

Focus Groups- A series of three focus groups with a diverse group of community members, parents from the local public and private school systems, educators, and others were designed to help the application team uncover and understand the factors that will influence families' choices of schools, determine the level of satisfaction with current schools, policies and procedures, and examine the information that families feel they need to make informed decisions.

External Community, Business, and Industry Meetings- A diverse group of leaders in the community have come together to learn more about charter schools, AAHS, and school choice. They have also provided input and asked questions to gain clarity. The purpose of these meetings is to learn what business and industry leaders are looking for in the K-12 arena. Incorporating essential skills, specific skills training, and career readiness modules into the curriculum as early as 8th grade could provide our students with an opportunity to be more college and career ready upon graduation. AAHS could help not only the city and county where it will be housed, but it could potentially help recruit businesses to the region and help others expand.

Informational Web Page- The AAHS Application Team has provided an informational webpage that contains key information throughout the development of the application. The website was designed to provide general information on charter schools, school choice, and to answer specific questions related to AAHS. The website contains a question/comment submission form that allows parents and community members to ask questions or voice satisfaction, indifference, or concerns regarding AAHS development ideas. The link to the webpage is www.alaahs.org.

Community Simulator/Drone Exhibitions- AAHS purchased a simulator and drone trailer. With Covid restrictions lifting, using our simulator and drone trailer, AAHS is hosting aviation and aerospace activities throughout the summer at area Best Buys. The community, parents, and students learn more about the aerospace and aviation industry, have hands-on experiences, and find out how they can register to attend the school in Fall 2022. For extended opportunities, parents and student participants were also invited to Summer A-Days hosted at area YMCAs and Boys & Girls Clubs.

Summer A-Days- In partnership with area YMCA and Boys & Girls Clubs, AAHS is hosting 9 summer "A-Days" where students in grades 5-6th participate in 4 rotations of activities. The rotations include guest speakers from the industry, industry-tied career interest exploration, and personal simulation/drone time. Delta Airlines is a major partner and has provided in-person guest speakers from their Atlanta

home base for most of the sites along with gifts for the students. We have completed 7 A-Days thus far with over 270 student participants. An exit survey is administered to A-Day students; survey responses indicate a strong desire for students to attend AAHS!

From the aforementioned interactions, the following four themes emerged from data collected and were used in the design of AAHS:

1. A high-quality free public school education option at the high school level taught by teachers who are strong in content
    a. AAHS will employ teachers who are strong in their content.
    b. Teachers will receive on-going content building professional development.
    c. Classes will be observed regularly where both student and teacher performance are evaluated for instructional support needs; this includes coaching.
2. Differentiate instruction
    a. AAHS teachers will develop and implement engaging lesson plans where varying instructional methods and strategies that meet the needs of their students' individual educational plans; this includes best-practice strategies for students with learning disabilities, general education, gifted, and ELL.
    b. Teachers will facilitate involvement by students where the AAHS classroom model is employed:
        i. Direct instruction (questioning, discussions, and modeling)
        ii. Independent learning (computer adaptive learning with remediation, enrichment, and daily assessments, independent time to process and write)
        iii. Collaborative learning (small groups based on ability for extended learning)
3. A caring environment
    a. AAHS teachers will receive culturally responsive and socio-emotional professional development; the Director of Teacher and Learning will receive extended "train-the-trainer" PD for evaluation and on-going faculty support needs.
    b. Every AAHS student will have an individual education plan (i.e. flight plan) where their individual needs and interests are mapped for progress check purposes.
    c. AAHS teachers and support faculty will serve on students' "flight crews" where someone from the crew will check on students every morning. They will also meet students for progress monitoring and adjustment needs of their "flight plans".
4. Exposure to "other" options
    a. AAHS has extensive partnerships with business/industry, higher education, and the community to ensure. Partners will provide exposure experiences (i.e. guest speakers, fieldtrips, apprenticeships, internships, & courses).
    b. AAHS Partners are diverse. Some of the partners include:
        i. Sisters of the Skies and Fly for the Culture (both promote minority inclusion and support in the aviation field).
        ii. Tuskegee University, University of Alabama at Birmingham, Alabama State University, Auburn University (AAHS students will interact, be mentored, and tutored by college students that look like them and came from their community. They will also be exposed to different types of college environments to help with secondary education decisions).
        iii. The Hispanic Interests Coalition of Alabama (This organization is helping AAHS reach its Latinx population through the assisting with student and teacher

recruitment, supporting parents by helping to facilitate parent AAHS parent meetings, and providing guest speakers and mentors.

iv. Delta Airlines, Kaiser Industries, and AOPA, our aerospace/aviation industry partners are providing us with curriculum and PD support, student experiences, and industry certification support.

AAHS is confident it has captured community input in its model. It will continue to gather community input through the methods described above and will add others. This includes consistent feedback from its current students, parents, and community partners via meeting notes and surveys.

The aforementioned focus groups, forums, community events, Summer A-Days, and meetings are ways in which the AAHS Founding Team has assessed the support for the proposed school. The AAHS Founding Team used the development of the AAHS webpage along with forums, meetings, and focus groups to build parent and community support for AAHS. The webpage contains the following information: basic information on charter schools and school choice, development for FAQ, handouts, schedule for meetings, and a question/comment submission form. The webpage is used to demonstrate that the AAHS Founding Team intends to be very transparent during the application process and to allow parents and the community a platform to demonstrate their support. The founding team also tried to accept every invitation extended to discuss AAHS and the application process. This transparency helps us to build the support needed for AAHS. Upon approval, AAHS will continue to involve parents in the development of and promotion of the school.

Parental involvement is a key to success of any educational institution and its students. One of the ways that AAHS will continue to involve the community and parents is to hold informational sessions with parents as the developments in implementation are occurring. AAHS plans to use the web and social media platforms to update parents and the community about important information on programs and ways to get involved and how they can contact us with any questions.

Finally, through the development of an advisory board, which will include community representatives and industry leaders, AAHS will listen, learn, and collaborate on ways that we can ensure we are giving students what they need. This approach will help us strengthen the connection of the community and the school through the building of lasting partnerships.

Upon approval, the life of the school will continue to actively involve parents, particularly through advisory council and parent teacher association. These groups will work to ensure the mission and vision of the school is a reality. The following are ways in which we will engage parents in the life of the school:

Parent Service- The school will encourage parent volunteerism. We will ask parents to volunteer for a minimum of 10 hours per school year. Knowing that some families may have only morning or afternoon availability, our assumption is that some families will exceed this expectation while others may not meet the minimum volunteer hours. We will not make parent volunteer hours a “requirement” because we do not have any intention of suspending or expelling a student for a family’s lack of volunteerism. Still, we will continue to strongly encourage parental volunteerism in the school and consistently educate parents on how being involved strengthens students, families, and schools. AAHS will train its teachers to work with volunteers to make this process as seamless and comfortable as possible for both parents and teachers. Offering flexible times for volunteers should also help with varied and hectic schedules of parents. AAHS will provide as many volunteer opportunities as possible for parents and will provide meaningful volunteer experiences that match the volunteer’s strengths. Some strategies for increasing

volunteerism and attendance at school events if participation is low are:

- Survey potential volunteers throughout the year about interest and availability to volunteer.
- Appoint a volunteer coordinator to help remind volunteers of committees, provide training on equipment, and to organize volunteer activities and events.
- Publicize volunteer opportunities year-round so that if parents cannot attend PTA meetings or miss school announcements, they will still have an opportunity to participate. Additional opportunities will be explored to ensure we are providing strategies that work.

Family-School Partnership- Alabama Aerospace and Aviation High School believes in partnering with parents in the education of their students. We recognize this essential relationship between school and home. The influence of and importance of families on their children, their children's choices and their children's success in school is key. Schools greatly succeed when parents are welcomed, involved, and a part of all aspects of the school community. Families as partners is also an important part of our school culture. AAHS will acknowledge that most children's first teacher is a parent, and we respect the wisdom and guidance parents are able to provide us in regards to their child and his or her needs. Additionally, we value their perspective which will be different from those who work in the school daily. Thus, partnering with parents only serves to make us better. AAHS plans to work with our parents in such a way that the school and families will learn from and support one another and build a school of excellence together. Daily and weekly communication via various means will be essential for open dialogue with the parents and to build the desired family-school partnership. AAHS plans to:

- Provide weekly newsletter
- Provide daily home enhancement activities
- Provide progress reports and written updates
- Meet with families before the start of the school year for updates
- Set volunteer expectation and communicate opportunities
- Create regularly scheduled volunteer opportunities
- Establish parent association
- Host parent information sessions
- Additional activities or events that parents may recommend

Governance Roles – The AAHS Board of Directors will have at a minimum 20% parent representation to be involved in key decision making in accordance to Act 2015-3 Section 4 (10): A governing Board of Directors shall have at least 20 % of its membership be parents of students who attend or have attended the public charter school for at least one academic year. Before the first day of instruction, the 20% membership requirement may be satisfied by parents who intend to have their students attend the public charter school.

Partnership or Contractual Relationships

AAHS has engaged in several informal partnerships thus far. All are willing to establish a formal partnership once the charter has been approved. See below for AAHS-partnership engagements.

Partner	Engagement
Aircraft Owners and Pilots Association (AOPA)	Curriculum, teacher training, industry-based hands-on experiences, flight hour scholarships for students and teachers, mentors
Delta Airlines	Industry-based hands-on experiences, guest speakers, DREAM Flights (parents/students), equipment donations, equipment use, mentors
Alabama Army Reserve (flight division)	Guest presentations, hands-on experiences, mentors
Kaiser Industries	Industry-based hands-on experiences, equipment donations (including retired planes!), equipment use, mentors
Birmingham Flight Center	Industry-based hands-on experiences, flight hours, equipment use, mentors
Bessemer Airport Authority	Industry-based hands-on experiences, flight hours, equipment use, mentors
Hispanic Interest Coalition of Alabama (HICA)	Parental engagement, translations, general ELL support
Tuskegee University	Dual Enrollment, tutors, summer enrichment
Auburn University	Dual Enrollment, tutors, summer enrichment
Alabama State University	Dual Enrollment, tutors, summer enrichment
University of Alabama at Birmingham	Dual Enrollment, tutors, summer enrichment
Miles College	Dual Enrollment, tutors, summer enrichment
Alabama Community College System	Dual Enrollment, certificates
YMCA	Socio-emotional learning, recruitment
Boys & Girls Club	Socio-emotional learning, recruitment
Carnegie Learning Solutions	Specialized curriculum developed (partnering with Delta to create AAHS/industry specific application problems and projects aligned with the ALCOS.

HIGH SCHOOL

ATTACHMENT 10

Community Partner Letters

DUAL ENROLLMENT/DUAL CREDIT
MEMORANDUM OF UNDERSTANDING
BETWEEN ALABAMA STATE UNIVERSITY
AND ALABAMA AEROSPACE AND AVIATION SCHOOLS, INC.

PART 1 – GENERAL PROVISIONS

A. SCOPE

Dual credit shall be provided in accordance with the terms and conditions of this Memorandum of Understanding (hereafter, this "Agreement"). This Agreement applies to Alabama State University ("Institution") and Alabama Aerospace and Aviation Schools, Inc. on behalf of Alabama Aerospace and Aviation High Schools ("AAAHS"). This Agreement supersedes all previous agreements, discussions, negotiations, and draft versions.

B. DEFINITION OF DUAL ENROLLMENT/DUAL CREDIT PROGRAM

"Dual enrollment/dual credit" program means a program that allows high school students to enroll in college-level courses offered by a post-secondary institution that may be academic or career technical and simultaneously earn credit toward high school graduation and a postsecondary degree or certificate.

C. AUTHORIZATION

Dual Enrollment/Dual Credit programs are authorized by Ala. Admin. Code r. 290-3-1-.02(11) and Alabama Community College System Policy 801.03. A copy of Alabama Community College System Policy 801.03, together with the associated Chancellor's Procedure for Policy, are attached to this Agreement (Exhibit B). Although AAAHS and Institution agree that Institution is not subject to the Alabama Community College System, and nothing in this Agreement shall be interpreted to suggest otherwise, AAAHS and Institution will refer to Alabama Community College System policies and procedures as guidelines for the development and practice of an educationally sound dual enrollment/dual credit program between AAAHS and Institution.

D. PURPOSE

The primary purpose of this Agreement is to allow eligible AAAHS students to enroll in college-level classes at Institution concurrently with high school classes, either on Institution's campus or at an AAAHS campus, and simultaneously receive both high school and college credit. This Agreement is intended to fulfill the requirement of a "Dual Enrollment for Dual Credit Agreement" as described in Paragraph 12 of the Chancellor's Procedure for Policy, 801.03: Admission: Dual Enrollment/Dual Credit for High School Students. This Agreement will increase the educational options and opportunities for high school students and increase the overall quality of instruction and learning available through participating postsecondary institutions.

E. ELIGIBILITY AND APPROVAL

The following general eligibility and approval requirements shall apply to this Agreement. This Agreement specifies the means by which Institution and AAAHS will provide equal opportunities to all eligible AAAHS students who wish to participate in the dual enrollment/dual credit program.

1. Eligible Courses

Courses offered by Institution shall be drawn from Institution's existing academic inventory of courses offered for credit. College courses that are academic or career technical and that simultaneously earn credit toward high school graduation and a postsecondary degree or certificate may be eligible for dual credit. Dual enrollment/dual credit courses shall be of postsecondary/college level. It is the responsibility of the Institution to ensure that the instruction is taught at the collegiate level, in compliance with the syllabus of the Institution, and that such compliance is documented and monitored on a regular basis.

Remedial and developmental courses (courses numbered below 100) and physical education courses are not eligible for dual enrollment/dual credit. AAAHS students may not audit courses and receive credit under this Agreement.

Dual enrollment/dual credit courses may be taken as elective or as core courses (except physical education activity courses) for high school credits. A core course means a course required for high school graduation, pursuant to the Alabama State Department of Education course of study.

AAAHS, in collaboration with Institution, shall determine a list of academic and career technical courses eligible for dual enrollment/dual credit for inclusion as Exhibit A to this Agreement. Exhibit A shall include information, including but not limited to, the date, course subject and number, course title, location of where the course is offered, high school and postsecondary credits to be awarded, and semester(s) offered.

Dual enrollment/dual credit courses may be offered at AAAHS, at Institution, and/or at off-campus centers as determined jointly by AAAHS and Institution. Dual enrollment/dual credit courses may be delivered and AAAHS students are permitted to enroll in Institution courses conducted during or after-school hours and/or during summer terms.

Institution may also offer dual credit courses via distance learning (online, hybrid, or other electronic or virtual platforms) should this option become available. All dual enrollment/credit course rules and guidelines shall apply. AAAHS and Institution shall be subject to applicable rules and guidelines pertaining to distance learning.

Institution reserves the right to cancel course offerings when courses do not meet minimum enrollment requirements.

2. Student Eligibility

An AAAHS student must meet all of the following criteria for participating in the dual enrollment/dual credit" program contemplated by this Agreement:

a. The AAAHS student must meet all entrance requirements established by Institution and/or by Alabama Community College System policies, as applicable, except for the requirement of high school graduation;

b. The AAAHS student must be in grades 10, 11, or 12. An exception from this requirement may be granted by the President of Institution for a student documented as gifted and talented in accordance with Ala. Admin. Code r. 290-8-9-.12;

c. The AAAHS student must have a minimum cumulative B [ACCS Policy 801.03 says the minimum is 2.5] average in completed high school courses, and high school transcripts will be provided as documentation of the student's cumulative grade average;

d. The AAAHS student must have written approval of the appropriate AAAHS principal and the AAAHS superintendent. AAAHS student access to Institution's dual enrollment/dual credit program is dependent upon both academic readiness and social maturity. Approval from the principal and superintendent indicates that the AAAHS student has demonstrated both; and

e. All AAAHS students will take the Compass placement test and must meet all course prerequisites established by Institution.

Dual enrollment/dual credit courses must meet any applicable Alabama State Department of Education (ALSDE) standards and benchmarks for high school academic credit. Dual enrollment/dual credit courses that are part of the general education common core for postsecondary institutions are eligible for transfer among Alabama postsecondary institutions. Credit is eligible for transfer from one public postsecondary institution to another and is applied toward requirements for postsecondary graduation and receipt of a degree.

Institution reserves the right to refuse readmission to any AAAHS student who is found to be in violation of Institution policies, including but not limited to, academic standards of progress and the Student Code of Conduct.

3. Dual Enrollment/Dual Credit Faculty

Dual enrollment/dual credit faculty shall be faculty of Institution. An AAAHS high school teacher employed to teach in the dual enrollment/dual credit program, if any, will be designated as an adjunct faculty member of Institution and therefore must meet the credentialing requirements of the Institution, the Alabama Community College System (if applicable), and any other applicable credentialing standards. All dual enrollment/dual credit program faculty must be under the ultimate control and supervision of Institution. Institution must provide for faculty orientation, supervision, and evaluation. Documentation of appropriate faculty credentials, which meet or exceed accrediting agency requirements, must be on file at Institution. Institution faculty credentials shall be provided to AAAHS as needed to meet accrediting agency requirements.

Institution shall be responsible for the compensation of all dual enrollment/dual credit program faculty, in accordance with Alabama Community College System (if applicable) and Institution policies. Dual enrollment/dual credit program faculty may not receive dual compensation for instructional time.

4. Course Approval and Enrollment Limitations

Approval for dual enrollment/dual credit shall be determined by AAAHS and Institution representatives on a course-by-course basis each semester based on the AAAHS student's prior coursework, career pathway, and/or academic readiness. Enrollment in a combined number of high school and college courses per term shall not exceed an amount that is educationally sound as determined jointly by Institution and AAAHS.

5. Course Requirements

The course requirements for AAAHS students enrolled in dual credit courses shall be the same as those of regular students of Institution. Course requirement information shall include the course prerequisites, course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information.

Semester credit hours at the postsecondary level for high school courses specifically named as a requirement for graduation as outlined in Ala. Admin. Code r. 290-3-1-.02(8)(a) shall be determined according to guidelines established by the Alabama State Department of Education. For all other courses, partial/full credit agreements will be developed between AAAHS and Institution in accordance with the Alabama Community College System Policy 705.01 and the associated Chancellor's Procedures for Policy.

6. State Reporting

AAAHS and Institution shall retain educational records in accordance with Alabama and federal statutes and record retention regulations, as applicable. AAAHS and Institution shall verify and reconcile the respective dual enrollment/dual credit records at the end of each academic year.

College courses approved for dual credit shall be posted on both AAAHS and Institution transcripts. Courses completed for dual credit shall be transcripted with the appropriate statement at the postsecondary level indicating dual enrollment credit.

A plan for an annual evaluation of dual enrollment/credit shall be prepared jointly by Institution and AAAHS. Institution and AAAHS shall assume the responsibility for reporting required information in a timely manner.

PART 2 – SPECIFIC PROVISIONS

The following provisions outline the specific responsibilities and duties that apply to Institution, AAAHS, and AAAHS students participating in the dual enrollment/dual credit program to ensure adequate participation by each party.

A. RESPONSIBILITIES AND DUTIES OF INSTITUTION

1. Admission and Enrollment of Students

Institution shall:

a. Designate an Institution representative to review and approve the completed dual enrollment/dual credit form with the understanding that only a form endorsed by all parties shall constitute a dual enrollment/dual credit approval request;

b. Determine, in collaboration with AAAHS, the required academic standing of each AAAHS student eligible to participate in the dual enrollment/dual credit program;

c. Collaborate with AAAHS to reach agreement on admission and registration of eligible AAAHS dual enrollment/dual credit students for the stated semester;

d. Employ a method of qualifying AAAHS students for dual enrollment/dual credit that demonstrates that the AAAHS student has the appropriate skills and maturity to benefit from the instruction and courses requested;

e. Provide placement counseling regarding the appropriateness of each AAAHS student's enrollment in a course prior to registration in terms of academic readiness, age requirements, and programmatic issues;

f. Provide a dual enrollment/dual credit form to eligible AAAHS students and appropriate AAAHS staff online and in hard copy;

g. Approve the dual enrollment/dual credit form each semester based on each student's prior coursework, career pathway, and/or academic readiness;

h. Provide a copy of each approved dual enrollment/dual credit form to the appropriate AAAHS representative;

i. Provide course placement evaluation services and consider a high school college readiness assessment to verify an AAAHS student's academic skill level and to ensure compliance with course prerequisites;

j. Provide information and orientation, in collaboration with AAAHS, to the AAAHS student and parent or guardian regarding the responsibilities of the dual enrollment/dual credit program including academic rigor, time commitments, and behavioral expectations associated with taking college-level coursework and the importance of satisfactorily completing the Institution credits attempted in order for dual credit to be awarded;

k. Inform AAAHS students and parents or guardians of course requirements and information, which includes course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

l. Be responsible for compliance with Section 113 of the Aviation and Transportation Security Act, to the extent that it applies to certain flight training activities; and

m. Advise parents and/or guardians of AAAHS students of federal Family Educational Rights and Privacy Act (FERPA) rules.

2. Responsibility for Funding AAAHS Student Dual Enrollment/Dual Credit

Institution shall:

a. Waive all general fees for dual enrollment/dual credit courses;

b. Waive tuition for AAAHS high school students taking dual enrollment/ dual credit courses; and

c. For Institution courses included in the dual enrollment/dual credit program, make reasonable, good-faith efforts to adopt textbooks and/or course materials for at least three years.

3. Reporting of AAAHS Student Records

Institution shall:

a. Provide AAAHS, within the first thirty (30) days of the academic term, access to each AAAHS student's official schedule of classes as verification of registration;

b. Track progress of dual enrollment/dual credit students on the issue of academic performance and provide reports, as needed, to AAAHS;

c. Verify and keep appropriate records of the AAAHS student's class attendance;

d. Retain the official transcript or grade report of AAAHS dual enrollment/dual credit students that records the term of enrollment, courses/credits attempted, courses/credits completed, grades, and grade point average earned;

e. Release, at the request of the AAAHS student, official Institution transcripts in accordance with the Institution's transcript request practices;

f. Provide final grades to AAAHS for each dual enrollment/dual credit student;

g. Deliver final grades for all dual credit students to AAAHS with sufficient time to be included with final grades; this schedule shall be defined by the parties in the agreement and shall address the time frame appropriate for determining student graduation from high school; and

h. Comply with data collection and reporting provisions in as required by applicable Alabama and federal laws and regulations.

B. RESPONSIBILITIES AND DUTIES OF AAAHS

1. Admission and Enrollment of AAAHS Students

AAAHS shall:

a. Designate a representative to collaborate with Institution to reach an agreement on admission and registration of eligible dual enrollment/dual credit students for the subject semester;

b. Determine, in collaboration with Institution, the required academic standing for AAAHS students eligible to participate in the dual enrollment/dual credit program;

c. Collaborate with Institution to reach an agreement on admission and registration of eligible dual enrollment/dual credit students for the stated semester;

d. Employ a method of qualifying AAAHS students for participation in the dual enrollment/dual credit program, which may include academic performance review, assessments, advisement, and career guidance, and base its recommendations for enrollment at Institution on evidence that the student possesses the appropriate skills and maturity to benefit from college-level instruction;

e. Provide information and orientation to AAAHS students about opportunities to participate in dual enrollment/dual credit programs;

f. Provide a dual enrollment/dual credit form to eligible AAAHS students and appropriate AAAHS staff online and in hard copy;

g. Approve the dual enrollment/dual credit form each semester based on each student's prior coursework, career pathway, and/or academic readiness;

h. Provide information and orientation, in collaboration with Institution, to AAAHS students and their families regarding the responsibilities of dual credit enrollment, including academic rigor, time commitments, and behavioral expectations associated with taking college-level course work and the importance of satisfactorily completing the college credits attempted in order for academic credit to be awarded;

i. Inform AAAHS students of course requirement information which includes course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

j. Notify Institution if the AAAHS student's official schedule of classes is in conflict with the school endorsed registration;

k. Inform AAAHS students in need of accommodations or other arrangements of the need to speak directly with the § 504 Coordinator at Institution;

l. Work collaboratively with Institution to submit an AAAHS student's request for change in registration according to Institution policies and within officially published deadlines (*e.g.*, add, drop, withdraw); and

m. Make it clear to AAAHS students that if they fail or withdraw from dual enrollment/dual credit classes that they were intending to use to substitute for a high school requirement that they will have to make up those high school credits in order to graduate.

2. <u>Responsibility for Funding Dual Enrollment/Dual Credit Program</u>

AAAHS shall:

Pay the cost of the required textbooks and other course supplies for the postsecondary course in which the dual enrollment/dual credit student is enrolled.

3. Dual Enrollment/Dual Credit Courses Offered at AAAHS

Upon the mutual agreement of AAAHS and Institution, courses may be offered at AAAHS high school sites or facilities.

4. Reporting of Student Records

AAAHS shall:

a. Furnish an official high school transcript to Institution, if required by Institution, and with the permission of the AAAHS student/guardian;

b. Record the grade given by Institution to the dual enrollment/dual credit student on the AAAHS student's high school transcript;

c. Retain educational records in accordance with Alabama and federal statutes and record retention regulations, as required under applicable laws and regulations; and

d. Comply with data collection and reporting provisions as required under applicable laws and regulations.

C. RESPONSIBILITIES AND DUTIES OF AAAHS STUDENTS AND PARENTS OR GUARDIANS

1. Admission and Enrollment of Students

For an AAAHS student to be accepted and enrolled into a dual enrollment/dual credit program, the AAAHS student shall:

a. Discuss potential dual enrollment/dual credit courses with the appropriate AAAHS and Institution staff, including Institution admission and registration requirements, course requirements, credits to be attempted, credits to be awarded, scheduling under dual credit, and implications for failure to successfully complete the course;

b. Obtain course requirements for each course, including course prerequisites, course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

c. Meet the prerequisites and requirements of the course(s) to be taken;

d. Complete the dual enrollment/dual credit form available online or in hard copy from AAAHS or Institution;

e. Obtain approval for enrolling in the dual enrollment/dual credit program each semester by acquiring all necessary signatures on the dual enrollment/dual credit form;

f. Register for courses during Institution's standard registration periods (*Note*: enrollments shall not be permitted after the close of posted late registration);

g. Discuss any request for a change in registration (add, drop, or withdraw) and complete all necessary forms and procedures with appropriate AAAHS and Institution staff;

h. Comply with Institution and AAAHS student codes of conduct and other institutional policies; and

i. Be responsible for knowing policies relative to dual enrollment/dual credit of the colleges and universities to which they plan to transfer credit.

2. Rights and Privileges of Students

The rights and privileges of AAAHS students participating in Dual Enrollment/Dual Credit include:

a. The rights and privileges equal to those extended to similarly situated AAAHS and Institution students, unless otherwise excluded by any section of this Agreement;

b. The use of the Institution's libraries, course-related laboratories, and other instructional facilities, the use of Institution programs and services such as counseling, tutoring, advising, summer camps, and special services for the students with disabilities, and access to Institution personnel and resources as required; and

c. The right to appeal, in writing to AAAHS or Institution, as applicable, any decision pertaining to enrollment in the dual enrollment/dual credit program.

3. Financial Responsibility for Participating in Dual Enrollment/Dual Credit

The AAAHS student and/or the parent or guardian of the AAAHS student shall:

a. Return the textbooks and unused course supplies to AAAHS when the student completes the course or withdraws from the course (subject the same being lost or damaged, normal wear and tear expected);

b. Arrange transportation to the site of the dual enrollment/dual credit course (depending upon the time and course location, the AAAHS student may have access to transportation through AAAHS if the dual enrollment/dual credit course is offered during the school day); and

c. Be responsible for course-specific fees (*e.g.*, lab, computer), unless waived or otherwise negotiated between AAAHS and Institution.

4. Confidentiality of AAAHS Student Records

a. AAAHS student educational records created as a result of this Agreement shall be held in accordance with the requirements of the Family Educational Rights and Privacy Act (FERPA).

b. Participation in dual enrollment/dual credit courses requires the AAAHS student and, if applicable, AAAHS student's parent's or guardian's signatures on the dual enrollment/dual credit form for compliance with FERPA regulations.

5. AAAHS and Institution School Calendars

AAAHS students earning dual credits shall abide by the regular operating calendars, schedules and associated requirements of AAAHS and Institution. In instances in which the calendars are incongruent, the dual enrollment/dual credit student is required to independently satisfy both calendar requirements and may consult with AAAHS counselors for assistance.

D. ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Both AAAHS and Institution have responsibilities to provide appropriate reasonable accommodations for AAAHS students while enrolled in dual enrollment/dual credit classes. Institution will direct AAAHS students who need reasonable accommodations to the Institution's § 504 Coordinator, Officer, or similar personnel for the provision of such accommodations.

PART 3 – TERM AND SIGNATURES

A. TERM

The initial term of this Agreement shall be from _____ to _____. This Agreement shall automatically renew for additional fiscal years unless either party notifies the other party of their intent not to renew 60 days before the end of the fiscal year. AAAHS in collaboration with Institution, may modify the list of dual credit courses in the Appendix of the Agreement. Modifications to Exhibit A must be submitted to the Alabama State Department of Education by the end of each semester.

A completed Agreement shall contain signatures from all parties and includes an Exhibit A developed collaboratively by AAAHS and Institution that specifies eligible dual enrollment/dual credit courses.

B. LICENSING

Institution is the owner of certain designations, including designs, trademarks, trade names, trade dress, service marks, logo graphics, images, symbols and other indicia (the "Licensed Indicia"). AAAHS desires to use certain licensed indicia in connection with the promotion, marketing and operation of the dual enrollment/dual credit program by displaying such Licensed Indicia on AAAHS websites and materials. Institution hereby grants AAAHS a license, during the term of this Agreement, to use the Licensed Indicia in connection with the promotion, marketing and operation of the dual enrollment/dual credit program.

Alabama State University	Alabama Aerospace and Aviation High School (AAAHS)
By:	By:
Dr. Quinton T. Ross, Jr. President	Name
	Title
Date	Date

EXHIBIT A

Academic and Career Technical Courses Eligible for Dual Enrollment/Dual Credit

Fall Semester, 2021

In addition to the following list, please refer to the Dual Enrollment-High School Graduation Requirement Equivalency List, 2020-2021 published by the Alabama State Department of Education, available at https://www.alsde.edu/sec/isvcs/Pages/dualenrollment-all.aspx

Course Title	Number	Location Where Offered	Postsecondary Credits	High School Credits
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1

EXHIBIT B

Alabama Community College System Policy 801.03

Chancellor's Procedure for Policy

May 5, 2021

Birmingham Flight Center Aircraft Industries, Inc.
Attn: Ms. Doris Sewell, CEO
1943 50th St. N
Birmingham, AL 35212

Re: Letter of Intent for Industry-Based Learning Partnership

Dear Mr. Pickett:

This Letter of Intent (this "LOI") sets out the principal terms of a potential offer being considered by Alabama Aerospace and Aviation Schools, Inc. ("AAASI") to partner with Birmingham Flight Center to implement industry-based learning in its charter school.

1. Non-Binding. Except for the provisions of Section 5, Section 6, Section 7, and Section 8 and the requirement of this paragraph regarding entry into negotiations, this LOI is not binding on the Parties; it is only an expression of basic terms and conditions that the Parties presently intend to incorporate into a formal written agreement that will govern future interactions between the Parties (hereinafter, the "Memorandum of Understanding" or "MOU"). No binding agreement shall exist with respect to the Parties unless and until the MOU has been duly executed and delivered by both Parties. As soon as practicable following the acceptance and approval of this LOI by Birmingham Flight Center, the Parties will enter into negotiations with the objective of executing the MOU within thirty business days thereafter. AAASI's counsel shall prepare the initial draft of the MOU.

2. Partnership. It is the present intention of the Parties that, upon execution of the MOU, the Parties would partner with each other to implement industry-based learning in AAASI's charter school located on the subleased property. The partnership would involve high school students enrolled in AAASI's charter school participating in internships and apprenticeships with Birmingham Flight Center. AAASI believes and hopes that the contemplated partnership would grow into a valuable, long-term source of workforce talent for Birmingham Flight Center. The MOU shall set out the terms that would govern such partnership and shall contain such covenants, conditions, indemnities, representations, and warranties as the Parties shall mutually agree.

3. Indemnification. It is the present intention of the Parties that the MOU will include appropriate provisions requiring AAASI to carry certain forms and amounts of insurance acceptable to Birmingham Flight Center, and that AAASI would indemnify Birmingham Flight Center and its officers, directors, employees, agents, affiliates, successors, and permitted assigns against certain specified claims and losses arising out of or related to any claim involving the activities contemplated in the MOU.

4. Term and Termination. This LOI will automatically terminate and be of no further force and effect upon the earlier of (i) execution of the MOU by the Parties, or (ii) termination by either Party by sending written notice of termination to the other Party. Notwithstanding anything in the previous sentence, Section 5, Section 6, and Section 7 shall survive the termination of this

LOI and the termination of this LOI shall not affect any rights a Party has with respect to the breach of this LOI by the other Party prior to such termination.

5. Governing Law. This LOI shall be governed by and construed in accordance with the internal laws of the state of Alabama, without giving effect to any choice or conflict of law provision or rule (whether of the state of Alabama or any other jurisdiction) that would cause the application of laws of any jurisdiction other than those of the state of Alabama.

6. Confidentiality. The Parties may provide each other with information as a result of their negotiations under this LOI. Such information shall be deemed confidential if identified as such in writing or otherwise by the Party giving the information (the "Confidential Information"). Confidential Information shall not be disclosed by the receiving party without the written consent of the disclosing party, except to the extent that disclosure is required by law. When disclosure is required, the Party making the disclosure shall provide notice of the intended disclosure to the other Party and shall take all reasonable steps to limit the extent of the disclosure to the minimum required to comply with its legal obligations. Neither Party shall have any obligation with respect to any Confidential Information that is or becomes publicly available without fault of the Party receiving the Confidential Information.

7. No Third-Party Beneficiaries. Nothing herein is intended or shall be construed to confer upon any person or entity other than the Parties and their successors or assigns, any rights or remedies under or by reason of this LOI.

8. Expenses. Each of the Parties shall bear its respective costs, charges, and expenses for the business review, preparation, and negotiation of the MOU or incurred in connection with the activities contemplated by this LOI, including, but not limited to, fees of their respective counsel, accountants, and other advisors or consultants.

9. Miscellaneous. Neither this LOI nor any rights or obligations hereunder may be assigned, delegated, or conveyed by either Party without the prior written consent of the other Party. This LOI may be executed in counterparts, each of which shall be deemed to be an original, but all of which together shall constitute one agreement. The section headings of this LOI have been inserted for reference only and shall not be deemed to be a part of this LOI.

If you are in agreement with the terms set forth above and wish to proceed with negotiating the MOU for the proposed activities on that basis, please sign this LOI in the space provided below and return an executed copy to the attention of Ruben Morris.

Very truly yours,

Alabama Aerospace and Aviation Schools, Inc.

By: _____
Ruben C. Morris
Founder/CEO

Agreed to and accepted:

Birmingham Flight Center, Inc.

By: _____
Steven Pickett
CEO

cc: Charles Knight

DUAL ENROLLMENT/DUAL CREDIT
MEMORANDUM OF UNDERSTANDING
BETWEEN JEFFERSON STATE COMMUNITY COLLEGE
AND ALABAMA AEROSPACE AND AVIATION SCHOOLS, INC.

PART 1 – GENERAL PROVISIONS

A. SCOPE

Dual credit shall be provided in accordance with the terms and conditions of this Memorandum of Understanding (hereafter, this "Agreement"). This Agreement applies to Jefferson State Community College ("Institution") and Alabama Aerospace and Aviation Schools, Inc. on behalf of Alabama Aerospace and Aviation High Schools ("AAAHS"). This Agreement supersedes all previous agreements, discussions, negotiations, and draft versions.

B. DEFINITION OF DUAL ENROLLMENT/DUAL CREDIT PROGRAM

"Dual enrollment/dual credit" program means a program that allows high school students to enroll in college-level courses offered by a post-secondary institution that may be academic or career technical and simultaneously earn credit toward high school graduation and a postsecondary degree or certificate.

C. AUTHORIZATION

Dual Enrollment/Dual Credit programs are authorized by Ala. Admin. Code r. 290-3-1-.02(11) and Alabama Community College System Policy 801.03. A copy of Alabama Community College System Policy 801.03, together with the associated Chancellor's Procedure for Policy, are attached to this Agreement (Exhibit B).

D. PURPOSE

The primary purpose of this Agreement is to allow eligible AAAHS students to enroll in college-level classes at Institution concurrently with high school classes, either on Institution's campus or at an AAAHS campus, and simultaneously receive both high school and college credit. This Agreement is intended to fulfill the requirement of a "Dual Enrollment for Dual Credit Agreement" as described in Paragraph 12 of the Chancellor's Procedure for Policy, 801.03: Admission: Dual Enrollment/Dual Credit for High School Students. This Agreement will increase the educational options and opportunities for high school students and increase the overall quality of instruction and learning available through participating postsecondary institutions.

E. ELIGIBILITY AND APPROVAL

The following general eligibility and approval requirements shall apply to this Agreement. This Agreement specifies the means by which Institution and AAAHS will provide equal opportunities to all eligible AAAHS students who wish to participate in the dual enrollment/dual credit program.

1. Eligible Courses

Courses offered by Institution shall be drawn from Institution's existing academic inventory of courses offered for credit. College courses that are academic or career technical and that simultaneously earn credit toward high school graduation and a postsecondary degree or certificate may be eligible for dual credit. Dual enrollment/dual credit courses shall be of postsecondary/college level. It is the responsibility of the Institution to ensure that the instruction is taught at the collegiate level, in compliance with the syllabus of the Institution, and that such compliance is documented and monitored on a regular basis.

Remedial and developmental courses (courses numbered below 100) and physical education courses are not eligible for dual enrollment/dual credit. AAAHS students may not audit courses and receive credit under this Agreement.

Dual enrollment/dual credit courses may be taken as elective or as core courses (except physical education activity courses) for high school credits. A core course means a course required for high school graduation, pursuant to the Alabama State Department of Education course of study.

AAAHS, in collaboration with Institution, shall determine a list of academic and career technical courses eligible for dual enrollment/dual credit for inclusion as Exhibit A to this Agreement. Exhibit A shall include information, including but not limited to, the date, course subject and number, course title, location of where the course is offered, high school and postsecondary credits to be awarded, and semester(s) offered.

Dual enrollment/dual credit courses may be offered at AAAHS, at Institution, and/or at off-campus centers as determined jointly by AAAHS and Institution. Dual enrollment/dual credit courses may be delivered and AAAHS students are permitted to enroll in Institution courses conducted during or after-school hours and/or during summer terms.

Institution may also offer dual credit courses via distance learning (online, hybrid, or other electronic or virtual platforms) should this option become available. All dual enrollment/credit course rules and guidelines shall apply. AAAHS and Institution shall be subject to applicable rules and guidelines pertaining to distance learning.

Institution reserves the right to cancel course offerings when courses do not meet minimum enrollment requirements.

2. Student Eligibility

An AAAHS student must meet all of the following criteria for participating in the dual enrollment/dual credit" program contemplated by this Agreement:

a. The AAAHS student must meet all entrance requirements established by Institution and/or by Alabama Community College System policies, as applicable, except for the requirement of high school graduation;

b. The AAAHS student must be in grades 10, 11, or 12. An exception from this requirement may be granted by the President of Institution for a student documented as gifted and talented in accordance with Ala. Admin. Code r. 290-8-9-.12;

c. The AAAHS student must have a minimum cumulative B [ACCS Policy 801.03 says the minimum is 2.5] average in completed high school courses, and high school transcripts will be provided as documentation of the student's cumulative grade average;

d. The AAAHS student must have written approval of the appropriate AAAHS principal and the AAAHS superintendent. AAAHS student access to Institution's dual enrollment/dual credit program is dependent upon both academic readiness and social maturity. Approval from the principal and superintendent indicates that the AAAHS student has demonstrated both; and

e. All AAAHS students will take the Compass placement test and must meet all course prerequisites established by Institution.

Dual enrollment/dual credit courses must meet any applicable Alabama State Department of Education (ALSDE) standards and benchmarks for high school academic credit. Dual enrollment/dual credit courses that are part of the general education common core for postsecondary institutions are eligible for transfer among Alabama postsecondary institutions. Credit is eligible for transfer from one public postsecondary institution to another and is applied toward requirements for postsecondary graduation and receipt of a degree.

Institution reserves the right to refuse readmission to any AAAHS student who is found to be in violation of Institution policies, including but not limited to, academic standards of progress and the Student Code of Conduct.

3. Dual Enrollment/Dual Credit Faculty

Dual enrollment/dual credit faculty shall be faculty of Institution. An AAAHS high school teacher employed to teach in the dual enrollment/dual credit program, if any, will be designated as an adjunct faculty member of Institution and therefore must meet the credentialing requirements of the Institution, the Alabama Community College System (if applicable), and any other applicable credentialing standards. All dual enrollment/dual credit program faculty must be under the ultimate control and supervision of Institution. Institution must provide for faculty orientation, supervision, and evaluation. Documentation of appropriate faculty credentials, which meet or exceed accrediting agency requirements, must be on file at Institution. Institution faculty credentials shall be provided to AAAHS as needed to meet accrediting agency requirements.

Institution shall be responsible for the compensation of all dual enrollment/dual credit program faculty, in accordance with Alabama Community College System (if applicable) and Institution policies. Dual enrollment/dual credit program faculty may not receive dual compensation for instructional time.

4. Course Approval and Enrollment Limitations

Approval for dual enrollment/dual credit shall be determined by AAAHS and Institution representatives on a course-by-course basis each semester based on the AAAHS student's prior coursework, career pathway, and/or academic readiness. Enrollment in a combined number of high school and college courses per term shall not exceed an amount that is educationally sound as determined jointly by Institution and AAAHS.

5. Course Requirements

The course requirements for AAAHS students enrolled in dual credit courses shall be the same as those of regular students of Institution. Course requirement information shall include the course prerequisites, course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information.

Semester credit hours at the postsecondary level for high school courses specifically named as a requirement for graduation as outlined in Ala. Admin. Code r. 290-3-1-.02(8)(a) shall be determined according to guidelines established by the Alabama State Department of Education. For all other courses, partial/full credit agreements will be developed between AAAHS and Institution in accordance with the Alabama Community College System Policy 705.01 and the associated Chancellor's Procedures for Policy.

6. State Reporting

AAAHS and Institution shall retain educational records in accordance with Alabama and federal statutes and record retention regulations, as applicable. AAAHS and Institution shall verify and reconcile the respective dual enrollment/dual credit records at the end of each academic year.

College courses approved for dual credit shall be posted on both AAAHS and Institution transcripts. Courses completed for dual credit shall be transcripted with the appropriate statement at the postsecondary level indicating dual enrollment credit.

A plan for an annual evaluation of dual enrollment/credit shall be prepared jointly by Institution and AAAHS. Institution and AAAHS shall assume the responsibility for reporting required information in a timely manner.

PART 2 – SPECIFIC PROVISIONS

The following provisions outline the specific responsibilities and duties that apply to Institution, AAAHS, and AAAHS students participating in the dual enrollment/dual credit program to ensure adequate participation by each party.

A. RESPONSIBILITIES AND DUTIES OF INSTITUTION

1. Admission and Enrollment of Students

Institution shall:

a. Designate an Institution representative to review and approve the completed dual enrollment/dual credit form with the understanding that only a form endorsed by all parties shall constitute a dual enrollment/dual credit approval request;

b. Determine, in collaboration with AAAHS, the required academic standing of each AAAHS student eligible to participate in the dual enrollment/dual credit program;

c. Collaborate with AAAHS to reach agreement on admission and registration of eligible AAAHS dual enrollment/dual credit students for the stated semester;

d. Employ a method of qualifying AAAHS students for dual enrollment/dual credit that demonstrates that the AAAHS student has the appropriate skills and maturity to benefit from the instruction and courses requested;

e. Provide placement counseling regarding the appropriateness of each AAAHS student's enrollment in a course prior to registration in terms of academic readiness, age requirements, and programmatic issues;

f. Provide a dual enrollment/dual credit form to eligible AAAHS students and appropriate AAAHS staff online and in hard copy;

g. Approve the dual enrollment/dual credit form each semester based on each student's prior coursework, career pathway, and/or academic readiness;

h. Provide a copy of each approved dual enrollment/dual credit form to the appropriate AAAHS representative;

i. Provide course placement evaluation services and consider a high school college readiness assessment to verify an AAAHS student's academic skill level and to ensure compliance with course prerequisites;

j. Provide information and orientation, in collaboration with AAAHS, to the AAAHS student and parent or guardian regarding the responsibilities of the dual enrollment/dual credit program including academic rigor, time commitments, and behavioral expectations associated with taking college-level coursework and the importance of satisfactorily completing the Institution credits attempted in order for dual credit to be awarded;

k. Inform AAAHS students and parents or guardians of course requirements and information, which includes course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

l. Be responsible for compliance with Section 113 of the Aviation and Transportation Security Act, to the extent that it applies to certain flight training activities; and

m. Advise parents and/or guardians of AAAHS students of federal Family Educational Rights and Privacy Act (FERPA) rules.

2. Responsibility for Funding AAAHS Student Dual Enrollment/Dual Credit

Institution shall:

a. Waive all general fees for dual enrollment/dual credit courses;

b. Waive tuition for AAAHS high school students taking dual enrollment/ dual credit courses; and

c. For Institution courses included in the dual enrollment/dual credit program, make reasonable, good-faith efforts to adopt textbooks and/or course materials for at least three years.

3. Reporting of AAAHS Student Records

Institution shall:

a. Provide AAAHS, within the first thirty (30) days of the academic term, access to each AAAHS student's official schedule of classes as verification of registration;

b. Track progress of dual enrollment/dual credit students on the issue of academic performance and provide reports, as needed, to AAAHS;

c. Verify and keep appropriate records of the AAAHS student's class attendance;

d. Retain the official transcript or grade report of AAAHS dual enrollment/dual credit students that records the term of enrollment, courses/credits attempted, courses/credits completed, grades, and grade point average earned;

e. Release, at the request of the AAAHS student, official Institution transcripts in accordance with the Institution's transcript request practices;

f. Provide final grades to AAAHS for each dual enrollment/dual credit student;

g. Deliver final grades for all dual credit students to AAAHS with sufficient time to be included with final grades; this schedule shall be defined by the parties in the agreement and shall address the time frame appropriate for determining student graduation from high school; and

h. Comply with data collection and reporting provisions in as required by applicable Alabama and federal laws and regulations.

B. RESPONSIBILITIES AND DUTIES OF AAAHS

1. Admission and Enrollment of AAAHS Students

AAAHS shall:

a. Designate a representative to collaborate with Institution to reach an agreement on admission and registration of eligible dual enrollment/dual credit students for the subject semester;

b. Determine, in collaboration with Institution, the required academic standing for AAAHS students eligible to participate in the dual enrollment/dual credit program;

c. Collaborate with Institution to reach an agreement on admission and registration of eligible dual enrollment/dual credit students for the stated semester;

d. Employ a method of qualifying AAAHS students for participation in the dual enrollment/dual credit program, which may include academic performance review, assessments, advisement, and career guidance, and base its recommendations for enrollment at Institution on evidence that the student possesses the appropriate skills and maturity to benefit from college-level instruction;

e. Provide information and orientation to AAAHS students about opportunities to participate in dual enrollment/dual credit programs;

f. Provide a dual enrollment/dual credit form to eligible AAAHS students and appropriate AAAHS staff online and in hard copy;

g. Approve the dual enrollment/dual credit form each semester based on each student's prior coursework, career pathway, and/or academic readiness;

h. Provide information and orientation, in collaboration with Institution, to AAAHS students and their families regarding the responsibilities of dual credit enrollment, including academic rigor, time commitments, and behavioral expectations associated with taking college-level course work and the importance of satisfactorily completing the college credits attempted in order for academic credit to be awarded;

i. Inform AAAHS students of course requirement information which includes course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

j. Notify Institution if the AAAHS student's official schedule of classes is in conflict with the school endorsed registration;

k. Inform AAAHS students in need of accommodations or other arrangements of the need to speak directly with the § 504 Coordinator at Institution;

l. Work collaboratively with Institution to submit an AAAHS student's request for change in registration according to Institution policies and within officially published deadlines (*e.g.*, add, drop, withdraw); and

m. Make it clear to AAAHS students that if they fail or withdraw from dual enrollment/dual credit classes that they were intending to use to substitute for a high school requirement that they will have to make up those high school credits in order to graduate.

2. <u>Responsibility for Funding Dual Enrollment/Dual Credit Program</u>

AAAHS shall:

Pay the cost of the required textbooks and other course supplies for the postsecondary course in which the dual enrollment/dual credit student is enrolled.

3. Dual Enrollment/Dual Credit Courses Offered at AAAHS

Upon the mutual agreement of AAAHS and Institution, courses may be offered at AAAHS high school sites or facilities.

4. Reporting of Student Records

AAAHS shall:

a. Furnish an official high school transcript to Institution, if required by Institution, and with the permission of the AAAHS student/guardian;

b. Record the grade given by Institution to the dual enrollment/dual credit student on the AAAHS student's high school transcript;

c. Retain educational records in accordance with Alabama and federal statutes and record retention regulations, as required under applicable laws and regulations; and

d. Comply with data collection and reporting provisions as required under applicable laws and regulations.

C. RESPONSIBILITIES AND DUTIES OF AAAHS STUDENTS AND PARENTS OR GUARDIANS

1. Admission and Enrollment of Students

For an AAAHS student to be accepted and enrolled into a dual enrollment/dual credit program, the AAAHS student shall:

a. Discuss potential dual enrollment/dual credit courses with the appropriate AAAHS and Institution staff, including Institution admission and registration requirements, course requirements, credits to be attempted, credits to be awarded, scheduling under dual credit, and implications for failure to successfully complete the course;

b. Obtain course requirements for each course, including course prerequisites, course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

c. Meet the prerequisites and requirements of the course(s) to be taken;

d. Complete the dual enrollment/dual credit form available online or in hard copy from AAAHS or Institution;

e. Obtain approval for enrolling in the dual enrollment/dual credit program each semester by acquiring all necessary signatures on the dual enrollment/dual credit form;

f. Register for courses during Institution's standard registration periods (*Note*: enrollments shall not be permitted after the close of posted late registration);

g. Discuss any request for a change in registration (add, drop, or withdraw) and complete all necessary forms and procedures with appropriate AAAHS and Institution staff;

h. Comply with Institution and AAAHS student codes of conduct and other institutional policies; and

i. Be responsible for knowing policies relative to dual enrollment/dual credit of the colleges and universities to which they plan to transfer credit.

2. Rights and Privileges of Students

The rights and privileges of AAAHS students participating in Dual Enrollment/Dual Credit include:

a. The rights and privileges equal to those extended to similarly situated AAAHS and Institution students, unless otherwise excluded by any section of this Agreement;

b. The use of the Institution's libraries, course-related laboratories, and other instructional facilities, the use of Institution programs and services such as counseling, tutoring, advising, summer camps, and special services for the students with disabilities, and access to Institution personnel and resources as required; and

c. The right to appeal, in writing to AAAHS or Institution, as applicable, any decision pertaining to enrollment in the dual enrollment/dual credit program.

3. Financial Responsibility for Participating in Dual Enrollment/Dual Credit

The AAAHS student and/or the parent or guardian of the AAAHS student shall:

a. Return the textbooks and unused course supplies to AAAHS when the student completes the course or withdraws from the course (subject the same being lost or damaged, normal wear and tear expected);

b. Arrange transportation to the site of the dual enrollment/dual credit course (depending upon the time and course location, the AAAHS student may have access to transportation through AAAHS if the dual enrollment/dual credit course is offered during the school day); and

c. Be responsible for course-specific fees (*e.g.*, lab, computer), unless waived or otherwise negotiated between AAAHS and Institution.

4. Confidentiality of AAAHS Student Records

a. AAAHS student educational records created as a result of this Agreement shall be held in accordance with the requirements of the Family Educational Rights and Privacy Act (FERPA).

b. Participation in dual enrollment/dual credit courses requires the AAAHS student and, if applicable, AAAHS student's parent's or guardian's signatures on the dual enrollment/dual credit form for compliance with FERPA regulations.

5. AAAHS and Institution School Calendars

AAAHS students earning dual credits shall abide by the regular operating calendars, schedules and associated requirements of AAAHS and Institution. In instances in which the calendars are incongruent, the dual enrollment/dual credit student is required to independently satisfy both calendar requirements and may consult with AAAHS counselors for assistance.

D. ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Both AAAHS and Institution have responsibilities to provide appropriate reasonable accommodations for AAAHS students while enrolled in dual enrollment/dual credit classes. Institution will direct AAAHS students who need reasonable accommodations to the Institution's § 504 Coordinator, Officer, or similar personnel for the provision of such accommodations.

PART 3 – TERM AND SIGNATURES

A. TERM

The initial term of this Agreement shall be from _____ to _____. This Agreement shall automatically renew for additional fiscal years unless either party notifies the other party of their intent not to renew 60 days before the end of the fiscal year. AAAHS in collaboration with Institution, may modify the list of dual credit courses in the Appendix of the Agreement. Modifications to Exhibit A must be submitted to the Alabama State Department of Education by the end of each semester.

A completed Agreement shall contain signatures from all parties and includes an Exhibit A developed collaboratively by AAAHS and Institution that specifies eligible dual enrollment/dual credit courses.

B. LICENSING

Institution is the owner of certain designations, including designs, trademarks, trade names, trade dress, service marks, logo graphics, images, symbols and other indicia (the "Licensed Indicia"). AAAHS desires to use certain licensed indicia in connection with the promotion, marketing and operation of the dual enrollment/dual credit program by displaying such Licensed Indicia on AAAHS websites and materials. Institution hereby grants AAAHS a license, during the term of this Agreement, to use the Licensed Indicia in connection with the promotion, marketing and operation of the dual enrollment/dual credit program.

Jefferson State Community College	Alabama Aerospace and Aviation High School (AAAHS)
By:	By:
Dr. Keith A. Brown President	Name
	Title
Date	Date

EXHIBIT A

Academic and Career Technical Courses Eligible for Dual Enrollment/Dual Credit

Fall Semester, 2021

In addition to the following list, please refer to the Dual Enrollment-High School Graduation Requirement Equivalency List, 2020-2021 published by the Alabama State Department of Education, available at https://www.alsde.edu/sec/isvcs/Pages/dualenrollment-all.aspx

Course Title	Number	Location Where Offered	Postsecondary Credits	High School Credits
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1

EXHIBIT B

Alabama Community College System Policy 801.03

Chancellor's Procedure for Policy

DUAL ENROLLMENT/DUAL CREDIT
MEMORANDUM OF UNDERSTANDING
BETWEEN MILES COLLEGE
AND ALABAMA AEROSPACE AND AVIATION SCHOOLS, INC.

PART 1 – GENERAL PROVISIONS

A. SCOPE

Dual credit shall be provided in accordance with the terms and conditions of this Memorandum of Understanding (hereafter, this "Agreement"). This Agreement applies to Miles College ("Institution") and Alabama Aerospace and Aviation Schools, Inc. on behalf of Alabama Aerospace and Aviation High Schools ("AAAHS"). This Agreement supersedes all previous agreements, discussions, negotiations, and draft versions.

B. DEFINITION OF DUAL ENROLLMENT/DUAL CREDIT PROGRAM

"Dual enrollment/dual credit" program means a program that allows high school students to enroll in college-level courses offered by a post-secondary institution that may be academic or career technical and simultaneously earn credit toward high school graduation and a postsecondary degree or certificate.

C. AUTHORIZATION

Dual Enrollment/Dual Credit programs are authorized by Ala. Admin. Code r. 290-3-1-.02(11) and Alabama Community College System Policy 801.03. A copy of Alabama Community College System Policy 801.03, together with the associated Chancellor's Procedure for Policy, are attached to this Agreement (Exhibit B). Although AAAHS and Institution agree that Institution is not subject to the Alabama Community College System, and nothing in this Agreement shall be interpreted to suggest otherwise, AAAHS and Institution will refer to Alabama Community College System policies and procedures as guidelines for the development and practice of an educationally sound dual enrollment/dual credit program between AAAHS and Institution.

D. PURPOSE

The primary purpose of this Agreement is to allow eligible AAAHS students to enroll in college-level classes at Institution concurrently with high school classes, either on Institution's campus or at an AAAHS campus, and simultaneously receive both high school and college credit. This Agreement is intended to fulfill the requirement of a "Dual Enrollment for Dual Credit Agreement" as described in Paragraph 12 of the Chancellor's Procedure for Policy, 801.03: Admission: Dual Enrollment/Dual Credit for High School Students. This Agreement will increase the educational options and opportunities for high school students and increase the overall quality of instruction and learning available through participating postsecondary institutions.

E. ELIGIBILITY AND APPROVAL

The following general eligibility and approval requirements shall apply to this Agreement. This Agreement specifies the means by which Institution and AAAHS will provide equal opportunities to all eligible AAAHS students who wish to participate in the dual enrollment/dual credit program.

1. Eligible Courses

Courses offered by Institution shall be drawn from Institution's existing academic inventory of courses offered for credit. College courses that are academic or career technical and that simultaneously earn credit toward high school graduation and a postsecondary degree or certificate may be eligible for dual credit. Dual enrollment/dual credit courses shall be of postsecondary/college level. It is the responsibility of the Institution to ensure that the instruction is taught at the collegiate level, in compliance with the syllabus of the Institution, and that such compliance is documented and monitored on a regular basis.

Remedial and developmental courses (courses numbered below 100) and physical education courses are not eligible for dual enrollment/dual credit. AAAHS students may not audit courses and receive credit under this Agreement.

Dual enrollment/dual credit courses may be taken as elective or as core courses (except physical education activity courses) for high school credits. A core course means a course required for high school graduation, pursuant to the Alabama State Department of Education course of study.

AAAHS, in collaboration with Institution, shall determine a list of academic and career technical courses eligible for dual enrollment/dual credit for inclusion as Exhibit A to this Agreement. Exhibit A shall include information, including but not limited to, the date, course subject and number, course title, location of where the course is offered, high school and postsecondary credits to be awarded, and semester(s) offered.

Dual enrollment/dual credit courses may be offered at AAAHS, at Institution, and/or at off-campus centers as determined jointly by AAAHS and Institution. Dual enrollment/dual credit courses may be delivered and AAAHS students are permitted to enroll in Institution courses conducted during or after-school hours and/or during summer terms.

Institution may also offer dual credit courses via distance learning (online, hybrid, or other electronic or virtual platforms) should this option become available. All dual enrollment/credit course rules and guidelines shall apply. AAAHS and Institution shall be subject to applicable rules and guidelines pertaining to distance learning.

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a. The AAAHS student must meet all entrance requirements established by Institution and/or by Alabama Community College System policies, as applicable, except for the requirement of high school graduation;

b. The AAAHS student must be in grades 10, 11, or 12. An exception from this requirement may be granted by the President of Institution for a student documented as gifted and talented in accordance with Ala. Admin. Code r. 290-8-9-.12;

c. The AAAHS student must have a minimum cumulative B [ACCS Policy 801.03 says the minimum is 2.5] average in completed high school courses, and high school transcripts will be provided as documentation of the student's cumulative grade average;

d. The AAAHS student must have written approval of the appropriate AAAHS principal and the AAAHS superintendent. AAAHS student access to Institution's dual enrollment/dual credit program is dependent upon both academic readiness and social maturity. Approval from the principal and superintendent indicates that the AAAHS student has demonstrated both; and

e. All AAAHS students will take the Compass placement test and must meet all course prerequisites established by Institution.

Dual enrollment/dual credit courses must meet any applicable Alabama State Department of Education (ALSDE) standards and benchmarks for high school academic credit. Dual enrollment/dual credit courses that are part of the general education common core for postsecondary institutions are eligible for transfer among Alabama postsecondary institutions. Credit is eligible for transfer from one public postsecondary institution to another and is applied toward requirements for postsecondary graduation and receipt of a degree.

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Institution shall be responsible for the compensation of all dual enrollment/dual credit program faculty, in accordance with Alabama Community College System (if applicable) and Institution policies. Dual enrollment/dual credit program faculty may not receive dual compensation for instructional time.

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Approval for dual enrollment/dual credit shall be determined by AAAHS and Institution representatives on a course-by-course basis each semester based on the AAAHS student's prior coursework, career pathway, and/or academic readiness. Enrollment in a combined number of high school and college courses per term shall not exceed an amount that is educationally sound as determined jointly by Institution and AAAHS.

5. Course Requirements

The course requirements for AAAHS students enrolled in dual credit courses shall be the same as those of regular students of Institution. Course requirement information shall include the course prerequisites, course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information.

Semester credit hours at the postsecondary level for high school courses specifically named as a requirement for graduation as outlined in Ala. Admin. Code r. 290-3-1-.02(8)(a) shall be determined according to guidelines established by the Alabama State Department of Education. For all other courses, partial/full credit agreements will be developed between AAAHS and Institution in accordance with the Alabama Community College System Policy 705.01 and the associated Chancellor's Procedures for Policy.

6. State Reporting

AAAHS and Institution shall retain educational records in accordance with Alabama and federal statutes and record retention regulations, as applicable. AAAHS and Institution shall verify and reconcile the respective dual enrollment/dual credit records at the end of each academic year.

College courses approved for dual credit shall be posted on both AAAHS and Institution transcripts. Courses completed for dual credit shall be transcripted with the appropriate statement at the postsecondary level indicating dual enrollment credit.

A plan for an annual evaluation of dual enrollment/credit shall be prepared jointly by Institution and AAAHS. Institution and AAAHS shall assume the responsibility for reporting required information in a timely manner.

PART 2 – SPECIFIC PROVISIONS

The following provisions outline the specific responsibilities and duties that apply to Institution, AAAHS, and AAAHS students participating in the dual enrollment/dual credit program to ensure adequate participation by each party.

A. RESPONSIBILITIES AND DUTIES OF INSTITUTION

1. Admission and Enrollment of Students

Institution shall:

a. Designate an Institution representative to review and approve the completed dual enrollment/dual credit form with the understanding that only a form endorsed by all parties shall constitute a dual enrollment/dual credit approval request;

b. Determine, in collaboration with AAAHS, the required academic standing of each AAAHS student eligible to participate in the dual enrollment/dual credit program;

c. Collaborate with AAAHS to reach agreement on admission and registration of eligible AAAHS dual enrollment/dual credit students for the stated semester;

d. Employ a method of qualifying AAAHS students for dual enrollment/dual credit that demonstrates that the AAAHS student has the appropriate skills and maturity to benefit from the instruction and courses requested;

e. Provide placement counseling regarding the appropriateness of each AAAHS student's enrollment in a course prior to registration in terms of academic readiness, age requirements, and programmatic issues;

f. Provide a dual enrollment/dual credit form to eligible AAAHS students and appropriate AAAHS staff online and in hard copy;

g. Approve the dual enrollment/dual credit form each semester based on each student's prior coursework, career pathway, and/or academic readiness;

h. Provide a copy of each approved dual enrollment/dual credit form to the appropriate AAAHS representative;

i. Provide course placement evaluation services and consider a high school college readiness assessment to verify an AAAHS student's academic skill level and to ensure compliance with course prerequisites;

j. Provide information and orientation, in collaboration with AAAHS, to the AAAHS student and parent or guardian regarding the responsibilities of the dual enrollment/dual credit program including academic rigor, time commitments, and behavioral expectations associated with taking college-level coursework and the importance of satisfactorily completing the Institution credits attempted in order for dual credit to be awarded;

k. Inform AAAHS students and parents or guardians of course requirements and information, which includes course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

l. Be responsible for compliance with Section 113 of the Aviation and Transportation Security Act, to the extent that it applies to certain flight training activities; and

m. Advise parents and/or guardians of AAAHS students of federal Family Educational Rights and Privacy Act (FERPA) rules.

2. Responsibility for Funding AAAHS Student Dual Enrollment/Dual Credit

Institution shall:

a. Waive all general fees for dual enrollment/dual credit courses;

b. Waive tuition for AAAHS high school students taking dual enrollment/ dual credit courses; and

c. For Institution courses included in the dual enrollment/dual credit program, make reasonable, good-faith efforts to adopt textbooks and/or course materials for at least three years.

3. Reporting of AAAHS Student Records

Institution shall:

a. Provide AAAHS, within the first thirty (30) days of the academic term, access to each AAAHS student's official schedule of classes as verification of registration;

b. Track progress of dual enrollment/dual credit students on the issue of academic performance and provide reports, as needed, to AAAHS;

c. Verify and keep appropriate records of the AAAHS student's class attendance;

d. Retain the official transcript or grade report of AAAHS dual enrollment/dual credit students that records the term of enrollment, courses/credits attempted, courses/credits completed, grades, and grade point average earned;

e. Release, at the request of the AAAHS student, official Institution transcripts in accordance with the Institution's transcript request practices;

f. Provide final grades to AAAHS for each dual enrollment/dual credit student;

g. Deliver final grades for all dual credit students to AAAHS with sufficient time to be included with final grades; this schedule shall be defined by the parties in the agreement and shall address the time frame appropriate for determining student graduation from high school; and

h. Comply with data collection and reporting provisions in as required by applicable Alabama and federal laws and regulations.

B. RESPONSIBILITIES AND DUTIES OF AAAHS

1. Admission and Enrollment of AAAHS Students

AAAHS shall:

a. Designate a representative to collaborate with Institution to reach an agreement on admission and registration of eligible dual enrollment/dual credit students for the subject semester;

b. Determine, in collaboration with Institution, the required academic standing for AAAHS students eligible to participate in the dual enrollment/dual credit program;

c. Collaborate with Institution to reach an agreement on admission and registration of eligible dual enrollment/dual credit students for the stated semester;

d. Employ a method of qualifying AAAHS students for participation in the dual enrollment/dual credit program, which may include academic performance review, assessments, advisement, and career guidance, and base its recommendations for enrollment at Institution on evidence that the student possesses the appropriate skills and maturity to benefit from college-level instruction;

e. Provide information and orientation to AAAHS students about opportunities to participate in dual enrollment/dual credit programs;

f. Provide a dual enrollment/dual credit form to eligible AAAHS students and appropriate AAAHS staff online and in hard copy;

g. Approve the dual enrollment/dual credit form each semester based on each student's prior coursework, career pathway, and/or academic readiness;

h. Provide information and orientation, in collaboration with Institution, to AAAHS students and their families regarding the responsibilities of dual credit enrollment, including academic rigor, time commitments, and behavioral expectations associated with taking college-level course work and the importance of satisfactorily completing the college credits attempted in order for academic credit to be awarded;

i. Inform AAAHS students of course requirement information which includes course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

j. Notify Institution if the AAAHS student's official schedule of classes is in conflict with the school endorsed registration;

k. Inform AAAHS students in need of accommodations or other arrangements of the need to speak directly with the § 504 Coordinator at Institution;

l. Work collaboratively with Institution to submit an AAAHS student's request for change in registration according to Institution policies and within officially published deadlines (*e.g.*, add, drop, withdraw); and

m. Make it clear to AAAHS students that if they fail or withdraw from dual enrollment/dual credit classes that they were intending to use to substitute for a high school requirement that they will have to make up those high school credits in order to graduate.

2. <u>Responsibility for Funding Dual Enrollment/Dual Credit Program</u>

AAAHS shall:

Pay the cost of the required textbooks and other course supplies for the postsecondary course in which the dual enrollment/dual credit student is enrolled.

3. Dual Enrollment/Dual Credit Courses Offered at AAAHS

Upon the mutual agreement of AAAHS and Institution, courses may be offered at AAAHS high school sites or facilities.

4. Reporting of Student Records

AAAHS shall:

a. Furnish an official high school transcript to Institution, if required by Institution, and with the permission of the AAAHS student/guardian;

b. Record the grade given by Institution to the dual enrollment/dual credit student on the AAAHS student's high school transcript;

c. Retain educational records in accordance with Alabama and federal statutes and record retention regulations, as required under applicable laws and regulations; and

d. Comply with data collection and reporting provisions as required under applicable laws and regulations.

C. RESPONSIBILITIES AND DUTIES OF AAAHS STUDENTS AND PARENTS OR GUARDIANS

1. Admission and Enrollment of Students

For an AAAHS student to be accepted and enrolled into a dual enrollment/dual credit program, the AAAHS student shall:

a. Discuss potential dual enrollment/dual credit courses with the appropriate AAAHS and Institution staff, including Institution admission and registration requirements, course requirements, credits to be attempted, credits to be awarded, scheduling under dual credit, and implications for failure to successfully complete the course;

b. Obtain course requirements for each course, including course prerequisites, course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

c. Meet the prerequisites and requirements of the course(s) to be taken;

d. Complete the dual enrollment/dual credit form available online or in hard copy from AAAHS or Institution;

e. Obtain approval for enrolling in the dual enrollment/dual credit program each semester by acquiring all necessary signatures on the dual enrollment/dual credit form;

f. Register for courses during Institution's standard registration periods (*Note*: enrollments shall not be permitted after the close of posted late registration);

g. Discuss any request for a change in registration (add, drop, or withdraw) and complete all necessary forms and procedures with appropriate AAAHS and Institution staff;

h. Comply with Institution and AAAHS student codes of conduct and other institutional policies; and

i. Be responsible for knowing policies relative to dual enrollment/dual credit of the colleges and universities to which they plan to transfer credit.

2. Rights and Privileges of Students

The rights and privileges of AAAHS students participating in Dual Enrollment/Dual Credit include:

a. The rights and privileges equal to those extended to similarly situated AAAHS and Institution students, unless otherwise excluded by any section of this Agreement;

b. The use of the Institution's libraries, course-related laboratories, and other instructional facilities, the use of Institution programs and services such as counseling, tutoring, advising, summer camps, and special services for the students with disabilities, and access to Institution personnel and resources as required; and

c. The right to appeal, in writing to AAAHS or Institution, as applicable, any decision pertaining to enrollment in the dual enrollment/dual credit program.

3. Financial Responsibility for Participating in Dual Enrollment/Dual Credit

The AAAHS student and/or the parent or guardian of the AAAHS student shall:

a. Return the textbooks and unused course supplies to AAAHS when the student completes the course or withdraws from the course (subject the same being lost or damaged, normal wear and tear expected);

b. Arrange transportation to the site of the dual enrollment/dual credit course (depending upon the time and course location, the AAAHS student may have access to transportation through AAAHS if the dual enrollment/dual credit course is offered during the school day); and

c. Be responsible for course-specific fees (*e.g.*, lab, computer), unless waived or otherwise negotiated between AAAHS and Institution.

4. Confidentiality of AAAHS Student Records

a. AAAHS student educational records created as a result of this Agreement shall be held in accordance with the requirements of the Family Educational Rights and Privacy Act (FERPA).

b. Participation in dual enrollment/dual credit courses requires the AAAHS student and, if applicable, AAAHS student's parent's or guardian's signatures on the dual enrollment/dual credit form for compliance with FERPA regulations.

5. AAAHS and Institution School Calendars

AAAHS students earning dual credits shall abide by the regular operating calendars, schedules and associated requirements of AAAHS and Institution. In instances in which the calendars are incongruent, the dual enrollment/dual credit student is required to independently satisfy both calendar requirements and may consult with AAAHS counselors for assistance.

D. ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Both AAAHS and Institution have responsibilities to provide appropriate reasonable accommodations for AAAHS students while enrolled in dual enrollment/dual credit classes. Institution will direct AAAHS students who need reasonable accommodations to the Institution's § 504 Coordinator, Officer, or similar personnel for the provision of such accommodations.

PART 3 – TERM AND SIGNATURES

A. TERM

The initial term of this Agreement shall be from _____ to _____. This Agreement shall automatically renew for additional fiscal years unless either party notifies the other party of their intent not to renew 60 days before the end of the fiscal year. AAAHS in collaboration with Institution, may modify the list of dual credit courses in the Appendix of the Agreement. Modifications to Exhibit A must be submitted to the Alabama State Department of Education by the end of each semester.

A completed Agreement shall contain signatures from all parties and includes an Exhibit A developed collaboratively by AAAHS and Institution that specifies eligible dual enrollment/dual credit courses.

B. LICENSING

Institution is the owner of certain designations, including designs, trademarks, trade names, trade dress, service marks, logo graphics, images, symbols and other indicia (the "Licensed Indicia"). AAAHS desires to use certain licensed indicia in connection with the promotion, marketing and operation of the dual enrollment/dual credit program by displaying such Licensed Indicia on AAAHS websites and materials. Institution hereby grants AAAHS a license, during the term of this Agreement, to use the Licensed Indicia in connection with the promotion, marketing and operation of the dual enrollment/dual credit program.

Miles College	Alabama Aerospace and Aviation High School (AAAHS)
By:	By:
Dr. Bobbie Knight President	Name
	Title
Date	Date

EXHIBIT A

Academic and Career Technical Courses Eligible for Dual Enrollment/Dual Credit

Fall Semester, 2021

In addition to the following list, please refer to the Dual Enrollment-High School Graduation Requirement Equivalency List, 2020-2021 published by the Alabama State Department of Education, available at https://www.alsde.edu/sec/isvcs/Pages/dualenrollment-all.aspx

Course Title	Number	Location Where Offered	Postsecondary Credits	High School Credits
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1

EXHIBIT B

Alabama Community College System Policy 801.03

Chancellor's Procedure for Policy

DUAL ENROLLMENT/DUAL CREDIT
MEMORANDUM OF UNDERSTANDING
BETWEEN SNEAD STATE COMMUNITY COLLEGE
AND ALABAMA AEROSPACE AND AVIATION SCHOOLS, INC.

PART 1 – GENERAL PROVISIONS

A. SCOPE

Dual credit shall be provided in accordance with the terms and conditions of this Memorandum of Understanding (hereafter, this "Agreement"). This Agreement applies to Snead State Community College ("Institution") and Alabama Aerospace and Aviation Schools, Inc. on behalf of Alabama Aerospace and Aviation High Schools ("AAAHS"). This Agreement supersedes all previous agreements, discussions, negotiations, and draft versions.

B. DEFINITION OF DUAL ENROLLMENT/DUAL CREDIT PROGRAM

"Dual enrollment/dual credit" program means a program that allows high school students to enroll in college-level courses offered by a post-secondary institution that may be academic or career technical and simultaneously earn credit toward high school graduation and a postsecondary degree or certificate.

C. AUTHORIZATION

Dual Enrollment/Dual Credit programs are authorized by Ala. Admin. Code r. 290-3-1-.02(11) and Alabama Community College System Policy 801.03. A copy of Alabama Community College System Policy 801.03, together with the associated Chancellor's Procedure for Policy, are attached to this Agreement (Exhibit B).

D. PURPOSE

The primary purpose of this Agreement is to allow eligible AAAHS students to enroll in college-level classes at Institution concurrently with high school classes, either on Institution's campus or at an AAAHS campus, and simultaneously receive both high school and college credit. This Agreement is intended to fulfill the requirement of a "Dual Enrollment for Dual Credit Agreement" as described in Paragraph 12 of the Chancellor's Procedure for Policy, 801.03: Admission: Dual Enrollment/Dual Credit for High School Students. This Agreement will increase the educational options and opportunities for high school students and increase the overall quality of instruction and learning available through participating postsecondary institutions.

E. ELIGIBILITY AND APPROVAL

The following general eligibility and approval requirements shall apply to this Agreement. This Agreement specifies the means by which Institution and AAAHS will provide equal opportunities to all eligible AAAHS students who wish to participate in the dual enrollment/dual credit program.

1. Eligible Courses

Courses offered by Institution shall be drawn from Institution's existing academic inventory of courses offered for credit. College courses that are academic or career technical and that simultaneously earn credit toward high school graduation and a postsecondary degree or certificate may be eligible for dual credit. Dual enrollment/dual credit courses shall be of postsecondary/college level. It is the responsibility of the Institution to ensure that the instruction is taught at the collegiate level, in compliance with the syllabus of the Institution, and that such compliance is documented and monitored on a regular basis.

Remedial and developmental courses (courses numbered below 100) and physical education courses are not eligible for dual enrollment/dual credit. AAAHS students may not audit courses and receive credit under this Agreement.

Dual enrollment/dual credit courses may be taken as elective or as core courses (except physical education activity courses) for high school credits. A core course means a course required for high school graduation, pursuant to the Alabama State Department of Education course of study.

AAAHS, in collaboration with Institution, shall determine a list of academic and career technical courses eligible for dual enrollment/dual credit for inclusion as Exhibit A to this Agreement. Exhibit A shall include information, including but not limited to, the date, course subject and number, course title, location of where the course is offered, high school and postsecondary credits to be awarded, and semester(s) offered.

Dual enrollment/dual credit courses may be offered at AAAHS, at Institution, and/or at off-campus centers as determined jointly by AAAHS and Institution. Dual enrollment/dual credit courses may be delivered and AAAHS students are permitted to enroll in Institution courses conducted during or after-school hours and/or during summer terms.

Institution may also offer dual credit courses via distance learning (online, hybrid, or other electronic or virtual platforms) should this option become available. All dual enrollment/credit course rules and guidelines shall apply. AAAHS and Institution shall be subject to applicable rules and guidelines pertaining to distance learning.

Institution reserves the right to cancel course offerings when courses do not meet minimum enrollment requirements.

2. Student Eligibility

An AAAHS student must meet all of the following criteria for participating in the dual enrollment/dual credit" program contemplated by this Agreement:

a. The AAAHS student must meet all entrance requirements established by Institution and/or by Alabama Community College System policies, as applicable, except for the requirement of high school graduation;

b. The AAAHS student must be in grades 10, 11, or 12. An exception from this requirement may be granted by the President of Institution for a student documented as gifted and talented in accordance with Ala. Admin. Code r. 290-8-9-.12;

c. The AAAHS student must have a minimum cumulative B [ACCS Policy 801.03 says the minimum is 2.5] average in completed high school courses, and high school transcripts will be provided as documentation of the student's cumulative grade average;

d. The AAAHS student must have written approval of the appropriate AAAHS principal and the AAAHS superintendent. AAAHS student access to Institution's dual enrollment/dual credit program is dependent upon both academic readiness and social maturity. Approval from the principal and superintendent indicates that the AAAHS student has demonstrated both; and

e. All AAAHS students will take the Compass placement test and must meet all course prerequisites established by Institution.

Dual enrollment/dual credit courses must meet any applicable Alabama State Department of Education (ALSDE) standards and benchmarks for high school academic credit. Dual enrollment/dual credit courses that are part of the general education common core for postsecondary institutions are eligible for transfer among Alabama postsecondary institutions. Credit is eligible for transfer from one public postsecondary institution to another and is applied toward requirements for postsecondary graduation and receipt of a degree.

Institution reserves the right to refuse readmission to any AAAHS student who is found to be in violation of Institution policies, including but not limited to, academic standards of progress and the Student Code of Conduct.

3. Dual Enrollment/Dual Credit Faculty

Dual enrollment/dual credit faculty shall be faculty of Institution. An AAAHS high school teacher employed to teach in the dual enrollment/dual credit program, if any, will be designated as an adjunct faculty member of Institution and therefore must meet the credentialing requirements of the Institution, the Alabama Community College System (if applicable), and any other applicable credentialing standards. All dual enrollment/dual credit program faculty must be under the ultimate control and supervision of Institution. Institution must provide for faculty orientation, supervision, and evaluation. Documentation of appropriate faculty credentials, which meet or exceed accrediting agency requirements, must be on file at Institution. Institution faculty credentials shall be provided to AAAHS as needed to meet accrediting agency requirements.

Institution shall be responsible for the compensation of all dual enrollment/dual credit program faculty, in accordance with Alabama Community College System (if applicable) and Institution policies. Dual enrollment/dual credit program faculty may not receive dual compensation for instructional time.

4. Course Approval and Enrollment Limitations

Approval for dual enrollment/dual credit shall be determined by AAAHS and Institution representatives on a course-by-course basis each semester based on the AAAHS student's prior coursework, career pathway, and/or academic readiness. Enrollment in a combined number of high school and college courses per term shall not exceed an amount that is educationally sound as determined jointly by Institution and AAAHS.

5. Course Requirements

The course requirements for AAAHS students enrolled in dual credit courses shall be the same as those of regular students of Institution. Course requirement information shall include the course prerequisites, course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information.

Semester credit hours at the postsecondary level for high school courses specifically named as a requirement for graduation as outlined in Ala. Admin. Code r. 290-3-1-.02(8)(a) shall be determined according to guidelines established by the Alabama State Department of Education. For all other courses, partial/full credit agreements will be developed between AAAHS and Institution in accordance with the Alabama Community College System Policy 705.01 and the associated Chancellor's Procedures for Policy.

6. State Reporting

AAAHS and Institution shall retain educational records in accordance with Alabama and federal statutes and record retention regulations, as applicable. AAAHS and Institution shall verify and reconcile the respective dual enrollment/dual credit records at the end of each academic year.

College courses approved for dual credit shall be posted on both AAAHS and Institution transcripts. Courses completed for dual credit shall be transcripted with the appropriate statement at the postsecondary level indicating dual enrollment credit.

A plan for an annual evaluation of dual enrollment/credit shall be prepared jointly by Institution and AAAHS. Institution and AAAHS shall assume the responsibility for reporting required information in a timely manner.

PART 2 – SPECIFIC PROVISIONS

The following provisions outline the specific responsibilities and duties that apply to Institution, AAAHS, and AAAHS students participating in the dual enrollment/dual credit program to ensure adequate participation by each party.

A. RESPONSIBILITIES AND DUTIES OF INSTITUTION

1. Admission and Enrollment of Students

Institution shall:

a. Designate an Institution representative to review and approve the completed dual enrollment/dual credit form with the understanding that only a form endorsed by all parties shall constitute a dual enrollment/dual credit approval request;

b. Determine, in collaboration with AAAHS, the required academic standing of each AAAHS student eligible to participate in the dual enrollment/dual credit program;

c. Collaborate with AAAHS to reach agreement on admission and registration of eligible AAAHS dual enrollment/dual credit students for the stated semester;

d. Employ a method of qualifying AAAHS students for dual enrollment/dual credit that demonstrates that the AAAHS student has the appropriate skills and maturity to benefit from the instruction and courses requested;

e. Provide placement counseling regarding the appropriateness of each AAAHS student's enrollment in a course prior to registration in terms of academic readiness, age requirements, and programmatic issues;

f. Provide a dual enrollment/dual credit form to eligible AAAHS students and appropriate AAAHS staff online and in hard copy;

g. Approve the dual enrollment/dual credit form each semester based on each student's prior coursework, career pathway, and/or academic readiness;

h. Provide a copy of each approved dual enrollment/dual credit form to the appropriate AAAHS representative;

i. Provide course placement evaluation services and consider a high school college readiness assessment to verify an AAAHS student's academic skill level and to ensure compliance with course prerequisites;

j. Provide information and orientation, in collaboration with AAAHS, to the AAAHS student and parent or guardian regarding the responsibilities of the dual enrollment/dual credit program including academic rigor, time commitments, and behavioral expectations associated with taking college-level coursework and the importance of satisfactorily completing the Institution credits attempted in order for dual credit to be awarded;

k. Inform AAAHS students and parents or guardians of course requirements and information, which includes course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

l. Be responsible for compliance with Section 113 of the Aviation and Transportation Security Act, to the extent that it applies to certain flight training activities; and

m. Advise parents and/or guardians of AAAHS students of federal Family Educational Rights and Privacy Act (FERPA) rules.

2. Responsibility for Funding AAAHS Student Dual Enrollment/Dual Credit

Institution shall:

a. Waive all general fees for dual enrollment/dual credit courses;

b. Waive tuition for AAAHS high school students taking dual enrollment/ dual credit courses; and

c. For Institution courses included in the dual enrollment/dual credit program, make reasonable, good-faith efforts to adopt textbooks and/or course materials for at least three years.

3. Reporting of AAAHS Student Records

Institution shall:

a. Provide AAAHS, within the first thirty (30) days of the academic term, access to each AAAHS student's official schedule of classes as verification of registration;

b. Track progress of dual enrollment/dual credit students on the issue of academic performance and provide reports, as needed, to AAAHS;

c. Verify and keep appropriate records of the AAAHS student's class attendance;

d. Retain the official transcript or grade report of AAAHS dual enrollment/dual credit students that records the term of enrollment, courses/credits attempted, courses/credits completed, grades, and grade point average earned;

e. Release, at the request of the AAAHS student, official Institution transcripts in accordance with the Institution's transcript request practices;

f. Provide final grades to AAAHS for each dual enrollment/dual credit student;

g. Deliver final grades for all dual credit students to AAAHS with sufficient time to be included with final grades; this schedule shall be defined by the parties in the agreement and shall address the time frame appropriate for determining student graduation from high school; and

h. Comply with data collection and reporting provisions in as required by applicable Alabama and federal laws and regulations.

B. RESPONSIBILITIES AND DUTIES OF AAAHS

1. Admission and Enrollment of AAAHS Students

AAAHS shall:

a. Designate a representative to collaborate with Institution to reach an agreement on admission and registration of eligible dual enrollment/dual credit students for the subject semester;

b. Determine, in collaboration with Institution, the required academic standing for AAAHS students eligible to participate in the dual enrollment/dual credit program;

c. Collaborate with Institution to reach an agreement on admission and registration of eligible dual enrollment/dual credit students for the stated semester;

d. Employ a method of qualifying AAAHS students for participation in the dual enrollment/dual credit program, which may include academic performance review, assessments, advisement, and career guidance, and base its recommendations for enrollment at Institution on evidence that the student possesses the appropriate skills and maturity to benefit from college-level instruction;

e. Provide information and orientation to AAAHS students about opportunities to participate in dual enrollment/dual credit programs;

f. Provide a dual enrollment/dual credit form to eligible AAAHS students and appropriate AAAHS staff online and in hard copy;

g. Approve the dual enrollment/dual credit form each semester based on each student's prior coursework, career pathway, and/or academic readiness;

h. Provide information and orientation, in collaboration with Institution, to AAAHS students and their families regarding the responsibilities of dual credit enrollment, including academic rigor, time commitments, and behavioral expectations associated with taking college-level course work and the importance of satisfactorily completing the college credits attempted in order for academic credit to be awarded;

i. Inform AAAHS students of course requirement information which includes course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

j. Notify Institution if the AAAHS student's official schedule of classes is in conflict with the school endorsed registration;

k. Inform AAAHS students in need of accommodations or other arrangements of the need to speak directly with the § 504 Coordinator at Institution;

l. Work collaboratively with Institution to submit an AAAHS student's request for change in registration according to Institution policies and within officially published deadlines (*e.g.*, add, drop, withdraw); and

m. Make it clear to AAAHS students that if they fail or withdraw from dual enrollment/dual credit classes that they were intending to use to substitute for a high school requirement that they will have to make up those high school credits in order to graduate.

2. <u>Responsibility for Funding Dual Enrollment/Dual Credit Program</u>

AAAHS shall:

Pay the cost of the required textbooks and other course supplies for the postsecondary course in which the dual enrollment/dual credit student is enrolled.

3. Dual Enrollment/Dual Credit Courses Offered at AAAHS

Upon the mutual agreement of AAAHS and Institution, courses may be offered at AAAHS high school sites or facilities.

4. Reporting of Student Records

AAAHS shall:

a. Furnish an official high school transcript to Institution, if required by Institution, and with the permission of the AAAHS student/guardian;

b. Record the grade given by Institution to the dual enrollment/dual credit student on the AAAHS student's high school transcript;

c. Retain educational records in accordance with Alabama and federal statutes and record retention regulations, as required under applicable laws and regulations; and

d. Comply with data collection and reporting provisions as required under applicable laws and regulations.

C. RESPONSIBILITIES AND DUTIES OF AAAHS STUDENTS AND PARENTS OR GUARDIANS

1. Admission and Enrollment of Students

For an AAAHS student to be accepted and enrolled into a dual enrollment/dual credit program, the AAAHS student shall:

a. Discuss potential dual enrollment/dual credit courses with the appropriate AAAHS and Institution staff, including Institution admission and registration requirements, course requirements, credits to be attempted, credits to be awarded, scheduling under dual credit, and implications for failure to successfully complete the course;

b. Obtain course requirements for each course, including course prerequisites, course content, grading policy, attendance requirements, course completion requirements, performance standards, and other related course information;

c. Meet the prerequisites and requirements of the course(s) to be taken;

d. Complete the dual enrollment/dual credit form available online or in hard copy from AAAHS or Institution;

e. Obtain approval for enrolling in the dual enrollment/dual credit program each semester by acquiring all necessary signatures on the dual enrollment/dual credit form;

f. Register for courses during Institution's standard registration periods (*Note*: enrollments shall not be permitted after the close of posted late registration);

g. Discuss any request for a change in registration (add, drop, or withdraw) and complete all necessary forms and procedures with appropriate AAAHS and Institution staff;

h. Comply with Institution and AAAHS student codes of conduct and other institutional policies; and

i. Be responsible for knowing policies relative to dual enrollment/dual credit of the colleges and universities to which they plan to transfer credit.

2. Rights and Privileges of Students

The rights and privileges of AAAHS students participating in Dual Enrollment/Dual Credit include:

a. The rights and privileges equal to those extended to similarly situated AAAHS and Institution students, unless otherwise excluded by any section of this Agreement;

b. The use of the Institution's libraries, course-related laboratories, and other instructional facilities, the use of Institution programs and services such as counseling, tutoring, advising, summer camps, and special services for the students with disabilities, and access to Institution personnel and resources as required; and

c. The right to appeal, in writing to AAAHS or Institution, as applicable, any decision pertaining to enrollment in the dual enrollment/dual credit program.

3. Financial Responsibility for Participating in Dual Enrollment/Dual Credit

The AAAHS student and/or the parent or guardian of the AAAHS student shall:

a. Return the textbooks and unused course supplies to AAAHS when the student completes the course or withdraws from the course (subject the same being lost or damaged, normal wear and tear expected);

b. Arrange transportation to the site of the dual enrollment/dual credit course (depending upon the time and course location, the AAAHS student may have access to transportation through AAAHS if the dual enrollment/dual credit course is offered during the school day); and

c. Be responsible for course-specific fees (*e.g.*, lab, computer), unless waived or otherwise negotiated between AAAHS and Institution.

4. Confidentiality of AAAHS Student Records

a. AAAHS student educational records created as a result of this Agreement shall be held in accordance with the requirements of the Family Educational Rights and Privacy Act (FERPA).

b. Participation in dual enrollment/dual credit courses requires the AAAHS student and, if applicable, AAAHS student's parent's or guardian's signatures on the dual enrollment/dual credit form for compliance with FERPA regulations.

5. AAAHS and Institution School Calendars

AAAHS students earning dual credits shall abide by the regular operating calendars, schedules and associated requirements of AAAHS and Institution. In instances in which the calendars are incongruent, the dual enrollment/dual credit student is required to independently satisfy both calendar requirements and may consult with AAAHS counselors for assistance.

D. ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Both AAAHS and Institution have responsibilities to provide appropriate reasonable accommodations for AAAHS students while enrolled in dual enrollment/dual credit classes. Institution will direct AAAHS students who need reasonable accommodations to the Institution's § 504 Coordinator, Officer, or similar personnel for the provision of such accommodations.

PART 3 – TERM AND SIGNATURES

A. TERM

The initial term of this Agreement shall be from _____ to _____. This Agreement shall automatically renew for additional fiscal years unless either party notifies the other party of their intent not to renew 60 days before the end of the fiscal year. AAAHS in collaboration with Institution, may modify the list of dual credit courses in the Appendix of the Agreement. Modifications to Exhibit A must be submitted to the Alabama State Department of Education by the end of each semester.

A completed Agreement shall contain signatures from all parties and includes an Exhibit A developed collaboratively by AAAHS and Institution that specifies eligible dual enrollment/dual credit courses.

B. LICENSING

Institution is the owner of certain designations, including designs, trademarks, trade names, trade dress, service marks, logo graphics, images, symbols and other indicia (the "Licensed Indicia"). AAAHS desires to use certain licensed indicia in connection with the promotion, marketing and operation of the dual enrollment/dual credit program by displaying such Licensed Indicia on AAAHS websites and materials. Institution hereby grants AAAHS a license, during the term of this Agreement, to use the Licensed Indicia in connection with the promotion, marketing and operation of the dual enrollment/dual credit program.

Snead State Community College	Alabama Aerospace and Aviation High School (AAAHS)
By:	By:
Dr. Joe Whitmore President	Name
	Title
Date	Date

EXHIBIT A

Academic and Career Technical Courses Eligible for Dual Enrollment/Dual Credit

Fall Semester, 2021

In addition to the following list, please refer to the Dual Enrollment-High School Graduation Requirement Equivalency List, 2020-2021 published by the Alabama State Department of Education, available at https://www.alsde.edu/sec/isvcs/Pages/dualenrollment-all.aspx

Course Title	Number	Location Where Offered	Postsecondary Credits	High School Credits
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1
Introduction to Subject Area Studies	SA101	Institution	3	1

EXHIBIT B

Alabama Community College System Policy 801.03

Chancellor's Procedure for Policy

7/6/2021
Alabama Public Charter School Commission
Alabama State Department of Education
Attn: Dr. David T. Marshall

Dear Mr. Marshall,

As the Director of the University of Alabama at Birmingham (UAB) Minority Health & Health Disparities Research Center (MHRC), I express my full support of the application for Alabama Aerospace and Aviation High School (AAHS) for the Alabama Public Charter Schools Commission. We trust that AAHS will be an invaluable addition to the Bessemer and to the Commission.

The MHRC generates and disseminates research knowledge from biomedical, behavioral, and social sciences to reduce the health disparities experienced by vulnerable populations and disadvantaged communities locally, regionally, and nationally. The Center was founded in 2002 and has maintained its status as a Center of Excellence, funded by the National Institutes of Health. The MHRC engages with communities to empower residents in minority and underserved populations across Alabama to improve their health. These academic-community partnerships - based on mutual trust - help facilitate scientific research and translate science into better health for all.

One of the MHRC's most impactful initiatives is Building Healthy Communities (BHC), which works to develop healthy communities from within by establishing coalitions of neighborhood stakeholders, community leaders, and grassroots groups. The Bessemer Coalition crafts and implements a community-driven action plan to improve the health and viability of the communities who need resources most. To date, our most recent programs include, with the support of residents, civic leaders, community leaders and residents, a raised garden bed initiative that addresses food insecurity, a summer camp program for 3rd, 4th, and 5th grade that addresses social and emotional learning, health disparities and violence in the area and the creation of a community mural for senior residents at the Bessemer Housing Authority. AAHS, one of our newer community partners, is dedicated to providing similar educational opportunities for Bessemer youth and support services for their families; a service that is not only unique to the school but absolutely critical to the needs of families.

UAB MINORITY HEALTH AND HEALTH DISPARITIES RESEARCH CENTER

Knowledge that will change your world

The MHRC has strong partnerships in the Bessemer area. We are pleased to support AAHS and their work as they expand to offer vital educational opportunities to Bessemer. We look forward to supporting their work and strongly recommend a favorable consideration their application for the Alabama Public Charter Schools Commission.

Sincerely,

Mona Fouad

Mona N. Fouad, MD, MPH
Senior Associate Dean for Diversity and Inclusion, School of Medicine
Professor and Director, Division of Preventive Medicine
Edward E. Partridge, M.D., Endowed Chair for Cancer Disparity Research
Director, UAB Minority Health and Health Disparities Research Center
UAB Department of Medicine

Educational Program Capacity

AAHS will be led by Mr. Ruben Morris, the proposed CEO/Head of School. He will serve as the school leader. Mr. Morris will lead a leadership team in year one consisting of a Director of Teaching and Learning, Dr. Veronique Brown, and a soon to be identified Director of Operations. This leadership team will be responsible for the day-to-day operation of the school. As the school reaches full capacity, leadership team members will be added each year. Please see below for specific roles and responsibilities.

School Leadership, Administration and Governance

AAHS will be led by Mr. Ruben Morris, the proposed CEO/Head of School. He will serve as the school leader.

AAHS's CEO/Head of school, Ruben Morris, is an experienced education leader with a long track record in school leadership and administration. Mr. Morris moved into school leadership in what was at the time Denver Public School's only Innovation School Network, the Denver Summit Schools Network. His Innovation School experience began at a Turnaround School, Collegiate Prep Academy (CPA). While serving at CPA, he was also awarded a school leadership fellowship with Get Smart Schools (Now Catapult Leadership) established to train dynamic leaders on how to design and lead charter schools. He later completed a Principal Residency within Denver Public School at the Denver Center for International Studies at Montbello as the lead administrator for the high school. The very next year he went on to be the school's first middle school principal. Mr. Morris later transitioned to Colorado's only competency-based school district where he served as a high school administrator at Westminster High School. Upon returning to Birmingham in 2016, he served as the Interim Education Director for the Woodlawn Innovation Network in Birmingham City Schools. He later served as the Executive Director of the New Rising Star Community Support Corporation where he was instrumental in the planning of Birmingham's first public charter school. He also was the Interim Principal of the Middle and High School at Cornerstone Schools of Alabama. Most recently, he led Build Up, the nation's first and only private school workforce development program that turns inner city students into homeowners.

Mr. Morris is currently a fellow in the Freedom Fellows Institute, a 12-month fellowship led by Freedom Preparatory Academy Charter School Network in Memphis, TN. where he was selected among a 2020 pool of 96 school leaders of color nationally to found a high-quality charter school that supports underserved students with an innovative school model. The Institute has offered extensive support in school design, curriculum evaluation, instructional leadership, organizational leadership, operations and finance. Mr. Morris was also selected into the New Schools for Alabama School Founders Program which provides expert training on Alabama compliance, school development, operations, and community organizing. The proposed AAHS founder also partners with Roblin Webb (CEO of Freedom Prep Charter Schools-Memphis) for extensive training on board formation, governance, and operations. Lastly, MCG Financials provides AAHS leadership with best-in-class financial development and support.

Curriculum, Instruction, and Assessment

Dr. Veronique Brown is an experienced and skilled educator with in-depth secondary education experience. She is a veteran educator with 25+ years of experience in K-12, higher education, non-profit, and corporate sectors. She is the owner/operator of Brown's Education Consulting, LLC. She has

presented at numerous national/state conferences and provides professional development, coaching, and interventions in several school systems covering topics on proper special education inclusion practices, collaboration and co-teaching, instructing and servicing English Language Learners, building professional learning communities, teacher self-efficacy, and making data-driven decisions to improve student and faculty performance and school climate and culture. Dr. Brown holds teaching certifications in mathematics, English as a second language, special education, and educational leadership/administration. She is also a certified ACT Educator and SREB College and Career Counselor. She has worked with federal and state government officials, the Alabama State Department of Education, and business/industry entities in efforts to provide comprehensive academic, socio-emotional learning, and real-world experiences for students to better equip them to chart life choices.

The President of the Governing Board is Mr. Charles Knight. The Alabama Aerospace and Aviation High School Governing Board President is also a proven leader with a rich background in board leadership and governance. Mr. Knight's governance experience includes:

Professional Membership and Public Service:
Vice Chair - Crime Stoppers of Metro Alabama, Inc.
Chair - State of Alabama Private Investigation Board
Founder & Past President - Metropolitan Criminal Justice Executives Association - MCJEA
Past Chair – ASIS International - Chapter 37
Birmingham Business Alliance - BBA
Rotary Club of Birmingham

Past Service:
Chair – Safe House of Shelby County
Boy Scouts of America Vulcan District - Troop 57
Building Owners and Managers Association – BOMA
Chair – Birmingham Chamber of Commerce Public Safety Committee
Chair - Birmingham Chamber of Commerce Goals for Public Safety Committee

Mr. Knight will provide leadership of the governing board as described in the AAHS Bylaws. According to the approved Bylaws, the Governing Board of Directors will form committees responsible for the oversight of key school operational tasks. AAHS will maintain its relationship with New Schools For Alabama as a partner for ongoing leadership professional development opportunities as well as Board Development opportunities.

Additional Salaried Hires-Timeline

AAHS will make additions to its leadership team to accommodate school and student flight plan needs. Leadership team responsibilities and qualification can be found in **Attachment 4.**

Position	Time	Hired by
Director of Operations	Full-time	Summer 2021

Director of Child Nutrition	Full-time	Spring 2022
Director of Student Success	Full-time	Spring 2023
Director of Community Engagement	Full-time	Spring 2023
Director of Work-Based Learning	Full-time	Spring 2024

Performance Management

With over 40+ years of combined education experience, Mr. Morris and Dr. Brown exhibits the demonstrated track record of leadership in performance management. Dr. Brown, as the owner/operator of Brown's Education Consulting, LLC, makes intentional efforts to work with school districts/schools to help prepare and support not only their students but faculty in order to make sustainable progress towards the culture's college/career readiness and growth mindset. She has presented at numerous national/state conferences and provides professional development, coaching, and interventions in several school systems covering topics on proper special education inclusion practices, collaboration and co-teaching, instructing and servicing English Language Learners, building professional learning communities, teacher self-efficacy, and making data-driven decisions to improve student and faculty performance and school climate and culture. Previously she was a program analyst for research, development, and evaluation for a non-profit education entity. She was a project director for a federal education grant and a faculty member at the University of Alabama at Birmingham School of Education, Curriculum and Instruction Department. Mr. Morris, as the owner/operator of EIS Consulting, LLC has guided and supported both independent charter schools and districts in goal setting, strategic planning, college and career readiness, as well as culturally competent pedagogy.

Parent and Community Engagement

AAHS parent and governing board member Tiffany Storey will provide additional leadership with our CEO/Head of School Mr. Morris in the area of parent and community engagement. Mrs. Storey is a Mid-career professional with 19+ years' experience in community service and outreach programs. She is a licensed professional counselor who is passionate about providing clients the best support to manage challenging life issues.

AAHS's proposed school leader is a native of the Bessemer surrounding area. Mr. Morris began his educational career at the now closed Birmingham City School McElwain Elementary School. Mr. Morris also served as a private school principal in the Huffman community at Cornerstone High School. He is intimately aware of the educational needs of AAHS's target communities. Mr. Morris's mother is a retired Birmingham City Schools teacher with over 20 years in the district and over 45 years as a public school teacher. Dr. Brown is also no stranger to the Bessemer surrounding areas. As the Program Analyst for Research, Development, and Evaluation at College Admissions Made Possible, Dr. Brown faithfully serves students in the area as well as helps to professionally develop numerous teachers. As a former faculty member of the School of Education, University of Alabama at Birmingham she has trained many of the teachers and administrators in the area.

HIGH SCHOOL

ATTACHMENT 13

Head of School

Ruben C. Morris

1731 Oak Park Lane, Helena, Alabama, 35080| 205-434-7051 | rubencmorris@icloud.com

Professional Experience

Alabama Aerospace and Aviation High School **2020-Present**

CEO/Founder

- Design and plan all elements of a public charter school including curriculum, education plan, and all school operations
- Recruit, select, hire, and develop all staff members and teachers
- Manage strategic relationships needed to secure seed funding and initial planning budgetary needs

Build Up **2018-2020**

Founding Program Director

- Provide strategic and operational leadership over the entire Build Up private school workforce development program
- Recruit, select, hire, and develop all instructional, construction, and support staff for the program
- Manage strategic relationships across multiple stakeholder groups resulting in increased program exposer and philanthropic contributions

Cornerstone Schools of Alabama **2017-2018**

Interim Middle School/High School Principal

- Create systems for the daily school operations including facility management, university partnerships, volunteer coordination, budget, teacher certification, and general school safety protocols
- Develop a strategic plan for the spiritual, academic, and character development of 225 students
- Build capacity in several stakeholders including teachers, staff, parents, community partners, and students to work together toward one mission

New Rising Star Community Support Corporation **2016-2017**

Interim Executive Director

- Serve as a primary thought leader, strategic planner, and philanthropic relationship builder needed to launch Birmingham, Alabama's first charter school
- Envision, manage, and lead collaborative community development projects in four areas including: affordable housing, education, recreation, and workforce development
- Create and execute a large-scale community development plan aimed at revitalizing several distressed areas of East Birmingham

Woodlawn Foundation **2016-2016**

Woodlawn Innovation Network Interim Education Director

- Develop a three-year strategic improvement plan to increase student achievement across all network schools
- Build, cultivate, and manage key strategic relationships with district personnel in order to leverage and advocate for resources needed in network schools
- Coach and support five turnaround principals within Woodlawn High School feeder pattern of Birmingham CitySchools

Adams County School District 50- Westminster High School

10th Grade Administrator **2015-2016**

- Create conditions and systems to support the academic achievement of approximately 500 students including establishing attendance supports and academic interventions
- Envision, plan, and facilitate school wide instructional priorities and goals leading to professional development including cycles of observation and feedback of competency based learning targets across all content areas
- Manage and lead all areas of our advanced academic programing including our International Baccalaureate Program and Advanced Placement program

Denver Public Schools- Denver Center for International Studies at Montbello

Middle School Principal (2014), DPS- Learn to Lead High School Principal Resident (2013) **2013-2015**

- Created systems and structures to coach, evaluate, and support the development of teachers with the goal of ensuring effective high quality instruction in every classroom
- Cultivated and implemented a student and adult culture of excellence that is rooted in core values and will lead to an over 70% reduction in school suspensions and in increase in attendance from 82% to over 90%
- Collaborated with district leadership and key stakeholders to envision and execute a post-secondary readiness plan that will ensure every student has the choice to go to college or purse whatever post-secondary option they choose leading to considerable increases in AP course enrollment, 100% college acceptance rate, and the highest composite ACT average in the network

Denver Public Schools- Collegiate Prep Academy High School

Assistant Principal, Get Smart Schools- Principal Fellow **2012-2013**

- Developed a yearlong professional development plan for teachers leading to dramatically improved instructional and classroom management practices including the creations of content data teams rooted in standards based data driven instruction establishing the first school wide data tracking system
- Collaborated with district and network leadership to create a strategy for college a career readiness including developing a new partnership with UC Denver to provide dual enrollment courses for students
- Wrote and secured an early college grant providing instructional coaches and over half a million dollars over four years to support post-

secondary readiness for students

KIPP Colorado- KIPP Sunshine Peak Academy
Teacher, Reading/Social Studies (7th Grade Team Lead) **2010-2012**
● Facilitated classroom instruction that led to 54% of reading students proficient or advanced on 2011 CSAP; 70% growth
● Collaborated with regional leadership to build and cultivate relationships with parents and community members to in order to cultivate support for furthering the regional mission of KIPP Colorado
● Provided instructional support to new to KIPP and struggling teachers including weekly observation and feedback cycles, regular check-ins, and professional development

Teach For America Atlanta
Director, District Strategy **2009-2010**
● Cultivated and leveraged district relationships with all school district partners and prospective partners from the building level to the superintendent in order to execute a growth strategy that would increase the overall footprint, maintain support, and dramatically increase the impact of the mission in Atlanta leading to the expansion of placement opportunities into three new school districts
● Built and managed relationships with university partners and regional education services agencies to ensure the certification of all corps members in the program
● Collaborated with other members of the regional Leadership Team to set the vision for the region and the priorities for each fiscal year

TGC Homes, Inc.
Project Manager, TGC Development, LLC. **2007-2009**
● Managed and supervised several construction projects simultaneously ensuring safety, productivity, efficiency, and timely completion streamlining company billing practices by implementing more accurate purchase order systems, which reduce losses and overage by 20% on average.
● Maintained accurate schedules, daily logs, budgets, material and vendor lists, and project specific documentation including: plans, permits, inspection requests, and engineering letters.
● Cultivated relationships with city inspectors and building code officials to ensure that the required quality building standards set by local, national, and international regulations are exceeded.
● Received extensive training on payroll taxes, payroll processing, and customer acquisition sales techniques.

Atlanta Public Schools- Ralph Bunche Middle School
Teacher, 8th Grade Social Studies (8th Grade Team Lead) **2006-2007**
● Created organized, standard specific, goal oriented lesson plans geared toward cultivating a passion for Georgia History.
● Compelled teammates to set ambitious measurable goals by adapting a positive influence through focus on excellence and teamwork.
● Administered various types of assessments to monitor student's comprehension of the material in order to tract measurable gains in student achievement.

Atlanta Public Schools- John Hope Elementary School (Teach For America Corps Member)
Teacher, 5th Grade (President, Local School Council) **2005-2006**
● Created an engaging, positive learning environment featuring structured whole group, small group, individualized instruction with hands-on lessons and computer applications.
● Presented monthly goals and objectives to John Hope Local School Council while leading monthly meetings; current projects include a writing campaign to revitalize the community pool.

Houston Independent School District- Patrick Henry Middle School (Teach For America Corps Member)
Teacher, 6th Grade Social Studies **2004-2005**
● Created and implemented Patrick Henry Middle School's 6th grade Thematic Social Studies curriculum that included students producing an 8-10 page research paper.
● Developed partnerships with parents, local businesses leaders, and other community leaders to increase understanding of the needs of the school and garner support for school-based initiatives
● Presented Teach For America in numerous classroom, one-on-one, and informational settings; established partnerships with professors, organizations, student leaders, and academic departments as a Teach For America recruitment volunteer

Education

MASTERS OF ARTS, SOCIAL CHANGE (OVERALL GPA 3.66) | May 2012 | ILLIF SCHOOL OF THEOLOGY, UNIVERSITY OF DENVER

Related coursework: Concentration in Non-Profit Management with coursework including: Financial Management, Leadership, Race/Class/Gender, Social Change Struggles, Identity/Power/Difference, Ethical Analysis

BACHELOR OF ARTS IN HISTORY, GRADUATED CUM LADE (OVERALL GPA 3.50) | MAY 2004 | MOREHOUSE COLLEGE ATLANTA, GA

Related coursework: Concentration in African-American Studies with coursework including: Public Speaking, African American Psychology, Sociology, Business Leadership

Current Board Service

Build Up **2020-Present**

TWC HUB CDC **2020-Present**

Ruben Morris, Head of School
Biography

Ruben Morris was born in Birmingham, AL to a single parent home of a first grade teacher. He graduated from Shades Valley High School (Jefferson County Public Schools) in suburban Birmingham, AL. Upon graduating from Morehouse College in 2004 where he studied History, he joined Teach For America where he taught 5th and 6th grade in Houston, TX and Atlanta, GA.

After a brief break from the classroom to work in the family real estate development business, Ruben returned to the education reform world as the Director of District Strategy for Teach For America Atlanta. After helping to significantly grow the footprint of TFA in Atlanta, he moved to Denver, CO, to pursue a Master's in Social Change.

While completing his Master's, Ruben went back to the classroom as a 7th grade Reading and History teacher at KIPP Sunshine Peak Academy on Denver's Southwest side. During his time at KIPP, he helped to post the highest combined 7th and 8th grade Reading growth in Denver Public Schools and the 4th highest in the state of Colorado in his first year.

After Ruben's time at KIPP, he moved into school leadership in what was at the time Denver Public School's only Innovation School Network, the Denver Summit Schools Network. His Innovation School experience began at a Turnaround School, Collegiate Prep Academy (CPA). While serving at CPA, he was also awarded a school leadership fellowship with Get Smart Schools (Now Catapult Leadership) established to train dynamic leaders on how to design and lead charter schools. He later completed a Principal Residency within Denver Public School at the Denver Center for International Studies at Montbello as the lead administrator for the high school. The very next year he went on to be the school's first middle school principal.

Ruben later transitioned to Colorado's only competency based school district where he served as a high school administrator at Westminster High School. Upon returning to Birmingham in 2016, he served as the Interim Education Director for the Woodlawn Innovation Network in Birmingham City Schools. He later served as the Executive Director of the New Rising Star Community Support Corporation where he was instrumental in the planning of Birmingham's first public charter school. He also was the Interim Principal of the Middle and High School at Cornerstone Schools of Alabama. Most recently, he led Build Up, the nation's first and only private school workforce development program that turns inner city students into homeowners.

HIGH SCHOOL

ATTACHMENT 14

Director of Teaching & Learning

Veronique Zimmerman-Brown, PhD

112 Summerchase PKWY, Calera AL 30405

Mobile: (205) 335-2285

Email: vbrown@brownseducationconsulting.com

PROFILE

Veteran educator is seeking an administrative position with a progressive organization of learning. I am currently the owner and operator of an education consulting firm where I serve as the lead consultant with 20 direct reports. Previously, I was a program analyst for research, development, and evaluation for a non-profit educational organization. For three years I served as the project director for a U.S Department of Education grant where I supervised over 120 employees (seven direct reports), developed business, higher education, and community partnerships, and acquired donations and/or in-kind support for the purpose of providing enriching opportunities for students in 21 diverse school districts in Alabama's *Black Belt*. For eight years I was a faculty member of the School of Education at an internationally renowned research university and largest employer in the state of Alabama. I trained pre-service teachers, all while serving on multiple university committees. Prior to my time in higher education, I taught in Alabama public schools for 11 years where I served as a department chair. I hold current certifications in educational administration, special education, English as a Second Language, and math education. I have completed project management professional development and training as an ACT and college/career counselor certified trainer.

EDUCATION

2019 ACT, New York, NY & Nashville, TN
ACT Certified Educator

2017 Southern Region Educational Board, Atlanta, GA.
Certification as a Go Alliance College & Career counseling instructor/facilitator

2011-2012 University of Alabama at Birmingham, Birmingham, AL.
Doctor of Philosophy in Educational Leadership/Minor in Innovative Instructional Leadership

Dissertation: *Improving Performance: Examining the Link Between Self-Efficacy and Support for Secondary Female Math Teachers*

2009-2011 University of Alabama at Birmingham, Birmingham, AL.
Educational Specialist in Educational Leadership

2006-2007 University of Montevallo, Montevallo, AL.
Certification for Educational Administration

2005-2006 University of Alabama at Birmingham, Birmingham, AL
Certification for English for Speakers of Other Languages

2003-2004 University of Alabama at Birmingham, Birmingham, AL
Masters in Special Education-Teacher Certification for Collaborative Special Education

1992-1996 Alabama State University, Montgomery, AL
Bachelor of Science in Math Education-Teacher Certification for Secondary Mathematics

EXPERIENCE

2011-Present **CEO and Lead Education Consultant**- *Brown's Education Consulting, LLC*

- Assess school culture through survey administration, observations, and data collection
- Provide data analyses and reports to district/school administrators
- Identify, coordinate, and facilitate specific school and departmental professional development needs
- Develop ACT and/or State Assessment aligned curriculum programs and resource packages
- Provide professional development training
- Provide student level interventions (core-content and socio-emotional learning)
- Facilitate professional learning community activities and build leadership capacity through

collaboration
- Coordinate district, school, parental, and community leader meetings
- Provide grant writing support
- Locate and solicit resources

2017-Present **Program Analyst for Research, Development, and Evaluation**-*College Admissions Made Possible*
- Provide data management and analysis for programs and maintain assigned projects
- Use data sources to identify programmatic needs
- Participate in strategic planning with regards to program development
- Assist with program assessments and reporting ensuring program goals and grant requirements are met and documented
- Perform data validation and quality control checks to ensure adherence to program objectives
- Provide professional development and training

2014-2017 **Project Director –** *GEAR UP Alabama*
- Worked directly with universities, the Alabama Department of Education, 21 partnering school districts, vendors, and the federal sponsor's program officer for a grant servicing over 10,000 students, their parents, and teachers
- Supervised over 120 employees
- Coordinated/facilitated stakeholder meetings for continuous evaluation and input
- Produced monthly programmatic status reports (qualitative & quantitative data)
- Reviewed, monitored, approved, directed, and oversaw all financial transactions related to the grant
- Reviewed, monitored, provided guidance and served as the liaison to central administration in regards to all HR activities (labor sources, effort reports, hiring, training, terminations, time sheets, etc.) related to the grant
- Assured that non-financial reporting activities related to the grant were compiled and completed in a timely fashion and adhered to federal guidelines
- Researched and submitted supplemental grant proposals

2006-2014 **Instructor for EDU 200 & 500, Education as a Profession -** *University of Alabama - Birmingham*
- Guided students through the reflective process in evaluating motives for teaching
- Introduced the concepts of professional dispositions, professionalism, ethics, and foundations of education
- Trained students in the use of BlackBoard, Canvas, TaskStream, and Livetext for submitting artifacts and assessments
- Administered and evaluated writing and basic math skills test, remediating when necessary
- Assisted students in completing requirements for admission to the Teacher Education Program

2001-2007 **Math Department Chairperson / Presenter- Inclusion Workshops -** *Shelby County Schools*
Math Teacher/Algebra Math Team Coach: Site Location- Montevallo High School
- Facilitated professional development and professional learning team activities
- Observed and evaluated teachers within the math department and mentored new teachers
- Coordinated ninth grade practice exam for the Alabama High School Graduation Exam
- Taught Algebra I, Algebra II, Algebraic Connections, and Geometry
- Prepared students to compete in various math tournaments
- Conducted workshops on co-teaching and inclusion practices

AFFILIATIONS AND COMMUNITY INVOLVEMENT

- Jefferson/Shelby County Child Care Resource Center Board
- American Educational Research Association
- Research on Women and Education
- Secondary Science and Mathematics Association
- Junior Achievement Volunteer/Instructor
- ACT Preparation Workshop Organizer
- Into the Streets Community Service Volunteer
- Alabama Red Cross Volunteer
- March of Dimes Volunteer
- University of Montevallo Campus Ministry
- Montevallo High School Outreach Program

Director of Teaching and Learning- Veronique Zimmerman-Brown, PhD

Biography

Dr. Veronique Brown is a veteran educator with 25+ years of experience in K-12, higher education, non-profit, and corporate sectors. She is the owner/operator of Brown's Education Consulting, LLC. In this capacity, she makes intentional efforts to work with school districts/schools to help prepare and support not only their students but faculty in order to make sustainable progress towards the culture's college/career readiness and growth mindset. She has presented at numerous national/state conferences and provides professional development, coaching, and interventions in several school systems covering topics on proper special education inclusion practices, collaboration and co-teaching, instructing and servicing English Language Learners, building professional learning communities, teacher self-efficacy, and making data-driven decisions to improve student and faculty performance and school climate and culture.

Previously she was a program analyst for research, development, and evaluation for a non-profit education entity. She was a project director for a federal education grant and a faculty member at the University of Alabama at Birmingham School of Education, Curriculum and Instruction Department. Before transitioning to higher education, Dr. Zimmerman-Brown was a high school math teacher, where she served as the department chair. She was the Educational Director for the Montgomery Boys and Girls Club.

Dr. Brown holds teaching certifications in mathematics, English as a second language, special education, and educational leadership/administration. She is also a certified ACT Educator and SREB College and Career Counselor. She has worked with federal and state government officials, the Alabama State Department of Education, and business/industry entities in efforts to provide comprehensive academic, socio-emotional learning, and real-world experiences for students to better equip them to chart life choices.

Legal Status and Governing Documents

Alabama Aerospace and Aviation High School is constituted as an Alabama non-profit corporation pursuant to Alabama law. The Alabama Aerospace and Aviation High School has received recognition of exemption under Section 501(c)3 of the Internal Revenue Code.

Alabama Aerospace and Aviation High School's Certificate of Formation states:

The purpose for which the Corporation is organized is exclusively for charitable, educational, religious, or scientific purposes, including for such purposes, the making of distributions to organizations that qualify as exempt organizations under Section 501(c)(3) of the Internal Revenue Code, or the corresponding section to any future tax code. Accordingly, the corporation shall transact any or all lawful business for which a non-profit corporation may be organized under the laws of the State of Alabama, including but not limited to: (a) To apply for, form and establish a Start-Up Public Charter School to improve public education in west Alabama, by developing a coalition of citizens, public officials and interested parties; and, (b) To provide a tax-exempt vehicle for the receipt of gifts and grants to benefit the corporation's programs and goals. Alabama Aerospace and Aviation High School will be governed and operated by an independent Board of Directors pursuant to corporate Bylaws adopted by the Board of Directors**.**

See attachments 15 & 16.

ATTACHMENT 15
AAHS Board By-Laws

BY-LAWS

OF

ALABAMA AEROSPACE AND AVIATION SCHOOLS, INC.

ARTICLE I. NAME, OFFICES AND SEAL OF THE CORPORATION

Section 1.01: Name. The name of the Corporation is Alabama Aerospace and Aviation Schools, Inc. (the "Corporation").

Section 1.02: Principal Office. The principal office of the Corporation shall be located in the County of Jefferson, State of Alabama.

Section 1.02: Registered Office. The registered office of the Corporation, as required by the Alabama Business and Nonprofit Entities Code to be maintained in the State of Alabama may be, but need not be, identical with the principal office in the State of Alabama, and the address of the registered office may be changed from time to time by the Board of Directors. The initial registered office of the Corporation shall be located at 1731 Oak Park Lane, Helena, Alabama 35080, as shown in the Certificate of Formation, or at such location as may be shown in a subsequent resolution of the Board of Directors filed with the Alabama Secretary of State. It may have such other offices as the Board of Directors may determine, from time to time.

Section 1.03: Seal. The Corporation may have a corporate seal of a design and form approved by the Board of Directors.

ARTICLE II. PURPOSE AND STRUCTURE

Section 2.01: Purpose. The purpose for which the Corporation is organized is exclusively for charitable, educational, religious, or scientific purposes, including for such purposes, the making of distributions to organizations that qualify as exempt organizations under Section 501(c)(3) of the Internal Revenue Code, or the corresponding section to any future tax code. Accordingly, the corporation shall transact any or all lawful business for which a non-profit corporation may be organized under the laws of the State of Alabama, including but not limited to:

(a) To apply for, form and establish a Start-Up Public Charter School to improve public education in Alabama, by developing a coalition of citizens, public officials and interested parties;

(b) To provide a tax-exempt vehicle for the receipt of gifts and grants to benefit the corporation's programs and goals.

The Corporation shall be vested with all powers necessary to accomplish its purposes, as more particularly delineated in Alabama Code §§ 10A-1-2.11, et seq. and 10A-3-2.41, et seq., as last amended.

HIGH SCHOOL

ARTICLE III. BOARD OF DIRECTORS

Section 3.01: Members. This Corporation will have no members. All corporate actions will be approved by the Board of Directors as provided in these bylaws and in accordance with Alabama law. All rights which would otherwise rest with members of the Corporation will rest with the Board.

Section 3.02: General Powers. The powers of the Corporation shall be exercised by or under the authority of, and the business, property and affairs of the Corporation shall be managed under the direction of, the Board of Directors and, subject to such restrictions, if any, as may be imposed by law, the Articles of Formation or by these Bylaws, the Board of Directors may, and are fully authorized to, do all such lawful acts and things as may be done by the Corporation.

Section 3.03: Property. No Director shall have any right, title or interest in or to the property of the Corporation.

Section 3.04: Qualifications of Directors. The affairs of the Corporation shall be governed by a Board of Directors composed of the number of members as determined under the Certificate of Formation and these Bylaws. Directors shall be natural persons who are 18 years of age or older, but need not be residents of the State of Alabama. The Directors shall possess an interest in promoting the purposes of the Corporation.

Section 3.05: Composition of Board of Directors. The Board of Directors shall consist of no less than three (3) nor more than eleven (11) Directors. At least twenty (20%) percent of the directors shall be parents of the public charter school(s) operated by the Corporation. The number of directors may be increased or decreased to any odd number (not less than three (3) nor more than eleven (11)), by majority vote of the Directors. The Board of Directors may choose to elect up to three (3) Emeritus Board Members at any given time. Emeritus Board Members must be former Board members still actively involved with the Corporation who can attend meetings to provide insight and guidance, however they shall be non-voting members of the Board. When making appointments and filling vacancies to the Board of Directors, it shall be a goal of the Board to ensure that the membership of the board is inclusive and reflects the racial, gender, geographic, urban/rural/, and economic diversity of the region and state while ensuring the integrity of the Board. Members of the Board of Directors shall sign a confidentiality agreement approved by the Board upon being voted onto and accepting appointment to the Board.

Section 3.06: Term of Office. Directors shall serve three-year (3) staggered terms with no more than one half (1/2) of the Board being elected each year. The initial Board of Directors and the length of the term each will serve will be designated in the initial minutes of the Board of Directors. All terms shall expire on the earlier of June 30 of the year in which the Director's term expires, his/her resignation, removal from office or death or until a successor is selected by a majority of the Board of

Directors. Directors shall be able to serve no more than two (2) consecutive two (2) year terms. A Director who has served two (2) consecutive terms may be elected again upon completion of a one (1) year absence from the Board. Emeritus Board Members may be a Director who is completing his/her required one (1) year absence.

Section 3.07: Procedures of Nomination and Election of Directors. Whenever it shall be required to nominate and elect members of the Board of Directors, the President of the Board shall appoint a Nominating Committee. This committee shall be composed of three (3) incumbent Directors. This committee shall request input from the community and parents prior to submitting its nomination(s) to the Corporation. In addition to candidates proposed by the Nominating Committee, nominations shall be taken from the floor. The names of all persons so nominated shall be submitted to the Board of Directors, which shall select the person or persons to serve as such Directors from those nominated.

Section 3.08: Vacancies. Vacancies in the Board of Directors shall be filled by a vote of the majority of the remaining Directors, even though they may constitute less than a quorum. Each person so elected and confirmed shall be a Director until the expiration of the term of office of the predecessor whose vacancy such Director was elected to fill. A vacancy that will occur at a specific later date (by reason of a resignation effective at a later date) may be filled before the vacancy occurs, but the new Director may not take office until the vacancy occurs.

Section 3.09: Removal of Directors. Any Director may be removed for good cause by a two-thirds (2/3) vote of the other Directors at any regular or special meeting at which a quorum is present. Reasons constituting good cause include, but are not limited to, nonfeasance, misfeasance or malfeasance, actions which bring discredit on the Corporation, neglect of responsibility to the Board or absenteeism from scheduled Board meetings (missing at least three (3) consecutive regular Board meetings).

Section 3.10: Resignation. Any Director may resign by giving written notice to the Board of Directors directed to the President with such resignation to be effective at the time stated in such notice.

Section 3.11: Meetings. Meetings of the Board shall be held at a location in Jefferson County, Alabama at a time convenient for partners to attend. Such meeting, location and time shall be set forth in the notice calling such meeting. If no location of a meeting is so specified, the meeting shall be held at the principal office of the Corporation. A meeting of the Board at which a quorum is present may be adjourned by a majority of the Directors present to reconvene at a specific time and place in Jefferson County, Alabama. It shall not be necessary to give notice of the reconvened meeting which was adjourned. At any such reconvened meeting at which a quorum is present, any business may be transacted that could have been transacted at a meeting which was adjourned.

Section 3.12: Annual Organizational Meeting. The Board of Directors shall hold an annual organizational meeting in June of each year on such date as may be determined by the Board of Directors. The purpose of such meeting shall be to elect officers for the year to take office on July 1, to elect Directors, to form necessary committees of the Board of Directors and determine the composition of such committees, and to set goals and policies.

Section 3.13: Annual Budget Meetings. The Board of Directors shall hold an annual budget meeting by July of each year, to plan for the upcoming year, on such date as may be determined by the Board of Directors. The purpose of such meeting shall be to determine a budget for the following fiscal year.

Section 3.14: Regular Meetings. The Corporation shall hold regular meetings, which may be held at such time and place as shall be determined from time to time, by a majority of the Directors. The Board may transact any business that comes before it. Any additional business may be transacted at any regular meeting of the Board. Notice of regular meetings of the Board of Directors shall be necessary and notice shall be given to the public at least twenty-four (24) hours prior to the meeting.

Section 3.15: Special Meetings.. A special meeting may be called by the President in office at that time or any three Directors. Unless waived, notice of the date, time, place and purpose of any special meeting of the Board shall be given by the Secretary at least twenty-four (24) hours before such meeting.

Section 3.16: Waiver of Notice. A written waiver of notice signed by a Director, whether before or after a meeting, shall be equivalent to the giving of such notice. Attendance by a Director at any meeting of the Board shall constitute a waiver of notice of such meeting, except when the Director attends for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened.

Section 3.17: Quorum. At all meetings of the Board of Directors, a majority of the Directors then in office shall be necessary to constitute a quorum for the transaction of business. If at any meeting of the Board of Directors there is less than a quorum present, the majority of those present shall adjourn the meeting.

Section 3.18: Action By Board. Except as otherwise provided in these Bylaws, the act of a majority of the Directors present at the meeting at which a quorum is present shall be an act of the Board.

Section 3.19: Compensation. No Director of the Corporation shall receive any compensation; provided, however, upon approval of the Board, a Director may be reimbursed necessary and reasonable expenses incurred by such Director in conducting the business of the Corporation.

ARTICLE IV. OFFICERS

Section 4.01: Designation. The principal officers of the Corporation shall consist of a President, a Vice President, a Secretary, and a Treasurer and

such other officers as may be determined by the Board, each of whom shall be from among the Board. No two offices may be held by the same person. The President of the Corporation shall be the Chairman of the Board of Directors and shall preside at meetings, and the Secretary of the Corporation shall be the Secretary of the Board of Directors. In the absence of the Secretary, the presiding officer shall designate a person who shall act as Secretary of the meeting.

Section 4.02: Election of Officers and Vacancies. The President, Vice President, Secretary, and Treasurer shall be elected annually by the Board. Officers of the Corporation shall be elected by the Board of Directors at its annual meeting, and unless sooner removed by the Board, shall serve for a term of one (1) year and until their successors are elected and shall qualify. Any vacancies occurring in any office for any reason shall be filled by the Board at a regular or special meeting. The Board of Directors shall appoint such temporary or acting officers as may be necessary during the temporary absence or disability of the regular officers. Officers may be elected to successive terms of office. The Directors may appoint such other officers whenever such action is deemed by the Board to the best interest of the Corporation.

Section 4.03: Removal. Any Officer elected by the Board may be removed from office by an affirmative vote of two-thirds (2/3) of the Directors present at any regular or special meeting at which a quorum is present whenever such action is deemed by the Board to the best interest of the Corporation. An officer may be removed either with or without cause

whenever, in its judgment, the best interest of the Corporation will be served thereby. The successor to the removed officer shall be elected at any regular meeting of the Board of Directors or at any special meeting called for such purpose.

Section 4.04: President. The President shall be a director of and Chairman of the Board of Directors of the Corporation. The President shall preside over all meetings of the Board of Directors, and shall have the general powers and duties which are usually vested in the office of the president of a corporation, including the power to appoint committees from time to time as in the exercise of discretion the President may deem appropriate to assist in the conduct of the affairs of the Corporation. The President shall also preside at the annual budget meeting and perform such other duties as may be required of him or her by the Board and those that are incident to his or her office.

Section 4.05: Vice President. The Vice President shall be a member of and Vice Chairman of the Board of Directors. In the absence or disability of the President, the Vice President shall possess all powers and shall perform such other duties of the office of the President. The Vice President shall also perform such other duties as shall be prescribed by the Board of Directors.

Section 4.06: Secretary. The Secretary shall be a director of the Board of Directors. The Secretary shall issue notices for all meetings of the members of the Board, keep the minutes of all meetings of the Board of

Directors and of the Executive Committee, and shall make such reports to the Board as they request and shall perform such other duties as may be incident to the office of Secretary. The Secretary shall have custody of such books and records of the Corporation as the Board of Directors may provide and shall perform the duties and functions customarily performed by the secretary of a corporation together with such other duties as the Board of Directors may prescribe.

Section 4.07: Treasurer. The Treasurer shall be a director of the Board of Directors. The Treasurer shall have charge and custody of and be responsible for all monies and funds of the Corporation, subject to such joint control and joint signature requirements as the Board may from time to time specify. The Treasurer shall also keep complete and accurate records and accounts in books belonging to the Corporation, shall see that all expenditures are duly authorized and are evidenced by proper receipts and vouchers for monies due and payable to the Corporation from any source whatsoever, and he or she shall deposit, in the name of the Corporation, all of the monies of the Corporation that shall come into his or her hands in such banks, trust companies, or other depositories as shall be selected, and in general perform all the duties incident to the office of Treasurer, and such other duties as from time to time maybe assigned to the Treasurer by the Board of Directors. The Treasurer shall also make a full report of the financial condition of the Corporation for the annual meetings of the Board and shall make such other reports and perform such other duties as may be required by him or her by the Board. If required by the Board of Directors, the Treasurer shall give a bond for the faithful

discharge of the duties of Treasurer in such sum and with such surety or sureties as the Board of Directors shall determine.

Section 4.08: Executive Director. The Board of Directors may elect to hire, employ or contract with a Head of School to perform such duties as the Board may elect to delegate to the Head of School, which duties may include management, administration and operation of the Corporation, and its policies and directives, under the general supervision of the President of the Corporation. The Head of School shall not be from among the Board.

Section 4.09: Personnel. The Board of Directors may hire or contract with such other personnel as it may deem necessary to accomplish the objectives of the Corporation.

ARTICLE V. COMMITTEES

Section 5.01: Committees. The Board of Directors may act by and through committees appointed by the President or approved by a majority of the Board of Directors. The duties and responsibilities will be designated by the Board and each such committee will be subject to the direction of the President of the Board.

Section 5.02: Advisory Council. An Advisory Council may be created whose members shall be appointed by the President but who shall have no duties, voting privileges, nor obligations for attendance at regular meetings of the Board of Directors. Advisory Council members may attend said meetings at the invitation of a member of the Board of Directors.

Members of the Advisory Council shall possess the desire to serve the community and support the work of the Corporation by providing expertise and professional knowledge. Members of the Advisory Council shall sign a confidentiality agreement approved by the Board upon being voted onto and accepting appointment to the Advisory Council. The Board of Directors may appoint a Director to serve as its liaison to the Advisory Council.

ARTICLE VI. FISCAL MANAGEMENT

Section 6.01: Fiscal Year. The fiscal year of the Corporation shall begin on the 1st day of October and end on the 30th day of September of each year. The commencement date of the fiscal year herein established shall be subject to change by the Board of Directors.

Section 6.02: Executive of Corporate Documents. With the prior authorization of the Board of Directors, all notes and contracts shall be executed on behalf of the Corporation by either the President or Vice President and attested by the Secretary. All checks, drafts, or other orders for the payment of money, notes or other evidences of indebtedness issued in the name of the Corporation shall be signed by the Executive Director, Chief Financial Officer or an authorized Board of Director signor. Two signatures are required for each check issued over $10,000. No loans shall be contracted on behalf of the Corporation and no evidences of indebtedness shall be issued in its name unless authorized by a resolution of the Board of Directors. Such authority may be general or confined to specific instances.

Section 6.03: Fiscal Agents. The Corporation may designate such fiscal agents, investment advisors and custodians of funds or assets as the Board may select by resolution. The Board may at any time, with or without cause, discontinue the use of the services of any such fiscal agent, investment advisor or custodian of funds or assets.

Section 6.04: Books and Records. The Corporation will keep:

a) Records of all proceedings of the Board of Directors and committees; and
b) All financial statements of the Corporation; and Articles of Incorporation and By-laws of the Corporation and all amendments and restatements; and
c) Other records and books of account necessary and appropriate to the conduct of the corporate business and in accordance with Alabama's public records laws.

Section 6.05: Audit and Publication. The records and books of account of the Corporation will be audited in such a manner as may be deemed necessary or appropriate. The Board will make such inquiry into the condition of all trusts and funds held by any trustee, agent or custodian for the benefit of the Corporation as it may deem appropriate.

Section 6.06: Bond. The Corporation will obtain a bond on such people and in such amounts as may from time to time be deemed necessary.

Section 6.07: No Self-Dealing. Neither the Corporation, nor its Directors will engage in any act which would constitute "self-dealing" as defined in Section 4941 (d) of the Internal Revenue Code of 1986.

Section 6.08: No Jeopardy Investment. The Corporation will assure that no funds, whether owned by the Corporation or vested in a trust for the benefit of the Corporation, are invested or reinvested in such a manner that jeopardizes the carrying out of its purposes for which this Corporation is organized.

Section 6.09: Expenditure Responsibility. Through its Board of Directors the Corporation will exercise "expenditure responsibility", as defined in Section 4945 (h)(1) of the Internal Revenue Code of 1986, as now enacted or as hereafter amended, with respect to all grants and distributions.

Section 6.10: Reasonable Return. The Board of Directors will take steps to assure that each Director, officer, agent or custodian of the trusts, assets or funds that are a component part of this Corporation, administer them in accordance with accepted standards of fiduciary conduct to produce a reasonable (as determined by the Board of Directors) return of net income.

Section 6.11: Indemnification.

Subject to the further provisions hereof, the Corporation shall indemnify any and all of its existing and former directors and officers against all expenses incurred by them and each of them, including but not limited to, legal fees, judgments, penalties, and amounts paid in settlement or compromise, which may arise or be incurred, rendered or levied in any legal action brought or threatened against any of them for or on account of any action or omission alleged to have been committed while acting within the scope of employment as director or officer of the Corporation, whether or not any action or compromise is approved by a court. Indemnification shall be made by the Corporation whether the legal action brought or threatened is brought by or in the right of the Corporation or by any other person. Whenever such director or officer shall report to the president of the Corporation or to the Board of Directors that he or she has incurred or may incur expenses, including but not limited to, legal fees, judgments, penalties, and amounts paid in settlement or compromise in a legal action brought or threatened against him or her for or on account of any action or omission alleged to have been committed by him or her while acting within the scope of his or her employment as a director or officer of the Corporation, the Board of Directors shall, at its next regular meeting or at a special meeting held within a reasonable time thereafter, determine in good faith whether, in regard to the matter involved in the action or contemplated action, such person acted, failed to act, or refused to act

willfully or with gross negligence or with fraudulent or criminal intent. If the Board of Directors determines in good faith that such person did not act, failed to act, or refused to act willfully or with gross negligence or with fraudulent or criminal intent in regard to the matter involved in the action or contemplated action, indemnification shall be mandatory and shall be automatically extended as specified herein. Provided, however, that the Corporation shall have the right to refuse indemnification in any instance in which the Board of Directors determines in good faith that such person did act, failed to act, or refused to act willfully or with gross negligence or with fraudulent or criminal intent in regard to the matter involved. Furthermore, the Corporation shall have the right to refuse indemnification in any instance in which the person to whom indemnification would otherwise have been applicable shall have unreasonably refused to permit the Corporation, at its own expense and through counsel of its own choosing, to defend him or her in the action. If the Board of Directors should in good faith deny indemnity to a current or former director or officer and if a court of competent jurisdiction or proper adjudicatory body should later find that such person did **not** act, fail to act, or refuse to act willfully or with gross negligence or with fraudulent or criminal intent in regard to the matter involved, then the Board shall, upon such person's application, reimburse the officer or director for all reasonable costs of defense, to include reasonable attorney's fees.

ARTICLE VII. FIDUCIARY RESPONSIBILITY

Section 7.01: Fiduciary Responsibility. It shall be the policy of this Corporation that the Board of Directors shall assume and discharge fiduciary responsibility with respect to all funds held or administered by the Corporation. All members of the Board of Directors shall be subject to Alabama's Ethics Laws.

ARTICLE VIII. NON-DISCRIMINATION POLICY

Section 8.01: Non-Discriminatory Statement. It shall be the policy of this Corporation that the Board of Directors, all employees, and associated volunteers acknowledges its ethical and statutory responsibility to afford equal treatment and equal opportunity to all persons, and thus complies with all applicable laws and directives which promulgate non-discrimination and equality of opportunity.

In keeping with the spirit and letter of the law, this Corporation prohibits discrimination against its employees, students, and applicants based on race, color, sex, gender identity, religion, creed, age, national origin or ancestry, sexual orientation, disability or different ability, marital status, parental status, pregnancy, military status, political activities/affiliations, or other impermissible reason; sexual harassment is also prohibited.

ARTICLE IX. AMENDMENT

Section 9.01: Amendment. These by-laws may be amended, altered or repealed in whole or in part at any regular or special meeting of the Board of Directors at which a quorum is present by a two-thirds ($^2/_3$) vote of the Board; provided that if such amendment is made at a special meeting, the call therefore shall set forth the proposed amendment.

Adopted and Approved by the Board of Directors on this _30th__ day of ____June_____ 2020.

AEROSPACE & AVIATION HIGH SCHOOL

HIGH SCHOOL

Charles Knight

President, Alabama Aerospace and Aviation Schools, Inc.

Michael G. Kendrick, Incorporator

HIGH SCHOOL

ATTACHMENT 16

Statement of Assurances

STATEMENT OF ASSURANCES

This Statement of Assurances must be signed by a duly authorized representative of the charter school applicant and submitted with the application for a charter school.

As the duly authorized representative of the applicant group (the school), I hereby certify under the penalty of perjury that all information and statements submitted for or on behalf of: Empower Community School are accurate and true to the best of my knowledge and belief; and further, I certify and assure that, **if awarded a charter**:

1. The School shall have a fully independent governing board that will exercise autonomy in all matters, to the extent authorized the Act.

2. The School has tax exempt status under section 501(c)(3) of the Internal Revenue Code of 1986 (26 U.S.C. Sec. 501(c)(3)), is not be a sectarian or religious organization, and shall be operated according to the terms of a charter contract executed with the Alabama Public Charter School Commission.

3. The School shall function as a local education agency under applicable federal laws and regulations, shall be responsible for meeting, and shall meet the requirements of local education agencies and public schools under those federal laws and regulations, including but not limited to:

    a. Compliance with the individuals with disabilities education improvement act (IDEA, 20 U.S.C. Sec. 1401 et seq.).

    b. Compliance with the federal educational rights and privacy act (FERPA, 20 U.S.C. Sec. 1232g).

    c. Compliance with the elementary and secondary education act (ESEA, 20 U.S.C. Sec. 6301 et seq.).

    d. Compliance with requirements that ensure a student's records, and, if applicable, a student's individualized education program, will follow the student, in accordance with applicable federal and state law.

    e. Compliance with the *Every Student Succeeds Act*, including but not limited to, provisions on school prayer, the Boy Scouts of America Equal Access Act, the Armed Forces Recruiter Access to Students and Student Recruiting Information, the Unsafe School Choice Option and assessments.

    f. Compliance with Title IX of the Education Amendments of 1972 (20 U.S.C. § 1681).

    g. Compliance with Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794*)*.

h. Compliance with Title II of the Americans With Disabilities Act of 1990 (42 U.S.C. § 12101).

4. The School shall hire, manage, and discharge any charter school employee in accordance with state laws and the School's charter contract.

5. The School shall receive and disburse funds solely in accordance with the purposes of the charter school.

6. To the extent it enters into contracts with any school district, educational service district, or other public or private entity for the provision of real property, equipment, goods, supplies, and services, including educational instructional services and including for the management and operation of the charter school, the School shall do so to the same extent as other non-charter public schools, as long as the School's governing board maintains oversight authority over the charter school.

7. The School shall not enter into any contracts for management operation of the charter school without the Alabama Public Charter's School approval of the entity and evidence of adherence to Alabama's bid law.

8. To the extent it enters into contracts with other entities regarding real property, the School shall include provisions regarding the disposition of the property if the charter school fails to open as planned or closes, or if the charter contract is revoked or not renewed.

9. To the extent it issues secured and unsecured debt, including pledging, assigning, or encumbering its assets to be used as collateral for loans or extensions of credit to manage cash flow, improve operations, or finance the acquisition of real property or equipment, the School shall not pledge, assign, or encumber any public funds received or to be received.

10. The School shall ensure that no debt incurred by the School is a general, special, or moral obligation of the state or any other political subdivision or agency of the state.

11. The School shall not pledge either the full faith and credit or the taxing power of the state or any political subdivision or agency of the state for the payment of the debt.

12. To the extent it solicits, accepts, and administers for the benefit of the charter school and its students, gifts, grants, and donations from individuals or public or private entities, the School shall not solicit, accept, and administer any such gifts, grants or donations from sectarian or religious organizations and shall not accept any gifts or donations the conditions of which violate state laws.

13. The School shall issue diplomas to students who meet state high school graduation requirements established by the Department even though the charter school governing board may establish additional graduation requirements.

14. The School shall not levy taxes or issue tax-backed bonds and shall not acquire or attempt to acquire property by eminent domain.

15. The School shall operate according to the terms of its charter contract and the Act.

16. The School shall comply with local, state, and federal health, safety, parents' rights, civil rights, and nondiscrimination laws applicable to school districts and to the same extent as school districts.

17. The School shall provide basic education, including instruction in the essential academic learning requirements and shall participate in the statewide student assessment system.

18. The School shall employ certificated instructional staff in areas required by Federal program regulations.

19. The School shall adhere to generally accepted accounting principles and be subject to financial examinations and audits as determined by the Department, including annual audits for legal and fiscal compliance.

20. The School shall comply with the open public meetings act and public records requirements.

21. The School shall be subject to and comply with all legislation governing the operation and management of charter schools.

22. The School shall comply with all state statutes and rules made applicable to the charter school in the school's charter contract.

23. The School shall not engage in any sectarian practices in its education program, admissions or employment policies, or operations.

24. The School shall be subject to the supervision of the State Superintendent and the State Board of Education, including accountability measures, to the same extent as non-charter public schools, except as otherwise expressly provided by law.

25. The School shall not limit admission on any basis other than age group, grade level, or capacity and must enroll all students who apply within these bases and shall be open to any Alabama student regardless of his or her location of residence.

26. The School shall not charge tuition, but may charge fees for participation in optional extracurricular events and activities in the same manner and to the same extent as do non-charter public schools.

27. If capacity is insufficient to enroll all students who apply to the charter school, the School must select students through a lottery as provided in the Act.

28. The School’s Governing Board shall annually determine the capacity of the School in consultation with the Commission and with consideration of the School's ability to facilitate the

academic success of its students, achieve the objectives specified in the charter contract, and assure that its student enrollment does not exceed the capacity of its facility.

29. The School shall comply with all health and safety laws, rules and regulations of the federal, state, county, region, or community that may apply to its facilities and property.

30. The School has disclosed any real, potential, or perceived conflicts of interest that could impact the approval or operation of the School.

31. The School shall, within sixty days of approval of its charter application, execute a charter contract with the Commission, containing the terms set forth by the Commission and the terms required by the Act, as well as future rules adopted by the Commission.

32. The School shall meet any reasonable preopening requirements or conditions imposed by the Commission, including, but not limited to, requirements or conditions to monitor the start-up progress of the School, to ensure that the School is prepared to open smoothly on the date agreed, and to ensure that the School meets all building, health, safety, insurance, and other legal requirements for school opening.

33. The School shall comply with, and fully participate in, any activity by the Commission that the Commission deems necessary for it to monitor, engage in oversight, and/or engage in corrective action.

34. The School shall comply with any corrective actions or sanctions imposed upon it by the Commission.

35. The School shall comply with all renewal and nonrenewal actions required of it by the Commission or by law.

36. The School shall comply with any nonrenewal of termination actions imposed by the Commission.

37. The School shall report student enrollment in the same manner and based on the same definitions of enrolled students and annual average full-time equivalent enrollment as other public schools.

38. The School shall comply with applicable reporting requirements to receive state or federal funding that is allocated based on student characteristics.

39. The School shall, at all times, maintain all necessary and appropriate insurance coverage.

40. The School shall indemnify and hold harmless the Commission and its officers, directors, agents, and employees, and any successors and assigns from any and all liability, cause of action, or other injury or damage in any way relating to the School or its operation.

41. The School's governing body has adopted a resolution or motion that authorizes the submission of the School's Charter School Application, including all understandings and assurances contained herein, directing and authorizing the School's designated representative to act in connection with the application and to provide such additional information as may be required by the Commission.

42. The School understands that the Commission will not reimburse the School for any costs incurred in the preparation of this application. All applications and associated materials become the property of the Commission, and the School claims no proprietary right to the ideas, writings, items, or samples, unless so stated in the application.

43. The School agrees that submission of the application constitutes acceptance of the solicitation contents and the attached sample contract. If there are any exceptions to these terms, the School has described those exceptions in detail on a page attached to this document. The School understands that the Commission is not bound by any of the changes that the School has proposed to the sample contract and that if its application is approved the specific terms and provisions of the contract will be negotiated.

44. The School grants the Commission, or its representatives, the right to contact references and others who may have pertinent information regarding the ability of the School, its Governing Board members, proposed management, and lead staff to perform the services contemplated by the application.

45. The School grants the Commission, or its representatives, the right to conduct criminal background checks as part of the evaluation process. Signed consent forms from each of the impacted individuals are attached.

46. The School shall propose a performance framework for approval by the Alabama Public Charter School Commission annually with the first proposal due within 6 months of application approval.

47. The school shall meet the following benchmarks with evidence in the APCSC online platform prior to approval to open:
    - Final school calendar and sample daily schedule
    - Plan for using internal and external assessments
    - Discipline policies, including those for special education students
    - Organizational chart
    - Staff background checks
    - Employment policies
    - Performance Evaluation
    - Final Governing Board with roster, resumes, and conflict of interest disclosure
    - Final Governing Board Bylaws
    - Meal Delivery (CNP)
    - Financial Capacity
    - Certificate of Occupancy
    - Department of Health Requirements

- Special Education Policies and Procedures
- Employee Handbook including grievance policy
- Student Handbook
- 80% enrollment
- School Safety Plan
- Policy for student records
- Adequate staff configuration with applicable qualification
- Child abuse training for all staff
- Federal Program Training
- Evidence of Insurance

48. All of the information submitted in the Application is true, correct, complete, and in compliance with Alabama laws.

48. All of the information contained in the Application reflects the work of the applicant; no portion of the application was plagiarized.

NAME OF APPLICANT

Alabama Aerospace and Aviation High School

SIGNATURE OF DULY AUTHORIZED REPRESENTATIVE

DATE
7/9/2021

DocuSigned by:
Ruben Morris
89E5DDC5D82D438...

NAME OF DULY AUTHORIZED REPRESENTATIVE

Ruben C. Morris

Department of the Treasury
Internal Revenue Service
Tax Exempt and Government Entities
P.O. Box 2508
Cincinnati, OH 45201

Date:
10/14/2020
Employer ID number:
84-3820962
Person to contact:
Name: Will Schroder
ID number: 31694
Telephone: 877-829-5500
Accounting period ending:
November 30
Public charity status:
170(b)(1)(A)(ii)
Form 990 / 990-EZ / 990-N required:
Yes
Effective date of exemption:
November 21, 2019
Contribution deductibility:
Yes
Addendum applies:
No
DLN:
26053641004500

ALABAMA AEROSPACE AND AVIATION SCHOOLS INC
C/O RUBEN C MORRIS
1731 OAK PARK LN
HELENA, AL 35080

Dear Applicant:

We're pleased to tell you we determined you're exempt from federal income tax under Internal Revenue Code (IRC) Section 501(c)(3). Donors can deduct contributions they make to you under IRC Section 170. You're also qualified to receive tax deductible bequests, devises, transfers or gifts under Section 2055, 2106, or 2522. This letter could help resolve questions on your exempt status. Please keep it for your records.

Organizations exempt under IRC Section 501(c)(3) are further classified as either public charities or private foundations. We determined you're a public charity under the IRC Section listed at the top of this letter.

Information for Charter Schools

You're not subject to the specific publishing requirements of Revenue Procedure 75-50, 1975-2 C.B., page 587, as long as you operate under a contract with the local government. If your method of operation changes to the extent that your charter is not approved, terminated, cancelled or not renewed, you should notify us. You'll also be required to comply with Revenue Procedure 75-50.

If we indicated at the top of this letter that you're required to file Form 990/990-EZ/990-N, our records show you're required to file an annual information return (Form 990 or Form 990-EZ) or electronic notice (Form 990-N, the e-Postcard). If you don't file a required return or notice for three consecutive years, your exempt status will be automatically revoked.

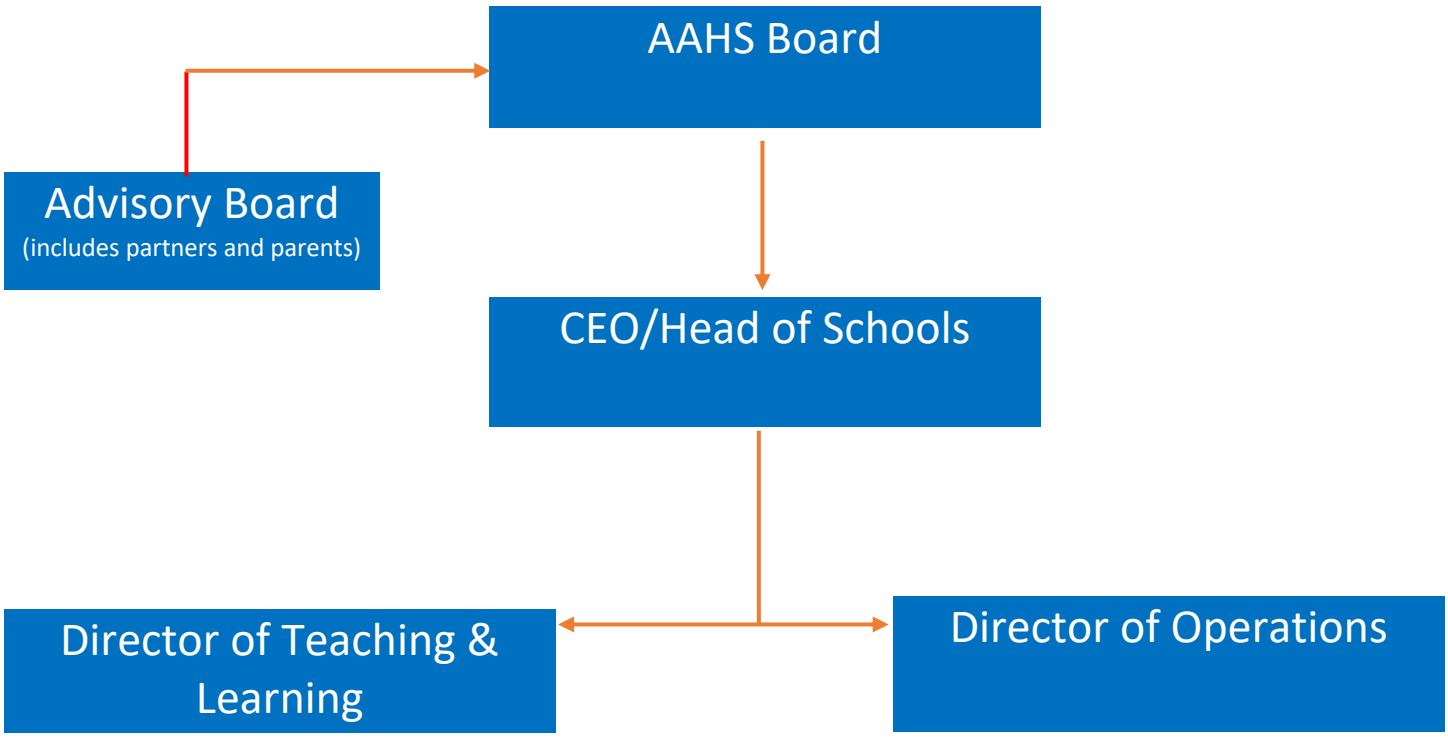
If we indicated at the top of this letter that an addendum applies, the enclosed addendum is an integral part of this letter.

HIGH SCHOOL

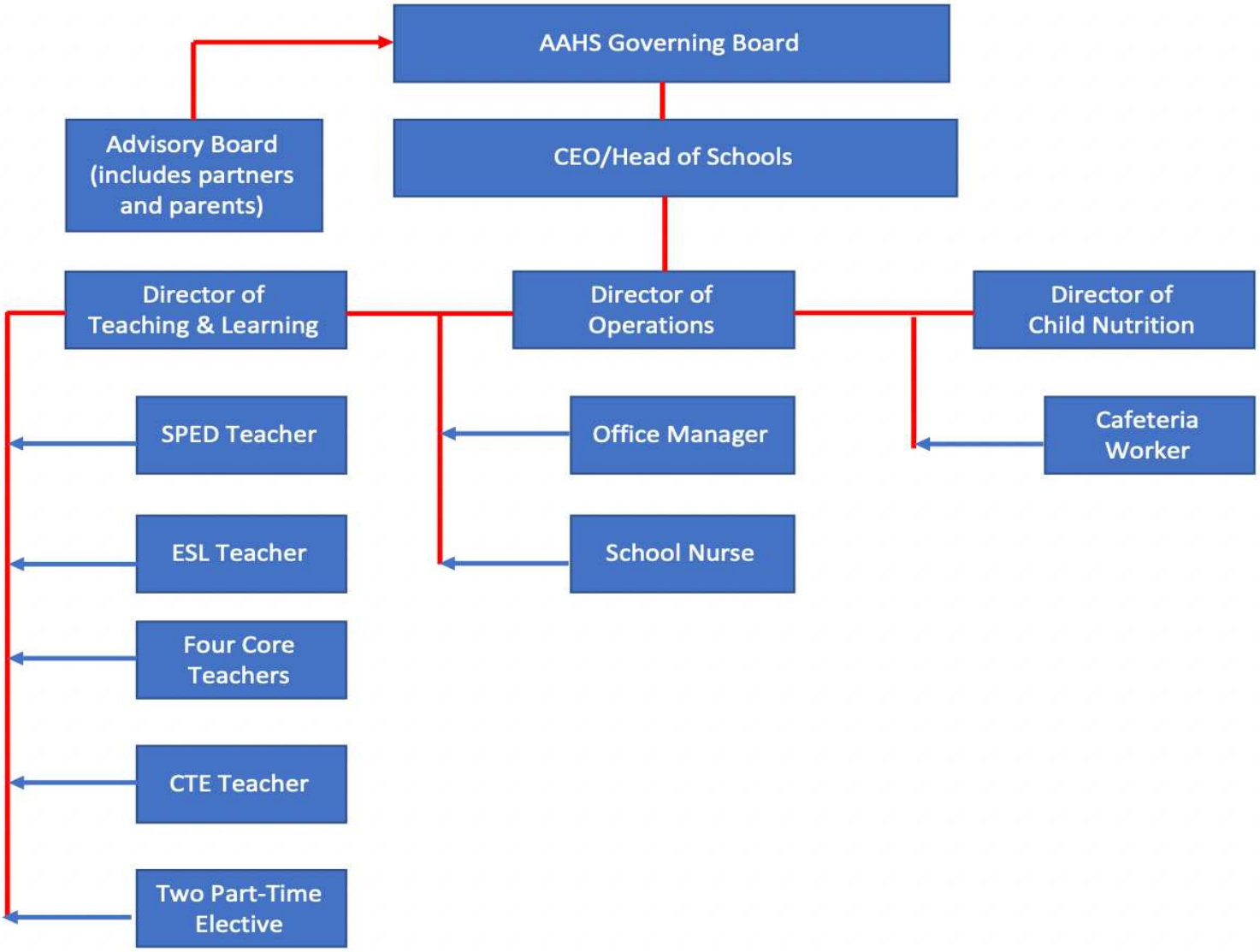
ATTACHMENT 17

Organizational Charts
Year 1 (organizing year-2021-2022)
and Full-Built (Cohort 1-9th Graders ONLY)

AAHS Year 1 Organizational Chart



AAHS Organizational Chart



Governing Board

The Alabama Aerospace and Aviation High School Accountability plan will consistently be used to evaluate school progress annually and for the term of the charter. The Board of Directors, through its Academic Accountability Committee, will review progress towards measures in the accountability plan. The CEO will be evaluated on these measures and for every assessment described below, and the school has critical goals outlined in the Accountability Plan.

The Board of Directors will provide effective and sound oversight of the school. School governance and leadership will effectively support the essential work of the school to promote teaching and learning in schools.

Administrative Audit

The Board of Directors will conduct an annual internal administrative audit, consisting of:

- Board of Directors self-review
- Board of Directors review of the CEO
- CEO's review of the Director of Teaching and Learning

This internal review will involve a performance review and an opportunity to discuss ways of improving administrative structure and policies.

Monthly Financial Status

The CEO in coordination with the Director of Operations will produce a monthly financial statement to present at the monthly Board of Directors' meetings showing the current financial state of Alabama Aerospace and Aviation High School.

Founding Board

The Founding Board is a group of individuals who have worked formally on the organization of Alabama Aerospace and Aviation High School since October of 2019. Board members were initially invited based upon clarity of vision, relevant skills and expertise, and willingness to dedicate themselves to educational excellence, and this group has reviewed, contributed to, and supported this charter application and the school design. Our Founder Ruben Morris is in the process of completing a year-long Fellowship with the Freedom Fellows Institute, a national organization that trains and develops professionals to create, open, and lead high-performing college preparatory charter schools across the country. Throughout the Fellowship, Mr. Morris will spend 600+ hours learning about educational program components, finance, operations, and charter school governance. In addition, Mr. Morris will participate in school visits to numerous high performing charter schools recognized for their outstanding student achievement results with similar populations as Alabama Aerospace and Aviation High School seeks to serve.

Board members were selected after a comprehensive process and were evaluated on the criteria of skills/expertise, teamwork, available time and energy, and philosophical alignment with the mission of Alabama Aerospace and Aviation High School. At present, we intend Ruben Morris to serve as the

school's Founding CEO/Head of School. At the time of chartering, the Board will review this intent, establish clear expectations for the CEO, and hire the Founding CEO.

Governing Board

Should Alabama Aerospace and Aviation High School be granted a charter, the school will be governed by a Board of Directors. This Board, ultimately to be composed of between 9 and 15 members, will hold the charter of Alabama Aerospace and Aviation High School and ensure accountability to its mission, financial viability, and adherence to the terms of the charter. Priority selection of Directors will be from members of the Founding Board. This Board will be composed of a diverse, talented group of professionals, including community leaders, parents, business leaders, business owners, participants with technical skills in the areas of law, real estate, finance, and fundraising. Such a board is desirable to provide independent governance for Alabama Aerospace and Aviation High School by a broad coalition of qualified leaders. This group will meet monthly for two hours (at least 10 times each year), in a public space with pre-announced meetings, in accordance with the Alabama Open Meetings Law.

The Board's primary role is to provide oversight, while delegating the day-to-day management of school operations to the CEO. The Board will ensure that Alabama Aerospace and Aviation High School successfully executes the school's mission, is fiscally responsible (implementing sound financial policies and procedures), adheres to the school's charter agreement with the authorizer and is compliant with all applicable local, state and federal laws. The governance and operational policies of Alabama Aerospace and Aviation High School will be designed to clearly delegate responsibility to appropriate parties and to set standards and expectations that can be used to measure performance and accountability.

To guide the Board's activities, a Board manual will be created and distributed to all members. The Board manual will include, but not be limited to, the following items:

- Overview information, including the school's mission statement and articulated goals
- By-laws and Articles of Incorporation
- Charter contract
- List of current Board members, offices held and terms
- List of committees, including purposes and objectives of each
- Board policies – including conflicts of interest policies and legal requirements
- School information – educational and organizational information pertaining to the school, such as a brief description of the curriculum, student achievement data and organizational chart
- Operating plan and strategic plan
- Recent reports – financial, administrative, programmatic audit; annual report

The Board manual will be developed in collaboration with the CEO and the Board and distributed to all Board members and the executive staff. This manual will give Board members a clear description of their roles and responsibilities and outline the distinction between governance and management.

In addition to the Board manual, the school will also create a staff handbook that will include all human resources policies and other information needed for the school staff. A student and family handbook, outlining major school and student policies (i.e., Code of Conduct, enrollment and attendance policies)

will also be disseminated to all who attend the school. At the end of each school year, the CEO and the Board will review and revise these documents as appropriate.

Financial Oversight

Alabama Aerospace and Aviation High School Academy will implement sound financial policies and practices to ensure the long-term viability of the school. These policies include maintaining a balanced budget, creating a comprehensive budgeting process, conducting an annual audit of the financial statements, as well as an audit of internal procedures and controls (via an outside CPA firm), developing a system of checks and balances, and assigning clear roles and responsibilities to school administration, the Finance Committee and the Board. A Finance Committee has been created by the Board to oversee the financial operations of Alabama Aerospace and Aviation High School. The Committee will work closely with the Director of Operations and the CEO to develop and execute responsible fiscal policies and practices. On a monthly basis, the Finance Committee will report to the Board on the financial health of the school. The report will include updated financial statements (income statement, balance sheet, cash flow statement) and any other material financial information needed for the Board to carry out its responsibilities.

The Alabama Aerospace and Aviation High School Board will be representative of the Birmingham community and will have a wide range of expertise, including finance, marketing, law, human resources, fundraising, philanthropy, real-estate, K-12 school experience, and community building. In addition, the Alabama Aerospace and Aviation High School Board has one parent representative on the board. Most importantly, the Alabama Aerospace and Aviation High School Board will have committed members who:

- Believe that all children can and will realize high academic achievement
- Dedicate their efforts to furthering the vision and mission of Alabama Aerospace and Aviation High School
- Contribute their experience and knowledge to the governance of Alabama Aerospace and Aviation High School
- Serve on one or more Board committees and contribute the appropriate time and energy necessary to follow through on assigned tasks

Members of the initial governing board will be seeded from the founding board and initial members will serve staggered terms. One-half (1/2) of the Board will initially serve a two-year term and one half will serve a three-year term. Thereafter, members will be elected to a two-year term to fill the vacancies created by expiring terms. This structure of staggered terms provides stability, while at the same time providing opportunities to infuse the Board with new contributors. Officers will be elected by the Board and will initially include a Chair, Vice-chair, Secretary, and Treasurer. New officers may be created and filled at any meeting of the Board of Directors.

The Board will meet at least once a month to review Alabama Aerospace and Aviation High School Academy's operations and hear reports and updates from each Board member and the school' CEO, consider and adopt policies and consider requests and concerns from the larger school community. A

majority vote of those present at a Board meeting will constitute action by the Board. The Board may not act unless a quorum of the directors is present.

The Board of Directors of Alabama Aerospace and Aviation High School will work efficiently through a committee structure. The initial committees will include a Governance Committee, Academic Accountability, Finance Committee, and Resource Development Committee. The Board may establish other committees and/or task forces from time to time that it deems necessary for carrying out the responsibilities of the Board. Certain tasks will be delegated to the committees which, in turn, will recommend a particular action to the full Board for discussion and vote as required. Each Board Member will serve on at least one committee, based on his or her area of interest and experience. Committees will work closely with the school administration, teaching staff, Board Members and outside individuals and organization, when appropriate, to achieve its objectives.

Board development is a critical part of creating and sustaining a high performing school. The Board of Directors of Alabama Aerospace and Aviation High School will invest the necessary funds and time to build an effective governing body. This development will include an annual retreat to review in depth the school's and Board's performance and to generate annual strategic plans. In addition, the Board will participate yearly in a self-evaluation that will help the Board better understand its strengths and weaknesses and serve as a useful tool for improvement. As part of Follow-on Support from New Schools For Alabama, we will train the Board in the transition from Founding Board to Governing Board and in good Board practice and policy.

The Board of Directors will maintain a standing Governance Committee that will have responsibility for identifying potential new directors, presenting them to the full board for consideration, and orienting all new members. The Governance Committee, composed of at least three directors, will cultivate relationships with potential new directors, present a slate of nominees to the full Board for selection, and orient new Directors to the business of the Board and the school. The Governance Committee will always recruit new Directors according to the best interests of the school. Potential Directors will include community leaders, parents, business leaders, business owners, and individuals contributing necessary skills to the operations of the board. The Board will also maintain standing committees for

Academic Accountability, Finance, and Fundraising. The Academic Accountability Committee will monitor the school's academic progress, using the academic and community goals of the Accountability plan as a guide. The Accountability Committee will ensure that the school meets academic goals, including Adequate Yearly Progress (AYP) under NCLB, and that academic progress is properly reported in an annual report. The Finance Committee will monitor the financial health of the school, through monthly financial reports and regular monitoring of the financial goals of the Accountability plan. The Finance Committee will monitor the annual audit of the school's finances. The Fund Development Committee will ensure the long-term viability of the school through private fundraising initiatives.

The following is the decision-making process for the Board upon identifying the need for a new policy:

- Board level discussion. The full Board will first discuss the need for the new policy and establish general considerations for the policy.
- Assign who will draft the policy. The CEO will draft the policy for Board review. The CEO will take on this role because he/she is most intimately aware of the day-to-day operations of the school.

- Write a first draft of the policy. The CEO will write the first draft of the policy.
- Present draft policy to the board for approval. The CEO will present the draft policy to the Board for discussion and approval.

AAHS's governing board has been in place since July of 2020 and it encompasses a high quality, high-capacity founding team.

Name/Board Position	**Phone**	**Email**	**Qualifications**	**Expertise**
Charles Knight (Board President)	205-915-4595	cknight500@bellsouth.net	Charles Knight is an honor graduate and holds degrees in Law Enforcement, Criminal Justice/Business and a Master's in Public Administration. He is a veteran of the US Air Force and Air National Guard. He graduated with top honors from the US Air Force Security Police Academy and the Birmingham Police Academy where he was also recognized as the Outstanding Graduate and Top Gun. In his years of experience working in the law enforcement, private and government security fields, Charles Knight is known as a Respected professional and leader. Mr. Knight has held highly responsible leadership positions in government and senior executive positions in the private sector.	Philanthropy/ Fundraising
Auri Brown (Secretary)	205-441-4293	auri@exprealty.com	Auri Brown is passionate real estate professional with a deep knowledge of the Birmingham market. As a Birmingham native, he has spent the last nearly 20 years working in both the healthcare and real estate sectors. He is passionate about education and sees high quality school options as a critical piece to overall community development.	Facilities Management

Tramayne Russell (Vice President)	407-670-4748	tramaynerussell@gmail.com	Tramayne Russell is an industry leader in professional sports sales and corporate relations. He has over 15 years in the industry across several major sports. He is an expert in high profile customer management and corporate partnership acquisition. Currently, he works the Director of Ticket Sales for the Nashville Soccer Club.	Marketing/Corporate Relations
Courtney French	205-447-5605	cfrench@fpflaw.com	G. Courtney French is a top-rated attorney selected to Super Lawyers for 2014 - 2020. He works at Fuston, Petway & French, LLP, located in Birmingham, Alabama, and provides legal services for issues involving Personal Injury - General: Plaintiff to the surrounding community. Courtney French completed legal studies at Samford University Cumberland School of Law and graduated with the class of 1998. Courtney French passed the bar in 1998.	Law/HR
Megan Jones	251-404-2135	huntmegan114@yahoo.com	Megan Jones is an experienced educator with a love for learning and children. She began her career in education as a 4th grade teacher in Birmingham City Schools. She has taught on several different grade levels and also has been a private tutor. She brings a strong grasp of foundational learning needs and remedial education.	Education
Tiffany Storey	205-253-2836	tsstorey@gmail.com	Tiffany Storey is a AAHS parent and a licensed professional counselor with 17+ years' experience working with families and	Parent/SEL

			adolescents in community service and outreach programs.	
Merrick Sims	404-493-434	merrick7467@gmail.com	Merrick is career educator and STEM professional. Merrick brings experience and expertise as both a math coach and engineer. As a Birmingham native, he also is deeply committed to improving educational options for all students in the city of Birmingham.	Education/STEM
R.J. Smith (Treasurer)	205-482-8799	Rjsmith06@gmail.com	Lieutenant Colonel (Ret) R. J. Smith graduated from Wenonah High School in Birmingham, Alabama and attended Alabama A&M University, Huntsville, Alabama. While attending Alabama A&M University, he enlisted in the United States Marine Corps Reserves. Colonel Smith served nine and a half years in the active Army before joining the Alabama Air National Guard to continue flying. Upon joining the Alabama Air National Guard, Colonel Smith earned his Air Force pilot wings.	Aviation/Military
Tierra Wright	205-276-5354	tbouyer@jeffersonstate.edu	Tierra Wright is a career educator with experience in both K- 12 education and higher education. She currently serves as the Adult Education Director at Jefferson State Community College.	Education/Workforce Development
Dr. Jeff Walker	205-975-5701	jeffw@uab.edu	Jeffery T. Walker is a professor and Chair of the Department of Criminal Justice, the Interim Chair of the Department of Social Work, and the Director of the Center for the Study of Community Health (a CDC	Education/Aerospace -Aviation Connected Careers/Grant Writing

			Prevention Research Center) at the University of Alabama, Birmingham. Dr. Walker has written 10 books and almost 100 journal articles and book chapters. He has obtained over $15 million in grants from the Center for Disease Control, Department of Justice, multiple divisions of the National Institutes of Health, National Science Foundation, and others. He is a past President of the Academy of Criminal Justice Sciences.	

The Alabama Aerospace and Aviation High School Board will be representative of the Bessemer/Birmingham community and will have a wide range of expertise, including finance, marketing, law, human resources, fundraising, philanthropy, real-estate, K-12 school experience, and community building. In addition, the Alabama Aerospace and Aviation High School Board has one parent representative on the board. Most importantly, the Alabama Aerospace and Aviation High School Board will have committed members who:

- Believe that all children can and will realize high academic achievement
- Dedicate their efforts to furthering the vision and mission of Alabama Aerospace and Aviation High School
- Contribute their experience and knowledge to the governance of Alabama Aerospace and Aviation High School
- Serve on one or more Board committees and contribute the appropriate time and energy necessary to follow through on assigned tasks

Members of the initial governing board will be seeded from the founding board and initial members will serve staggered terms. One-half (1/2) of the Board will initially serve a two-year term and one half will serve a three-year term. Thereafter, members will be elected to a two-year term to fill the vacancies created by expiring terms. This structure of staggered terms provides stability, while at the same time providing opportunities to infuse the Board with new contributors.

Officers will be elected by the Board and will initially include a Chair, Vice-chair, Secretary, and Treasurer. New officers may be created and filled at any meeting of the Board of Directors.

The Board will meet at least once a month to review Alabama Aerospace and Aviation High School Academy's operations and hear reports and updates from each Board member and the school' CEO, consider and adopt policies and consider requests and concerns from the larger school community. A majority vote of those present at a Board meeting will constitute action by the Board. The Board may not act unless a quorum of the directors is present.

The Board of Directors of Alabama Aerospace and Aviation High School will work efficiently through a committee structure. The initial committees will include a Governance Committee, Academic Accountability, Finance Committee, and Resource Development Committee. The Board may establish other committees and/or task forces from time to time that it deems necessary for carrying out the responsibilities of the Board. Certain tasks will be delegated to the committees which, in turn, will recommend a particular action to the full Board for discussion and vote as required. Each Board Member will serve on at least one committee, based on his or her area of interest and experience. Committees will work closely with the school administration, teaching staff, Board Members and outside individuals and organization, when appropriate, to achieve its objectives.

The Alabama Aerospace and Aviation High School Board of Directors and staff will receive training in the Alabama State Ethics Law, Open Meetings Act, Public Records law, and all other applicable state laws for charter schools. Furthermore, legal counsel will provide assistance in monitoring compliance with these state laws and can provide guidance to the board of directors. The AAHS board secretary will keep records of trainings, advertisements of meetings, meeting minutes, evaluations, and reports as evidence of compliance.

Board development is a critical part of creating and sustaining a high performing school. The Board of Directors of Alabama Aerospace and Aviation High School will invest the necessary funds and time to build an effective governing body. This development will include an annual retreat to review in depth the school's and Board's performance and to generate annual strategic plans. In addition, the Board will participate yearly in a self-evaluation that will help the Board better understand its strengths and weaknesses and serve as a useful tool for improvement. As part of Follow-on Support from New Schools For Alabama, we will train the Board in the transition from Founding Board to Governing Board and in good Board practice and policy. As necessary, the Board will use secure additional consultants for retreats, resource development and to assist with strategic planning and visioning.

The Board of Directors will maintain a standing Governance Committee that will have responsibility for identifying potential new directors, presenting them to the full board for consideration, and orienting all new members. The Governance Committee, composed of at least three directors, will cultivate relationships with potential new directors, present a slate of nominees to the full Board for selection, and orient new Directors to the business of the Board and the school. The Governance Committee will always recruit new Directors according to the best interests of the school. Potential Directors will include community leaders, parents, business leaders, business owners, and individuals contributing necessary skills to the operations of the board. The Board will also maintain standing committees for Academic Accountability, Finance, and Fundraising. The Academic Accountability Committee will monitor the school's academic progress, using the academic and community goals of the Accountability plan as a guide. The Accountability Committee will ensure that the school meets academic goals, including Adequate Yearly Progress (AYP) under NCLB, and that academic progress is properly reported in an annual report. The Finance Committee will monitor the financial health of the school, through monthly financial reports and regular monitoring of the financial goals of the Accountability plan. The Finance Committee will monitor the annual audit of the school's finances. The Fund Development Committee will ensure the long-term viability of the school through private fundraising initiatives.

The following is the decision-making process for the Board upon identifying the need for a new policy:

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- Assign who will draft the policy. The CEO will draft the policy for Board review. The CEO will take on this role because he/she is most intimately aware of the day-to-day operations of the school.
- Write a first draft of the policy. The CEO will write the first draft of the policy.
- Present draft policy to the board for approval. The CEO will present the draft policy to the Board for discussion and approval.

Training and Development

New board members will be required to complete board training prior to attending their first meeting. All board members will be required to participate in refresher bi-annual trainers (January and June of each year). Training modules will include the following:

- Defining Good Directors, Boards, and Strategies
- Legal Issues Cybersecurity for Directors
- Board and Committee Responsibilities
- The Board Recruiting Process
- Audit Issues
- Activist Investors
- The Board's Role in a Crisis
- Activist Investors Case Study

HIGH SCHOOL

ATTACHMENT 18
AAHS Board By-Laws

BY-LAWS

OF

ALABAMA AEROSPACE AND AVIATION SCHOOLS, INC.

ARTICLE I. NAME, OFFICES AND SEAL OF THE CORPORATION

Section 1.01: Name. The name of the Corporation is Alabama Aerospace and Aviation Schools, Inc. (the "Corporation").

Section 1.02: Principal Office. The principal office of the Corporation shall be located in the County of Jefferson, State of Alabama.

Section 1.02: Registered Office. The registered office of the Corporation, as required by the Alabama Business and Nonprofit Entities Code to be maintained in the State of Alabama may be, but need not be, identical with the principal office in the State of Alabama, and the address of the registered office may be changed from time to time by the Board of Directors. The initial registered office of the Corporation shall be located at 1731 Oak Park Lane, Helena, Alabama 35080, as shown in the Certificate of Formation, or at such location as may be shown in a subsequent resolution of the Board of Directors filed with the Alabama Secretary of State. It may have such other offices as the Board of Directors may determine, from time to time.

Section 1.03: Seal. The Corporation may have a corporate seal of a design and form approved by the Board of Directors.

ARTICLE II. PURPOSE AND STRUCTURE

Section 2.01: Purpose. The purpose for which the Corporation is organized is exclusively for charitable, educational, religious, or scientific purposes, including for such purposes, the making of distributions to organizations that qualify as exempt organizations under Section 501(c)(3) of the Internal Revenue Code, or the corresponding section to any future tax code. Accordingly, the corporation shall transact any or all lawful business for which a non-profit corporation may be organized under the laws of the State of Alabama, including but not limited to:

(a) To apply for, form and establish a Start-Up Public Charter School to improve public education in Alabama, by developing a coalition of citizens, public officials and interested parties;

(b) To provide a tax-exempt vehicle for the receipt of gifts and grants to benefit the corporation's programs and goals.

The Corporation shall be vested with all powers necessary to accomplish its purposes, as more particularly delineated in Alabama Code §§ 10A-1-2.11, et seq. and 10A-3-2.41, et seq., as last amended.

ARTICLE III. BOARD OF DIRECTORS

Section 3.01: Members. This Corporation will have no members. All corporate actions will be approved by the Board of Directors as provided in these bylaws and in accordance with Alabama law. All rights which would otherwise rest with members of the Corporation will rest with the Board.

Section 3.02: General Powers. The powers of the Corporation shall be exercised by or under the authority of, and the business, property and

affairs of the Corporation shall be managed under the direction of, the Board of Directors and, subject to such restrictions, if any, as may be imposed by law, the Articles of Formation or by these Bylaws, the Board of Directors may, and are fully authorized to, do all such lawful acts and things as may be done by the Corporation.

Section 3.03: Property. No Director shall have any right, title or interest in or to the property of the Corporation.

Section 3.04: Qualifications of Directors. The affairs of the Corporation shall be governed by a Board of Directors composed of the number of members as determined under the Certificate of Formation and these Bylaws. Directors shall be natural persons who are 18 years of age or older, but need not be residents of the State of Alabama. The Directors shall possess an interest in promoting the purposes of the Corporation.

Section 3.05: Composition of Board of Directors. The Board of Directors shall consist of no less than three (3) nor more than eleven (11) Directors. At least twenty (20%) percent of the directors shall be parents of the public charter school(s) operated by the Corporation. The number of directors may be increased or decreased to any odd number (not less than three (3) nor more than eleven (11)), by majority vote of the Directors. The Board of Directors may choose to elect up to three (3) Emeritus Board Members at any given time. Emeritus Board Members must be former Board members still actively involved with the Corporation who can attend meetings to provide insight and guidance, however they shall be non-voting members of the Board. When making appointments and filling vacancies to the Board of Directors, it shall be a goal of the Board to ensure that the membership of the board is inclusive and reflects the racial, gender, geographic, urban/rural/, and economic diversity of the region and state while ensuring the integrity of the Board. Members of the Board of Directors shall sign a confidentiality agreement

approved by the Board upon being voted onto and accepting appointment to the Board.

Section 3.06: Term of Office. Directors shall serve three-year (3) staggered terms with no more than one half (1/2) of the Board being elected each year. The initial Board of Directors and the length of the term each will serve will be designated in the initial minutes of the Board of Directors. All terms shall expire on the earlier of June 30 of the year in which the Director's term expires, his/her resignation, removal from office or death or until a successor is selected by a majority of the Board of Directors. Directors shall be able to serve no more than two (2) consecutive two (2) year terms. A Director who has served two (2) consecutive terms may be elected again upon completion of a one (1) year absence from the Board. Emeritus Board Members may be a Director who is completing his/her required one (1) year absence.

Section 3.07: Procedures of Nomination and Election of Directors. Whenever it shall be required to nominate and elect members of the Board of Directors, the President of the Board shall appoint a Nominating Committee. This committee shall be composed of three (3) incumbent Directors. This committee shall request input from the community and parents prior to submitting its nomination(s) to the Corporation. In addition to candidates proposed by the Nominating Committee, nominations shall be taken from the floor. The names of all persons so nominated shall be submitted to the Board of Directors, which shall select the person or persons to serve as such Directors from those nominated.

Section 3.08: Vacancies. Vacancies in the Board of Directors shall be filled by a vote of the majority of the remaining Directors, even though they may constitute less than a quorum. Each person so elected and confirmed shall be a Director until the expiration of the term of office of the predecessor whose vacancy such Director was elected to fill. A vacancy

that will occur at a specific later date (by reason of a resignation effective at a later date) may be filled before the vacancy occurs, but the new Director may not take office until the vacancy occurs.

Section 3.09: Removal of Directors. Any Director may be removed for good cause by a two-thirds (2/3) vote of the other Directors at any regular or special meeting at which a quorum is present. Reasons constituting good cause include, but are not limited to, nonfeasance, misfeasance or malfeasance, actions which bring discredit on the Corporation, neglect of responsibility to the Board or absenteeism from scheduled Board meetings (missing at least three (3) consecutive regular Board meetings).

Section 3.10: Resignation. Any Director may resign by giving written notice to the Board of Directors directed to the President with such resignation to be effective at the time stated in such notice.

Section 3.11: Meetings. Meetings of the Board shall be held at a location in Jefferson County, Alabama at a time convenient for partners to attend. Such meeting, location and time shall be set forth in the notice calling such meeting. If no location of a meeting is so specified, the meeting shall be held at the principal office of the Corporation. A meeting of the Board at which a quorum is present may be adjourned by a majority of the Directors present to reconvene at a specific time and place in Jefferson County, Alabama. It shall not be necessary to give notice of the reconvened meeting which was adjourned. At any such reconvened meeting at which a quorum is present, any business may be transacted that could have been transacted at a meeting which was adjourned.

Section 3.12: Annual Organizational Meeting. The Board of Directors shall hold an annual organizational meeting in June of each year on such date as may be determined by the Board of Directors. The purpose of such

meeting shall be to elect officers for the year to take office on July 1, to elect Directors, to form necessary committees of the Board of Directors and determine the composition of such committees, and to set goals and policies.

Section 3.13: Annual Budget Meetings. The Board of Directors shall hold an annual budget meeting by July of each year, to plan for the upcoming year, on such date as may be determined by the Board of Directors. The purpose of such meeting shall be to determine a budget for the following fiscal year.

Section 3.14: Regular Meetings. The Corporation shall hold regular meetings, which may be held at such time and place as shall be determined from time to time, by a majority of the Directors. The Board may transact any business that comes before it. Any additional business may be transacted at any regular meeting of the Board. Notice of regular meetings of the Board of Directors shall be necessary and notice shall be given to the public at least twenty-four (24) hours prior to the meeting.

Section 3.15: Special Meetings.. A special meeting may be called by the President in office at that time or any three Directors. Unless waived, notice of the date, time, place and purpose of any special meeting of the Board shall be given by the Secretary at least twenty-four (24) hours before such meeting.

Section 3.16: Waiver of Notice. A written waiver of notice signed by a Director, whether before or after a meeting, shall be equivalent to the giving of such notice. Attendance by a Director at any meeting of the Board shall constitute a waiver of notice of such meeting, except when the Director attends for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened.

Section 3.17: Quorum. At all meetings of the Board of Directors, a majority of the Directors then in office shall be necessary to constitute a quorum for the transaction of business. If at any meeting of the Board of Directors there is less than a quorum present, the majority of those present shall adjourn the meeting.

Section 3.18: Action By Board. Except as otherwise provided in these Bylaws, the act of a majority of the Directors present at the meeting at which a quorum is present shall be an act of the Board.

Section 3.19: Compensation. No Director of the Corporation shall receive any compensation; provided, however, upon approval of the Board, a Director may be reimbursed necessary and reasonable expenses incurred by such Director in conducting the business of the Corporation.

ARTICLE IV. OFFICERS

Section 4.01: Designation. The principal officers of the Corporation shall consist of a President, a Vice President, a Secretary, and a Treasurer and such other officers as may be determined by the Board, each of whom shall be from among the Board. No two offices may be held by the same person. The President of the Corporation shall be the Chairman of the Board of Directors and shall preside at meetings, and the Secretary of the Corporation shall be the Secretary of the Board of Directors. In the absence of the Secretary, the presiding officer shall designate a person who shall act as Secretary of the meeting.

Section 4.02: Election of Officers and Vacancies. The President, Vice President, Secretary, and Treasurer shall be elected annually by the Board. Officers of the Corporation shall be elected by the Board of Directors at its annual meeting, and unless sooner removed by the Board, shall serve for a term of one (1) year and until their successors are elected

and shall qualify. Any vacancies occurring in any office for any reason shall be filled by the Board at a regular or special meeting. The Board of Directors shall appoint such temporary or acting officers as may be necessary during the temporary absence or disability of the regular officers. Officers may be elected to successive terms of office. The Directors may appoint such other officers whenever such action is deemed by the Board to the best interest of the Corporation.

Section 4.03: Removal. Any Officer elected by the Board may be removed from office by an affirmative vote of two-thirds (2/3) of the Directors present at any regular or special meeting at which a quorum is present whenever such action is deemed by the Board to the best interest of the Corporation. An officer may be removed either with or without cause whenever, in its judgment, the best interest of the Corporation will be served thereby. The successor to the removed officer shall be elected at any regular meeting of the Board of Directors or at any special meeting called for such purpose.

Section 4.04: President. The President shall be a director of and Chairman of the Board of Directors of the Corporation. The President shall preside over all meetings of the Board of Directors, and shall have the general powers and duties which are usually vested in the office of the president of a corporation, including the power to appoint committees from time to time as in the exercise of discretion the President may deem appropriate to assist in the conduct of the affairs of the Corporation. The President shall also preside at the annual budget meeting and perform such other duties as may be required of him or her by the Board and those that are incident to his or her office.

Section 4.05: Vice President. The Vice President shall be a member of and Vice Chairman of the Board of Directors. In the absence or disability

of the President, the Vice President shall possess all powers and shall perform such other duties of the office of the President. The Vice President shall also perform such other duties as shall be prescribed by the Board of Directors.

Section 4.06: Secretary. The Secretary shall be a director of the Board of Directors. The Secretary shall issue notices for all meetings of the members of the Board, keep the minutes of all meetings of the Board of Directors and of the Executive Committee, and shall make such reports to the Board as they request and shall perform such other duties as may be incident to the office of Secretary. The Secretary shall have custody of such books and records of the Corporation as the Board of Directors may provide and shall perform the duties and functions customarily performed by the secretary of a corporation together with such other duties as the Board of Directors may prescribe.

Section 4.07: Treasurer. The Treasurer shall be a director of the Board of Directors. The Treasurer shall have charge and custody of and be responsible for all monies and funds of the Corporation, subject to such joint control and joint signature requirements as the Board may from time to time specify. The Treasurer shall also keep complete and accurate records and accounts in books belonging to the Corporation, shall see that all expenditures are duly authorized and are evidenced by proper receipts and vouchers for monies due and payable to the Corporation from any source whatsoever, and he or she shall deposit, in the name of the Corporation, all of the monies of the Corporation that shall come into his or her hands in such banks, trust companies, or other depositories as shall be selected, and in general perform all the duties incident to the office of Treasurer, and such other duties as from time to time maybe assigned to the Treasurer by the Board of Directors. The Treasurer shall also make a full report of the financial condition of the Corporation for the annual

meetings of the Board and shall make such other reports and perform such other duties as may be required by him or her by the Board. If required by the Board of Directors, the Treasurer shall give a bond for the faithful discharge of the duties of Treasurer in such sum and with such surety or sureties as the Board of Directors shall determine.

Section 4.08: Executive Director. The Board of Directors may elect to hire, employ or contract with a Head of School to perform such duties as the Board may elect to delegate to the Head of School, which duties may include management, administration and operation of the Corporation, and its policies and directives, under the general supervision of the President of the Corporation. The Head of School shall not be from among the Board.

Section 4.09: Personnel. The Board of Directors may hire or contract with such other personnel as it may deem necessary to accomplish the objectives of the Corporation.

ARTICLE V. COMMITTEES

Section 5.01: Committees. The Board of Directors may act by and through committees appointed by the President or approved by a majority of the Board of Directors. The duties and responsibilities will be designated by the Board and each such committee will be subject to the direction of the President of the Board.

Section 5.02: Advisory Council. An Advisory Council may be created whose members shall be appointed by the President but who shall have no duties, voting privileges, nor obligations for attendance at regular meetings of the Board of Directors. Advisory Council members may attend said meetings at the invitation of a member of the Board of Directors. Members of the Advisory Council shall possess the desire to serve the community and support the work of the Corporation by providing expertise

and professional knowledge. Members of the Advisory Council shall sign a confidentiality agreement approved by the Board upon being voted onto and accepting appointment to the Advisory Council. The Board of Directors may appoint a Director to serve as its liaison to the Advisory Council.

ARTICLE VI. FISCAL MANAGEMENT

Section 6.01: Fiscal Year. The fiscal year of the Corporation shall begin on the 1st day of October and end on the 30th day of September of each year. The commencement date of the fiscal year herein established shall be subject to change by the Board of Directors.

Section 6.02: Executive of Corporate Documents. With the prior authorization of the Board of Directors, all notes and contracts shall be executed on behalf of the Corporation by either the President or Vice President and attested by the Secretary. All checks, drafts, or other orders for the payment of money, notes or other evidences of indebtedness issued in the name of the Corporation shall be signed by the Executive Director, Chief Financial Officer or an authorized Board of Director signor. Two signatures are required for each check issued over $10,000. No loans shall be contracted on behalf of the Corporation and no evidences of indebtedness shall be issued in its name unless authorized by a resolution of the Board of Directors. Such authority may be general or confined to specific instances.

Section 6.03: Fiscal Agents. The Corporation may designate such fiscal agents, investment advisors and custodians of funds or assets as the Board may select by resolution. The Board may at any time, with or without cause, discontinue the use of the services of any such fiscal agent, investment advisor or custodian of funds or assets.

Section 6.04: Books and Records. The Corporation will keep:

a) Records of all proceedings of the Board of Directors and committees; and
b) All financial statements of the Corporation; and
Articles of Incorporation and By-laws of the Corporation and all amendments and restatements; and
c) Other records and books of account necessary and appropriate to the conduct of the corporate business and in accordance with Alabama's public records laws.

Section 6.05: Audit and Publication. The records and books of account of the Corporation will be audited in such a manner as may be deemed necessary or appropriate. The Board will make such inquiry into the condition of all trusts and funds held by any trustee, agent or custodian for the benefit of the Corporation as it may deem appropriate.

Section 6.06: Bond. The Corporation will obtain a bond on such people and in such amounts as may from time to time be deemed necessary.

Section 6.07: No Self-Dealing. Neither the Corporation, nor its Directors will engage in any act which would constitute "self-dealing" as defined in Section 4941 (d) of the Internal Revenue Code of 1986.

Section 6.08: No Jeopardy Investment. The Corporation will assure that no funds, whether owned by the Corporation or vested in a trust for the benefit of the Corporation, are invested or reinvested in such a manner that jeopardizes the carrying out of its purposes for which this Corporation is organized.

Section 6.09: Expenditure Responsibility. Through its Board of Directors the Corporation will exercise "expenditure responsibility", as defined in Section 4945 (h)(1) of the Internal Revenue Code of 1986, as

now enacted or as hereafter amended, with respect to all grants and distributions.

Section 6.10: Reasonable Return. The Board of Directors will take steps to assure that each Director, officer, agent or custodian of the trusts, assets or funds that are a component part of this Corporation, administer them in accordance with accepted standards of fiduciary conduct to produce a reasonable (as determined by the Board of Directors) return of net income.

Section 6.11: Indemnification.

Subject to the further provisions hereof, the Corporation shall indemnify any and all of its existing and former directors and officers against all expenses incurred by them and each of them, including but not limited to, legal fees, judgments, penalties, and amounts paid in settlement or compromise, which may arise or be incurred, rendered or levied in any legal action brought or threatened against any of them for or on account of any action or omission alleged to have been committed while acting within the scope of employment as director or officer of the Corporation, whether or not any action or compromise is approved by a court. Indemnification shall be made by the Corporation whether the legal action brought or threatened is brought by or in the right of the Corporation or by any other person. Whenever such director or officer shall report to the president of the Corporation or to the Board of Directors that he or she has incurred or may incur expenses, including but not limited to, legal fees, judgments, penalties, and amounts paid in settlement or compromise in a legal action brought or threatened against him or her for or on account of any action or omission alleged to have been committed by him or her while acting within the scope of his or her employment as a director or officer of the Corporation, the Board of Directors shall, at its next regular meeting or at a special meeting held within a reasonable time thereafter, determine in good faith whether, in regard to the matter involved in the action or contemplated action, such person acted, failed to act, or refused to act willfully or with gross negligence or with fraudulent or criminal intent. If the Board of Directors determines in good faith that such person did not act, failed to act, or refused to act willfully or with gross negligence or with fraudulent or criminal intent in regard to the matter involved in the action or contemplated action, indemnification shall be mandatory and shall be automatically extended as specified herein. Provided, however, that the Corporation shall have the right to refuse indemnification in any instance

in which the Board of Directors determines in good faith that such person did act, failed to act, or refused to act willfully or with gross negligence or with fraudulent or criminal intent in regard to the matter involved. Furthermore, the Corporation shall have the right to refuse indemnification in any instance in which the person to whom indemnification would otherwise have been applicable shall have unreasonably refused to permit the Corporation, at its own expense and through counsel of its own choosing, to defend him or her in the action. If the Board of Directors should in good faith deny indemnity to a current or former director or officer and if a court of competent jurisdiction or proper adjudicatory body should later find that such person did **not** act, fail to act, or refuse to act willfully or with gross negligence or with fraudulent or criminal intent in regard to the matter involved, then the Board shall, upon such person's application, reimburse the officer or director for all reasonable costs of defense, to include reasonable attorney's fees.

ARTICLE VII. FIDUCIARY RESPONSIBILITY

Section 7.01: Fiduciary Responsibility. It shall be the policy of this Corporation that the Board of Directors shall assume and discharge fiduciary responsibility with respect to all funds held or administered by the Corporation. All members of the Board of Directors shall be subject to Alabama's Ethics Laws.

ARTICLE VIII. NON-DISCRIMINATION POLICY

Section 8.01: Non-Discriminatory Statement. It shall be the policy of this Corporation that the Board of Directors, all employees, and associated volunteers acknowledges its ethical and statutory responsibility to afford equal treatment and equal opportunity to all persons, and thus complies with all applicable laws and directives which promulgate non-discrimination and equality of opportunity.

In keeping with the spirit and letter of the law, this Corporation prohibits discrimination against its employees, students, and applicants based on race, color, sex, gender identity, religion, creed, age, national origin or ancestry, sexual orientation, disability or different ability, marital status, parental status,

pregnancy, military status, political activities/affiliations, or other impermissible reason; sexual harassment is also prohibited.

ARTICLE IX. AMENDMENT

Section 9.01: Amendment. These by-laws may be amended, altered or repealed in whole or in part at any regular or special meeting of the Board of Directors at which a quorum is present by a two-thirds ($^2/_3$) vote of the Board; provided that if such amendment is made at a special meeting, the call therefore shall set forth the proposed amendment.

Adopted and Approved by the Board of Directors on this _30th__ day of ____June_____ 2020.

_____Charles Knight_____

President, Alabama Aerospace and Aviation Schools, Inc.

Michael G. Kendrick, Incorporator

Ruben C. Morris
Alabama Aerospace and Aviation Schools, Inc.
1731 Oak Park Ln.
Helena, AL 35080

August 26th, 2020

Internal Revenue Service
1111 Constitution Avenue Northwest
Washington, D.C. 20224

To whom it may concern:

I am writing this letter to request an expedited review and approval. Alabama Aerospace and Aviation Schools, Inc. DBA “Alabama Aerospace and Aviation High School” has been recommended for funding from the Walton Family Foundation as an innovative school. Our school has a mission to train, credential, and graduate the next generation of diverse aviation professionals. We are endeavouring to open a public charter high school in an underserved community in East Birmingham that will provide a high quality STEM education to a diverse population of majority students of color. These funds we have just been recommended for are contingent upon this organization receiving its 501c3 status. I was under the impression that our application was submitted via mail back in January. After reaching someone at the IRS today, I found out there is no record of our application. We are at risk of losing these funds if we cannot demonstrate our tax exempt status. Without them, this amazing school will likely be delayed or not be able to open. I have attached an email communication from the Walton Foundation indicating that we have been recommended for funding. Thank you so much for your consideration.

Sincerely,

Ruben C. Morris
Founder, Alabama Aerospace and Aviation High School.

HIGH SCHOOL

ATTACHMENT 19

Board Information Signed Documents

Board Member Information Form

To be completed individually by each proposed charter school board member.
All forms must be signed by hand.

Serving on a public charter school board is a position of public trust and fiduciary responsibility. As a board member of a public school, you are responsible for ensuring the quality of the school program, competent stewardship of public funds, and the school's fulfillment of its public obligations and all terms of its charter. The purposes of this questionnaire are: to give application reviewers a clearer introduction to the applicant team behind each school proposal in advance of the applicant interview, in order to be better prepared for the interview; to encourage board members to reflect individually, as well as collectively, on their common mission, purposes, and obligations at the earliest stage of school development; and to identify any potential conflict of interest you may have as a board member.

Each board member should complete this form individually, print, and sign. Along with the completed, signed form, each board member should provide a resume, a background check, and (if applicable), appropriate academic data.

Where narrative responses are required, brief responses are sufficient. You may delete these instructions.

Background and Contact Information

1. Name of charter school on whose Board of Directors you intend to serve: ALABAMA AREOSPACE & AVIATION HIGH SCHOOL

2. Full name: CHARLES F. KNIGHT
   Home address: 5001 STONE BRIDGE LANE, B'HAM, AL 35242
   Business name and address: ARGUS SECURITY SOLUTIONS, LLC, PO BOX 380214, B'HAM, AL 35238
   Phone number: 205-915-4555
   E-mail address: CKNIGHT500@BELLSOUTH.NET

☒ Resume and professional bio are attached here.
☐ Resume and professional bio are attached elsewhere in the application (specify). _____

3. Indicate whether you currently, or have previously, served on a board of a school district, another charter school, a non-public school, or any not-for-profit corporation. If yes, explain.
   ☒ Yes ☐ No
   VICE-CHAIRMAN – CRIMESTOPPERS OF METRO ALABAMA

4. Indicate whether you currently, or have previously, served as the leader or on the leadership team of ANY school, regardless of type (charter/traditional/private, etc.). If yes, explain and attach the required academic data.
   ☑ Yes ☐ No

   ☐ Academic evidence is attached here as required. (Should include annual student achievement data, disaggregated by subgroup, for every school under your current or prior management.)

3 YEARS - PRESIDENT PTO - OAK MOUNTAIN MIDDLE SCHOOL; 11 YEARS ADJUNCT DAY SCHOOL – AEAE BOARD.

5. Why do you wish to serve on the board of the proposed charter school?

I AM EXCITED TO BE INVOLVED WITH AN EDUCATIONAL CONCEPT THAT WILL CHALLENGE AND GREATLY BENEFIT THE YOUTH OF GREATER BIRMINGHAM WITH OUTSTANDING STEM AND COLLEGE PREP AND TECH EDUCATION.

6. What is your understanding of the appropriate role of a public charter school board member?

OVERSIGHT, GUIDENCE AND SUPPORT

7. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.

I HAVE BEEN ACTIVE AS A VOLUNTEER LEADERSHIP ROLE IN BOTH PUBLIC AND PRIVATE SCHOOLS. CONSULTED W/ SCHOOL LEADERS ON PROBLEMS, FUND RAISING AND COMMUNITY SUPPORT.

8. Describe the specific knowledge and experience that you would bring to the board.

EXECUTIVE LEADERSHIP EXPERIENCE BOTH IN BUSINESS AND NON PROFITS. LED BUSINESS IN BIRMINGHAM AND ALABAMA WITH HUNDREDS OF EMPLOYEES AND BUDGETS IN THE MILLIONS.

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?

INDUSTRY BASED EDUCATION, COLLEGE AND CAREER READINESS

2. What is your understanding of the school's proposed educational program?

COLLEGE AND TECH + CAREER READINESS

3. What do you believe to be the characteristics of a successful school?

SAFE, CARING + NURTURING ENVIRONMENT, WITH OUTSTANDING FACULTY + STAFF, AND A GOAL TO BE THE BEST!

4. How will you know that the school is succeeding (or not) in its mission?

TBD – IF WE ACHIEVE OUR SET GOALS

Governance

1. Describe the role that the board will play in the school's operation.

OVERSIGHT AND FISCAL MANAGEMENT

2. How will you know if the school is successful at the end of the first year of operation?

IF SCHOOL MEETS ITS ANNUAL GOALS.

3. How will you know at the end of four years of the school is successful?

WE WILL KNOW THE LEVEL OF SUCCESS WELL BEFORE 4 YEARS!

4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?

ENSURE THAT THE SCHOOLS HAS FINANCIAL CONTROLS AND BUDGETS ALONG WITH EXPERIENCED LEADERSHIP.

5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?

CONSULT WITH HEAD OF SCHOOL AND THE SCHOOL'S ATTORNEY

6. If your school intends to contract with a third-party ESP: N/A

a. Summarize your involvement in the selection process;
b. Explain your understanding of the legal relationship between yourself as a board member and the ESP; and
c. Indicate whether you have been involved in the review/negotiation of the management agreement.

Disclosures

1. Indicate whether you or your spouse knows other prospective board members for the proposed school. If so, please indicate the precise nature of your relationship.
   ☐ I / we do not know these individuals ☑ Yes DUE TO COVID THE BOARD HAS BEEN UNABLE TO MEET IN-PERSON AND HAVE OPPORTUNITY TO BUILD RELATIONSHIPS OUTSIDE OF MONTHLY ZOOM MEETINGS. IN OCTOBER SEVERAL BOARD MEMBERS ATTENDED A HALF DAY COMMUNITY OUTREACH SCHOOL FUNCTION.
2. Indicate whether you or your spouse knows any person who is, or has been in the last two years, a school employee. If so, indicate the precise nature of your relationship.
   ☑ I / we do not know any such employees ☐ Yes

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3. Indicate whether you or your spouse knows anyone who is doing, or plans to do, business with the charter school (whether as an individual or as a director, officer, employee, or agent of an entity). If so, indicate and describe the precise nature of your relationship and the nature of the business that such person or entity is transacting, or will be transacting, with the school.
   ☑ I / we do not know any such persons ☐ Yes

---

4. Indicate if you, your spouse, or other immediate family members anticipate conducting, or are conducting, any business with the school. If so, indicate the precise nature of the business that is being or will be conducted.
   ☑ I / we do not anticipate conducting any such business ☐ Yes

---

5. If the school intends to contract with an education service provider or management organization, indicate whether you or your spouse knows any employees, officers, owners, directors, or agents of that provider. If the answer is in the affirmative, please describe any such relationship.
   ☒ Not applicable because the school does not intend to contact with an education service provider or school management organization.
   ☐ I / we do not know any such persons ☐ Yes

---

6. If the school contracts with an education service provider, please indicate whether you, your spouse, or other immediate family members have a direct or indirect ownership, employment, contractual, or management interest in the provider. For any interest indicated, provide a detailed description.
   ☒ N/A. ☐ I / we have no such interest ☐ Yes

---

7. If the school plans to contract with an education service provider, indicate if you, your spouse, or other immediate family member anticipate conducting, or are conducting, any business with the provider. If so, indicate the precise nature of the business that is being, or will be, conducted.

☒ N/A ☐ I / we or my family do not anticipate conducting any such business ☐ Yes

---

8. Indicate whether you, your spouse, or other immediate family members are a director, officer, employee, partner or member of, or are otherwise associated with, any organization that is partnering with the charter school. To the extent you have provided this information in response to prior items, you may so indicate.

☒ Does not apply to me, my spouse or family ☐ Yes

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9. Indicate any potential ethical or legal conflicts of interests that would, or are likely to exist, should you serve on the school's board.

☒ None ☐ Yes

Certification

I recognize that all information submitted with this conflict of interest disclosure becomes a matter of public record, subject by law to disclosure upon request to members of the general public. I will hold Birmingham City Schools, its trustees, officers, employees, or authorized agents harmless from liability for the disclosure of any information it reasonably believes is true based upon my representations.

I hereby certify that the information contained in this document is true and complete to the best of my knowledge and, if the proposed charter school is approved, agree to notify the chair of the board at the charter school at which I will serve of any change that may create a conflict of interest. I have attached all required documents.

Name: CHARLES F. KNIGHT

Signature

11/29/2020
Date

Board Member Information Form

To be completed individually by each proposed charter school board member.
All forms must be signed by hand.

Serving on a public charter school board is a position of public trust and fiduciary responsibility. As a board member of a public school, you are responsible for ensuring the quality of the school program, competent stewardship of public funds, and the school's fulfillment of its public obligations and all terms of its charter. The purposes of this questionnaire are: to give application reviewers a clearer introduction to the applicant team behind each school proposal in advance of the applicant interview, in order to be better prepared for the interview; to encourage board members to reflect individually, as well as collectively, on their common mission, purposes, and obligations at the earliest stage of school development; and to identify any potential conflict of interest you may have as a board member.

Each board member should complete this form individually, print, and sign. Along with the completed, signed form, each board member should provide a resume, a background check, and (if applicable), appropriate academic data.

Where narrative responses are required, brief responses are sufficient. You may delete these instructions.

Background and Contact Information

1. Name of charter school on whose Board of Directors you intend to serve: Alabama Aerospace and Aviation High School

2. Full name: Tramayne Russell
   Home address: **5036 Gracious Drive, Franklin, TN 37064**
   Business name and address:
   Phone number: **407-670-4748**
   E-mail address: **Tramaynerussell@gmail.com**

☒ Resume and professional bio are attached here.
☐ Resume and professional bio are attached elsewhere in the application (specify). _____

3. Indicate whether you currently, or have previously, served on a board of a school district, another charter school, a non-public school, or any not-for-profit corporation. If yes, explain.
   ☐ Yes ☒ No

---

4. Indicate whether you currently, or have previously, served as the leader or on the leadership team of ANY school, regardless of type (charter/traditional/private, etc.). If yes, explain and attach the required academic data.
   ☐ Yes ☒ No

   ☐ Academic evidence is attached here as required. (Should include annual student achievement data, disaggregated by subgroup, for every school under your current or prior management.)

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5. Why do you wish to serve on the board of the proposed charter school?
I grew up in Birmingham and there were no opportunities like this available. I want to do my part to ensure that students have the professional opportunities that this school will afford.

6. What is your understanding of the appropriate role of a public charter school board member?
To provide the strategic vision for the school, hire leaders to run the school, hold those leaders accountable for academic success, and provide financial oversight.

7. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.
I do not have previous board experience, however my professional business experience will be valuable in helping to secure partnerships and opportunities of growth for the school.

8. Describe the specific knowledge and experience that you would bring to the board.
Securing partnerships, managing budgets and leeadership

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?
To create a diverse leadership pipeline of students prepared to succeed in the aerospace and aviation industry

2. What is your understanding of the school's proposed educational program?

3. What do you believe to be the characteristics of a successful school?
Accountable leadership with the right resources and partnerships for students

4. How will you know that the school is succeeding (or not) in its mission?

Governance

1. Describe the role that the board will play in the school's operation.
Holding the school's leadership accountable

2. How will you know if the school is successful at the end of the first year of operation?
Graduation rates, college enrollment, job and internship placements

3. How will you know at the end of four years of the school is successful?
Graduation rates, college enrollment, job and internship placements

4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?

5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?

I would recommend they be removed from their roll of being a board member

6. If your school intends to contract with a third-party ESP:
   a. Summarize your involvement in the selection process;
   b. Explain your understanding of the legal relationship between yourself as a board member and the ESP; and
   c. Indicate whether you have been involved in the review/negotiation of the management agreement.

Disclosures

1. Indicate whether you or your spouse knows other prospective board members for the proposed school. If so, please indicate the precise nature of your relationship.
   ☐ I / we do not know these individuals ☒ Yes

I went to school with Auri Brown

2. Indicate whether you or your spouse knows any person who is, or has been in the last two years, a school employee. If so, indicate the precise nature of your relationship.
   ☐ I / we do not know any such employees ☒ Yes

I went to school with Ruben Morris

3. Indicate whether you or your spouse knows anyone who is doing, or plans to do, business with the charter school (whether as an individual or as a director, officer, employee, or agent of an entity). If so, indicate and describe the precise nature of your relationship and the nature of the business that such person or entity is transacting, or will be transacting, with the school.
   ☒ I / we do not know any such persons ☐ Yes

4. Indicate if you, your spouse, or other immediate family members anticipate conducting, or are conducting, any business with the school. If so, indicate the precise nature of the business that is being or will be conducted.
   ☒ I / we do not anticipate conducting any such business ☐ Yes

5. If the school intends to contract with an education service provider or management organization, indicate whether you or your spouse knows any employees, officers, owners, directors, or agents of that provider. If the answer is in the affirmative, please describe any such relationship.
   ☐ Not applicable because the school does not intend to contact with an education service provider or school management organization.
   ☒ I / we do not know any such persons ☐ Yes

6. If the school contracts with an education service provider, please indicate whether you, your spouse, or other immediate family members have a direct or indirect ownership,

employment, contractual, or management interest in the provider. For any interest indicated, provide a detailed description.
☐ N/A. ☒ I / we have no such interest ☐ Yes

7. If the school plans to contract with an education service provider, indicate if you, your spouse, or other immediate family member anticipate conducting, or are conducting, any business with the provider. If so, indicate the precise nature of the business that is being, or will be, conducted.
☐ N/A ☒ I / we or my family do not anticipate conducting any such business ☐ Yes

8. Indicate whether you, your spouse, or other immediate family members are a director, officer, employee, partner or member of, or are otherwise associated with, any organization that is partnering with the charter school. To the extent you have provided this information in response to prior items, you may so indicate.
☒ Does not apply to me, my spouse or family ☐ Yes

9. Indicate any potential ethical or legal conflicts of interests that would, or are likely to exist, should you serve on the school's board.
☒ None ☐ Yes

Certification

I recognize that all information submitted with this conflict of interest disclosure becomes a matter of public record, subject by law to disclosure upon request to members of the general public. I will hold Birmingham City Schools, its trustees, officers, employees, or authorized agents harmless from liability for the disclosure of any information it reasonably believes is true based upon my representations.

I hereby certify that the information contained in this document is true and complete to the best of my knowledge and, if the proposed charter school is approved, agree to notify the chair of the board at the charter school at which I will serve of any change that may create a conflict of interest. I have attached all required documents.

Name: Tramayne Russell

Signature *Date*

Board Member Information Form

To be completed individually by each proposed charter school board member.
All forms must be signed by hand.

Serving on a public charter school board is a position of public trust and fiduciary responsibility. As a board member of a public school, you are responsible for ensuring the quality of the school program, competent stewardship of public funds, and the school's fulfillment of its public obligations and all terms of its charter. The purposes of this questionnaire are: to give application reviewers a clearer introduction to the applicant team behind each school proposal in advance of the applicant interview, in order to be better prepared for the interview; to encourage board members to reflect individually, as well as collectively, on their common mission, purposes, and obligations at the earliest stage of school development; and to identify any potential conflict of interest you may have as a board member.

Each board member should complete this form individually, print, and sign. Along with the completed, signed form, each board member should provide a resume, a background check, and (if applicable), appropriate academic data.

Where narrative responses are required, brief responses are sufficient. You may delete these instructions.

Background and Contact Information

1. Name of charter school on whose Board of Directors you intend to serve **Alabama Aerospace & Aviation High School**

2. Full name **George Courtney French**

   Home address **329 Poinciana Drive, Birmingham, AL 35209**

   Business name and address **Petway, French & Ford, LLP, 600 Luckie Dr, Ste 300, Birmingham, AL 35223**

   Phone number **205-977-9798**

   E-mail address **cfrench@fpflaw.com**

☐ Resume and professional bio are attached here.
☑ Resume and professional bio are attached elsewhere in the application (specify). _____

3. Indicate whether you currently, or have previously, served on a board of a school district, another charter school, a non-public school, or any not-for-profit corporation. If yes, explain.
   ☐ Yes ☑ No

---

4. Indicate whether you currently, or have previously, served as the leader or on the leadership team of ANY school, regardless of type (charter/traditional/private, etc.). If yes, explain and attach the required academic data.
   ☐ Yes ☑ No

   ☐ Academic evidence is attached here as required. (Should include annual student achievement data, disaggregated by subgroup, for every school under your current or prior management.)

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5. Why do you wish to serve on the board of the proposed charter school?
To be a part of this specialized curriculum not offered elsewhere in the State of Alabama.

6. What is your understanding of the appropriate role of a public charter school board member?
The role of the Board is defined in the Alabama School Choice and Student Opportunity Act (Act 2015-3).

7. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.
I have a degree in secondary education from Birmingham Southern College where I presently serve as a Member of the Board of Trustees, as well as numerous other Boards.

8. Describe the specific knowledge and experience that you would bring to the board.
In addition to an earned education degree, I am in the process of completing my private pilot certification that is specific to AAAHS.

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?
They are focused on college and career readiness and promoting students into aerospace and aviation.

2. What is your understanding of the school's proposed educational program?
It is a college preparatory curriculum and aerospace and aviation related training.

3. What do you believe to be the characteristics of a successful school?
A school that is devoted to the students, staff, faculty and community.

4. How will you know that the school is succeeding (or not) in its mission?
Whether the school is making adequate progress on annual goals.

Governance

1. Describe the role that the board will play in the school's operation.
The role of the Board is defined in the Alabama School Choice and Student Opportunity Act (Act 2015-3).

2. How will you know if the school is successful at the end of the first year of operation?
Whether the school is making adequate progress on annual goals.

3. How will you know at the end of four years of the school is successful?
Whether the school is making adequate progress on annual goals.

4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?
Effective policy making related to fiscal management and school board governance best practices.

5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?

See AAAHS Conflict of Interest Policy.

6. If your school intends to contract with a third-party ESP:
   a. Summarize your involvement in the selection process;
   b. Explain your understanding of the legal relationship between yourself as a board member and the ESP; and
   c. Indicate whether you have been involved in the review/negotiation of the management agreement.

N/A

Disclosures

1. Indicate whether you or your spouse knows other prospective board members for the proposed school. If so, please indicate the precise nature of your relationship.
   ☐ I / we do not know these individuals ☑ Yes

R.J. Smith; Merrick Sims

2. Indicate whether you or your spouse knows any person who is, or has been in the last two years, a school employee. If so, indicate the precise nature of your relationship.
   ☑ I / we do not know any such employees ☐ Yes

3. Indicate whether you or your spouse knows anyone who is doing, or plans to do, business with the charter school (whether as an individual or as a director, officer, employee, or agent of an entity). If so, indicate and describe the precise nature of your relationship and the nature of the business that such person or entity is transacting, or will be transacting, with the school.
   ☑ I / we do not know any such persons ☐ Yes

4. Indicate if you, your spouse, or other immediate family members anticipate conducting, or are conducting, any business with the school. If so, indicate the precise nature of the business that is being or will be conducted.
   ☑ I / we do not anticipate conducting any such business ☐ Yes

5. If the school intends to contract with an education service provider or management organization, indicate whether you or your spouse knows any employees, officers, owners, directors, or agents of that provider. If the answer is in the affirmative, please describe any such relationship.
   ☐ Not applicable because the school does not intend to contact with an education service provider or school management organization.
   ☑ I / we do not know any such persons ☐ Yes

6. If the school contracts with an education service provider, please indicate whether you, your spouse, or other immediate family members have a direct or indirect ownership,

employment, contractual, or management interest in the provider. For any interest indicated, provide a detailed description.
☐ N/A. ☑ I / we have no such interest ☐ Yes

7. If the school plans to contract with an education service provider, indicate if you, your spouse, or other immediate family member anticipate conducting, or are conducting, any business with the provider. If so, indicate the precise nature of the business that is being, or will be, conducted.
☐ N/A ☑ I / we or my family do not anticipate conducting any such business ☐ Yes

8. Indicate whether you, your spouse, or other immediate family members are a director, officer, employee, partner or member of, or are otherwise associated with, any organization that is partnering with the charter school. To the extent you have provided this information in response to prior items, you may so indicate.
☑ Does not apply to me, my spouse or family ☐ Yes

9. Indicate any potential ethical or legal conflicts of interests that would, or are likely to exist, should you serve on the school's board.
☑ None ☐ Yes

Certification

I recognize that all information submitted with this conflict of interest disclosure becomes a matter of public record, subject by law to disclosure upon request to members of the general public. I will hold Birmingham City Schools, its trustees, officers, employees, or authorized agents harmless from liability for the disclosure of any information it reasonably believes is true based upon my representations.

I hereby certify that the information contained in this document is true and complete to the best of my knowledge and, if the proposed charter school is approved, agree to notify the chair of the board at the charter school at which I will serve of any change that may create a conflict of interest. I have attached all required documents.

Name: George Courtney French

George Courtney French — 11/30/20

Signature *Date*

Board Member Information Form

To be completed individually by each proposed charter school board member.
All forms must be signed by hand.

Serving on a public charter school board is a position of public trust and fiduciary responsibility. As a board member of a public school, you are responsible for ensuring the quality of the school program, competent stewardship of public funds, and the school's fulfillment of its public obligations and all terms of its charter. The purposes of this questionnaire are: to give application reviewers a clearer introduction to the applicant team behind each school proposal in advance of the applicant interview, in order to be better prepared for the interview; to encourage board members to reflect individually, as well as collectively, on their common mission, purposes, and obligations at the earliest stage of school development; and to identify any potential conflict of interest you may have as a board member.

Each board member should complete this form individually, print, and sign. Along with the completed, signed form, each board member should provide a resume, a background check, and (if applicable), appropriate academic data.

Where narrative responses are required, brief responses are sufficient. You may delete these instructions.

Background and Contact Information

1. Name of charter school on whose Board of Directors you intend to serve: Alabama Aerospace & Aviation High School

2. Full name: Merrick Sims
   Home address: 5468 Stone Cove Drive, Atlanta GA 30331
   Business name and address:
   Phone number: 404-493-4343
   E-mail address: Merrick7467@gail.com

☐ Resume and professional bio are attached here.
☒ Resume and professional bio are attached elsewhere in the application (specify). See package

Merrick Sims 11/29/2020 7:43 PM
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3. Indicate whether you currently, or have previously, served on a board of a school district, another charter school, a non-public school, or any not-for-profit corporation. If yes, explain.
   ☐ Yes ☒ No

Merrick Sims 11/29/2020 7:44 PM
Deleted: ☐

4. Indicate whether you currently, or have previously, served as the leader or on the leadership team of ANY school, regardless of type (charter/traditional/private, etc.). If yes, explain and attach the required academic data.
   ☒ Yes ☐ No

   ☒ Academic evidence is attached here as required. (Should include annual student achievement data, disaggregated by subgroup, for every school under your current or prior management.)

Merrick Sims 11/29/2020 7:44 PM
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5. Why do you wish to serve on the board of the proposed charter school?
Professional and educational insight

6. What is your understanding of the appropriate role of a public charter school board member?
Provide professional input

7. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.
I worked in the Aerospace industry as an engineer and I thought high school math

8. Describe the specific knowledge and experience that you would bring to the board.
I worked in the Aerospace industry as an engineer and I thought high school math

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?
They align with the demands of the communtiy

2. What is your understanding of the school's proposed educational program?
They align with the demands of the communtiy

3. What do you believe to be the characteristics of a successful school?
Meeting the projected goals

4. How will you know that the school is succeeding (or not) in its mission?
Data will match the desired goals.

Governance

1. Describe the role that the board will play in the school's operation.
Oversee the functions, budget and major decisions

2. How will you know if the school is successful at the end of the first year of operation?
Data will match the desired goals.

3. How will you know at the end of four years of the school is successful?
Data will match the desired goals.

4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?
Set high goals and plans to achieve those goals

5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?
Report it to the lead authority

6. If your school intends to contract with a third-party ESP:

a. Summarize your involvement in the selection process;
b. Explain your understanding of the legal relationship between yourself as a board member and the ESP; and
c. Indicate whether you have been involved in the review/negotiation of the management agreement.

n/a

Disclosures

1. Indicate whether you or your spouse knows other prospective board members for the proposed school. If so, please indicate the precise nature of your relationship.
☒ I / we do not know these individuals ☐ Yes

2. Indicate whether you or your spouse knows any person who is, or has been in the last two years, a school employee. If so, indicate the precise nature of your relationship.
☒ I / we do not know any such employees ☐ Yes

3. Indicate whether you or your spouse knows anyone who is doing, or plans to do, business with the charter school (whether as an individual or as a director, officer, employee, or agent of an entity). If so, indicate and describe the precise nature of your relationship and the nature of the business that such person or entity is transacting, or will be transacting, with the school.
☒ I / we do not know any such persons ☐ Yes

4. Indicate if you, your spouse, or other immediate family members anticipate conducting, or are conducting, any business with the school. If so, indicate the precise nature of the business that is being or will be conducted.
☒ I / we do not anticipate conducting any such business ☐ Yes

5. If the school intends to contract with an education service provider or management organization, indicate whether you or your spouse knows any employees, officers, owners, directors, or agents of that provider. If the answer is in the affirmative, please describe any such relationship.
☐ Not applicable because the school does not intend to contact with an education service provider or school management organization.
☒ I / we do not know any such persons ☐ Yes

6. If the school contracts with an education service provider, please indicate whether you, your spouse, or other immediate family members have a direct or indirect ownership, employment, contractual, or management interest in the provider. For any interest indicated, provide a detailed description.
☒ N/A. ☐ I / we have no such interest ☐ Yes

7. If the school plans to contract with an education service provider, indicate if you, your

spouse, or other immediate family member anticipate conducting, or are conducting, any business with the provider. If so, indicate the precise nature of the business that is being, or will be, conducted.

☒ N/A ☐ I / we or my family do not anticipate conducting any such business ☐ Yes

8. Indicate whether you, your spouse, or other immediate family members are a director, officer, employee, partner or member of, or are otherwise associated with, any organization that is partnering with the charter school. To the extent you have provided this information in response to prior items, you may so indicate.

☒ Does not apply to me, my spouse or family ☐ Yes

9. Indicate any potential ethical or legal conflicts of interests that would, or are likely to exist, should you serve on the school's board.

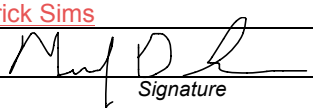
☒ None ☐ Yes

Certification

I recognize that all information submitted with this conflict of interest disclosure becomes a matter of public record, subject by law to disclosure upon request to members of the general public. I will hold Birmingham City Schools, its trustees, officers, employees, or authorized agents harmless from liability for the disclosure of any information it reasonably believes is true based upon my representations.

I hereby certify that the information contained in this document is true and complete to the best of my knowledge and, if the proposed charter school is approved, agree to notify the chair of the board at the charter school at which I will serve of any change that may create a conflict of interest. I have attached all required documents.

Name: Merrick Sims



Signature

11/29/2020

Date

Board Member Information Form

To be completed individually by each proposed charter school board member.
All forms must be signed by hand.

Serving on a public charter school board is a position of public trust and fiduciary responsibility. As a board member of a public school, you are responsible for ensuring the quality of the school program, competent stewardship of public funds, and the school's fulfillment of its public obligations and all terms of its charter. The purposes of this questionnaire are: to give application reviewers a clearer introduction to the applicant team behind each school proposal in advance of the applicant interview, in order to be better prepared for the interview; to encourage board members to reflect individually, as well as collectively, on their common mission, purposes, and obligations at the earliest stage of school development; and to identify any potential conflict of interest you may have as a board member.

Each board member should complete this form individually, print, and sign. Along with the completed, signed form, each board member should provide a resume, a background check, and (if applicable), appropriate academic data.

Where narrative responses are required, brief responses are sufficient. You may delete these instructions.

Background and Contact Information

1. Name of charter school on whose Board of Directors you intend to serve: ALABAMA AEROSPACE + AVIATION HS
2. Full name: RODERICK J. SMITH
   Home address: 112 HARVILL LANE, BIRMINGHAM, AL 35217
   Business name and address: UPS AIRLINES - LOUISVILLE, KY 802 GRADE LANE
   Phone number: 205-482-8799
   E-mail address: RJSMITH06@GMAIL.COM

☐ Resume and professional bio are attached here.
☐ Resume and professional bio are attached elsewhere in the application (specify). _____

3. Indicate whether you currently, or have previously, served on a board of a school district, another charter school, a non-public school, or any not-for-profit corporation. If yes, explain. ☐ Yes ☒ No

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4. Indicate whether you currently, or have previously, served as the leader or on the leadership team of ANY school, regardless of type (charter/traditional/private, etc.). If yes, explain and attach the required academic data.
   ☐ Yes ☒ No

   ☐ Academic evidence is attached here as required. (Should include annual student achievement data, disaggregated by subgroup, for every school under your current or prior management.)

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5. Why do you wish to serve on the board of the proposed charter school?

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6. What is your understanding of the appropriate role of a public charter school board member?

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7. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.

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8. Describe the specific knowledge and experience that you would bring to the board.

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?

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2. What is your understanding of the school's proposed educational program?

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3. What do you believe to be the characteristics of a successful school?

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4. How will you know that the school is succeeding (or not) in its mission?

Governance

1. Describe the role that the board will play in the school's operation.

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2. How will you know if the school is successful at the end of the first year of operation?

---

3. How will you know at the end of four years of the school is successful?

---

4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?

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5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?

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6. If your school intends to contract with a third-party ESP:
   a. Summarize your involvement in the selection process;
   b. Explain your understanding of the legal relationship between yourself as a board member and the ESP; and
   c. Indicate whether you have been involved in the review/negotiation of the management agreement.

N/A

Disclosures

1. Indicate whether you or your spouse knows other prospective board members for the proposed school. If so, please indicate the precise nature of your relationship.
   ☐ I / we do not know these individuals ☒ Yes

2. Indicate whether you or your spouse knows any person who is, or has been in the last two years, a school employee. If so, indicate the precise nature of your relationship.
   ☒ I / we do not know any such employees ☐ Yes

3. Indicate whether you or your spouse knows anyone who is doing, or plans to do, business with the charter school (whether as an individual or as a director, officer, employee, or agent of an entity). If so, indicate and describe the precise nature of your relationship and the nature of the business that such person or entity is transacting, or will be transacting, with the school.
   ☒ I / we do not know any such persons ☐ Yes

4. Indicate if you, your spouse, or other immediate family members anticipate conducting, or are conducting, any business with the school. If so, indicate the precise nature of the business that is being or will be conducted.
   ☒ I / we do not anticipate conducting any such business ☐ Yes

5. If the school intends to contract with an education service provider or management organization, indicate whether you or your spouse knows any employees, officers, owners, directors, or agents of that provider. If the answer is in the affirmative, please describe any such relationship.
   ☒ Not applicable because the school does not intend to contact with an education service provider or school management organization.
   ☐ I / we do not know any such persons ☐ Yes

6. If the school contracts with an education service provider, please indicate whether you, your spouse, or other immediate family members have a direct or indirect ownership, employment, contractual, or management interest in the provider. For any interest indicated, provide a detailed description.
   ☒ N/A. ☐ I / we have no such interest ☐ Yes

7. If the school plans to contract with an education service provider, indicate if you, your spouse, or other immediate family member anticipate conducting, or are conducting, any business with the provider. If so, indicate the precise nature of the business that is being, or will be, conducted.

☒ N/A I / we or my family do not anticipate conducting any such business Yes

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8. Indicate whether you, your spouse, or other immediate family members are a director, officer, employee, partner or member of, or are otherwise associated with, any organization that is partnering with the charter school. To the extent you have provided this information in response to prior items, you may so indicate.

☒ Does not apply to me, my spouse or family ☐ Yes

---

9. Indicate any potential ethical or legal conflicts of interests that would, or are likely to exist, should you serve on the school's board.

☒ None ☐ Yes

Certification

I recognize that all information submitted with this conflict of interest disclosure becomes a matter of public record, subject by law to disclosure upon request to members of the general public. I will hold Birmingham City Schools, its trustees, officers, employees, or authorized agents harmless from liability for the disclosure of any information it reasonably believes is true based upon my representations.

I hereby certify that the information contained in this document is true and complete to the best of my knowledge and, if the proposed charter school is approved, agree to notify the chair of the board at the charter school at which I will serve of any change that may create a conflict of interest. I have attached all required documents.

Name: RODERICK J. SMITH

RJSmith

Signature

29 NOV 20

Date

Background and Contract Information

5. I have volunteered for several years doing summer aviation camps for kids. I have seen the excitement of a young person telling their peers about their first flight where they controlled an airplane in flight. As an African-American aviator, I know first hand of our underrepresentation in the aviation community as well as the vast amount of unknown opportunities within the aerospace and aviation community. By serving on this board, I will have the ability to assist in bringing aviation and aerospace to the next generation, an opportunity which they may have never been afforded otherwise. This will also give light to all the unknown opportunities within aerospace and aviation.

6. To provide a strategic vision, financial oversight, hire school administration and hold them accountable for academic success.

7. I am a retired Air Force Lieutenant Colonel with over 29 years of combined service over three branches of the military. I have served as an Administrative Assistant to the Mayor of Birmingham and as a Partnership Specialist for the Department of Commerce Bureau of the Census.

8. I have over 29 years of military and commercial aviation experience. I hold the Air Force Command Pilot badge and the Army Aviator badge. I am currently a First Officer for United Parcel Service Airlines operating the Boeing 757/767 conducting world wide cargo operations.

School Mission and Program

1. To prepare and position students to succeed in the aerospace and aviation industry by leading from a core set of values focused on Scholarship, Optimism, Accountability, and Respect.

2. To exceed the Alabama state standards in math, science, and technology in order to prepare and inspire students to pursue careers in the aerospace and aviation industry.

3. To impart the knowledge and the abilities necessary to be successful in the given field of study, aerospace and aviation. Also, to inspire Passion, Hard-work, Service, and Persistence.

4. By the number students that, upon graduation, continue in some facet of aerospace, aviation or STEM.

Governance

1. Holding the school accountable by ensuring it is run properly through oversight and support.

2. By the number of students who successfully complete the first year of course work and matriculate to the next year.

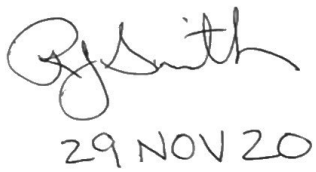
3. By the percentage of students who are able to complete the course work and graduate.

4. Focus on student achievement, ensure competent school leadership, provide proper guidance through oversight, act strategically, ensure regulatory compliance and lastly be financially responsible.

5. Prior to installation of the Board we would set up standard operating procedures to include what to do in the event of unethical or questionable actions.

Disclosures

1. Courtney French and I are fraternity brothers. Merrick Sims' uncle and I went to elementary school together.



29 NOV 20

Board Member Information Form

To be completed individually by each proposed charter school board member.
All forms must be signed by hand.

Serving on a public charter school board is a position of public trust and fiduciary responsibility. As a board member of a public school, you are responsible for ensuring the quality of the school program, competent stewardship of public funds, and the school's fulfillment of its public obligations and all terms of its charter. The purposes of this questionnaire are: to give application reviewers a clearer introduction to the applicant team behind each school proposal in advance of the applicant interview, in order to be better prepared for the interview; to encourage board members to reflect individually, as well as collectively, on their common mission, purposes, and obligations at the earliest stage of school development; and to identify any potential conflict of interest you may have as a board member.

Each board member should complete this form individually, print, and sign. Along with the completed, signed form, each board member should provide a resume, a background check, and (if applicable), appropriate academic data.

Where narrative responses are required, brief responses are sufficient. You may delete these instructions.

Background and Contact Information

1. Name of charter school on whose Board of Directors you intend to serve: Alabama Aerospace & Aviation High School

2. Full name: Tiffany Storey

   Home address: 312 Lance Way, Birmingham AL 35206

   Business name and address:

   Phone number:

   E-mail address: tsstorey@gmail.com

☑ Resume and professional bio are attached here.
☐ Resume and professional bio are attached elsewhere in the application (specify). _____

3. Indicate whether you currently, or have previously, served on a board of a school district, another charter school, a non-public school, or any not-for-profit corporation. If yes, explain.
   ☐ Yes ☑ No

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4. Indicate whether you currently, or have previously, served as the leader or on the leadership team of ANY school, regardless of type (charter/traditional/private, etc.). If yes, explain and attach the required academic data.
   ☐ Yes ☑ No

   ☐ Academic evidence is attached here as required. (Should include annual student achievement data, disaggregated by subgroup, for every school under your current or prior management.)

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5. Why do you wish to serve on the board of the proposed charter school?

I think it is important to have a parent on the school board as they offer a unique perspective. As a perspective parent, I will get to experience the school environment first- hand.

6. What is your understanding of the appropriate role of a public charter school board member?

My role as a school board member is to provide accountablity and help implement structure and ensure ethical decision making.

7. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.

8. Describe the specific knowledge and experience that you would bring to the board.

I have never served on a school board however as a Licensed Professional Counselor I served as a mental health consultant and therapist for 2 years with the Bessemer City School Board Special Education Department.

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?

AAAHS is creating a pathway for students to gain knowledge, skills, and credentials that allow them to go directly into the workforce or gain a headstart to higher education in the field of areospace and aviation.

2. What is your understanding of the school's proposed educational program?

Students will not only be able to earn high school credits, they will also have an opportunity for dual enrollment, receive certifications and internships with industry leaders in areospace and aviation.

3. What do you believe to be the characteristics of a successful school?

A clear and shared focus, effective leaders, a strong curriculum, instruction, assessment aligned with state educational standards, consistent professional development and diverse school board

4. How will you know that the school is succeeding (or not) in its mission?

Having a solid strategic plan with clear SMART goals that allows the school to measure its progress and outcomes against plan in place

Governance

1. Describe the role that the board will play in the school's operation.

The board provides oversight and accountability regarding structure, staffing, budget, curriculum and calender

2. How will you know if the school is successful at the end of the first year of operation?

Measuring student and school performance, outputs and outcomes against first year goals

3. How will you know at the end of four years of the school is successful?

Measuring test scores, retention rates, school performance and outcomes against school goals and other schools locally and across state

4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?

Establish realistic and measurable goals, provide effective goverance and accountability, and engage community and stakeholders to garnish support and buy-in,

5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?

A code of ethics sets the standard for member behavior. If concerns arise regarding unethical behavior of a board member there should be a committee that investigates complaints and depending on the outcome that member may be voted off board.

6. If your school intends to contract with a third-party ESP:

a. Summarize your involvement in the selection process;
b. Explain your understanding of the legal relationship between yourself as a board member and the ESP; and
c. Indicate whether you have been involved in the review/negotiation of the management agreement.

Disclosures

1. Indicate whether you or your spouse knows other prospective board members for the proposed school. If so, please indicate the precise nature of your relationship.
☑ I / we do not know these individuals ☐ Yes

---

2. Indicate whether you or your spouse knows any person who is, or has been in the last two years, a school employee. If so, indicate the precise nature of your relationship.
☐ I / we do not know any such employees ☑ Yes

The school founder is the former principal of my oldest child.

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3. Indicate whether you or your spouse knows anyone who is doing, or plans to do, business with the charter school (whether as an individual or as a director, officer, employee, or agent of an entity). If so, indicate and describe the precise nature of your relationship and the nature of the business that such person or entity is transacting, or will be transacting, with the school.
☑ I / we do not know any such persons ☐ Yes

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4. Indicate if you, your spouse, or other immediate family members anticipate conducting, or are conducting, any business with the school. If so, indicate the precise nature of the business that is being or will be conducted.
☑ I / we do not anticipate conducting any such business ☐ Yes

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5. If the school intends to contract with an education service provider or management organization, indicate whether you or your spouse knows any employees, officers, owners, directors, or agents of that provider. If the answer is in the affirmative, please describe any such relationship.
☑ Not applicable because the school does not intend to contact with an education service provider or school management organization.
☐ I / we do not know any such persons ☐ Yes

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6. If the school contracts with an education service provider, please indicate whether you, your spouse, or other immediate family members have a direct or indirect ownership, employment, contractual, or management interest in the provider. For any interest indicated, provide a detailed description.
☑ N/A. ☐ I / we have no such interest ☐ Yes

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7. If the school plans to contract with an education service provider, indicate if you, your spouse, or other immediate family member anticipate conducting, or are conducting, any business with the provider. If so, indicate the precise nature of the business that is being, or will be, conducted.
   ☑ N/A ☐ I / we or my family do not anticipate conducting any such business ☐ Yes

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8. Indicate whether you, your spouse, or other immediate family members are a director, officer, employee, partner or member of, or are otherwise associated with, any organization that is partnering with the charter school. To the extent you have provided this information in response to prior items, you may so indicate.
   ☑ Does not apply to me, my spouse or family ☐ Yes

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9. Indicate any potential ethical or legal conflicts of interests that would, or are likely to exist, should you serve on the school's board.
   ☑ None ☐ Yes

Certification

I recognize that all information submitted with this conflict of interest disclosure becomes a matter of public record, subject by law to disclosure upon request to members of the general public. I will hold Birmingham City Schools, its trustees, officers, employees, or authorized agents harmless from liability for the disclosure of any information it reasonably believes is true based upon my representations.

I hereby certify that the information contained in this document is true and complete to the best of my knowledge and, if the proposed charter school is approved, agree to notify the chair of the board at the charter school at which I will serve of any change that may create a conflict of interest. I have attached all required documents.

Name: Tiffany Storey

11-29-2020

Signature *Date*

Board Member Information Form

To be completed individually by each proposed charter school board member.
All forms must be signed by hand.

Serving on a public charter school board is a position of public trust and fiduciary responsibility. As a board member of a public school, you are responsible for ensuring the quality of the school program, competent stewardship of public funds, and the school's fulfillment of its public obligations and all terms of its charter. The purposes of this questionnaire are: to give application reviewers a clearer introduction to the applicant team behind each school proposal in advance of the applicant interview, in order to be better prepared for the interview; to encourage board members to reflect individually, as well as collectively, on their common mission, purposes, and obligations at the earliest stage of school development; and to identify any potential conflict of interest you may have as a board member.

Each board member should complete this form individually, print, and sign. Along with the completed, signed form, each board member should provide a resume, a background check, and (if applicable), appropriate academic data.

Where narrative responses are required, brief responses are sufficient. You may delete these instructions.

Background and Contact Information

1. Name of charter school on whose Board of Directors you intend to serve **Alabama Aerospace & Aviation High School**

2. Full name **Tierra Wright**
   Home address **6379 Walnut Drive, Clay, AL 35126**
   Business name and address **Jefferson State Community College, 2600 Carson Road, Birmingham, AL 35215**
   Phone number **(205)276-5354**
   E-mail address **tbwright16@gmail.com**

☐ Resume and professional bio are attached here.
X☐ Resume and professional bio are attached elsewhere in the application (specify). _____

3. Indicate whether you currently, or have previously, served on a board of a school district, another charter school, a non-public school, or any not-for-profit corporation. If yes, explain.
   ☐ Yes ☐ No
   No

4. Indicate whether you currently, or have previously, served as the leader or on the leadership team of ANY school, regardless of type (charter/traditional/private, etc.). If yes, explain and attach the required academic data.
   ☐ Yes ☐ No

   ☐ Academic evidence is attached here as required. (Should include annual student achievement data, disaggregated by subgroup, for every school under your current or prior management.)
   No

5. Why do you wish to serve on the board of the proposed charter school?
To be part of the history of a school that is committed to providing inner city youth with specialized training and hands on experience in the field of aviation.

6. What is your understanding of the appropriate role of a public charter school board member?
The role of the Board is defined in the Alabama School Choice and Student Opportunity Act (Act 2015-3)

7. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.
I have a degree in secondary education from Auburn University and 15 years of experience working on both secondary and post-secondary levels.

8. Describe the specific knowledge and experience that you would bring to the board.
I have 15 years of experience in teaching and administration on both the secondary and post-secondary levels.

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?
The school is focused on providing instruction based on the College and Career Reading Standards and providing specialized academic and field training for students to transition into aerospace and aviation careers.

2. What is your understanding of the school's proposed educational program?
An advanced high school that will allow students to have a normal high school experience academically and socially while taking coursework leading towards a certification in aviation.

3. What do you believe to be the characteristics of a successful school?
A school that has frequent and continuous monitoring of performance, effective school leadership and extremely high level of collaboration and communication with all stakeholders.

4. How will you know that the school is succeeding (or not) in its mission?
I will know if the school is successful at the end of the first year of operation if documented progress towards its annual goals is evidenced.

Governance

1. Describe the role that the board will play in the school's operation.
The role of the Board is defined in the Alabama School Choice and Student Opportunity Act (Act 2015-3).

2. How will you know if the school is successful at the end of the first year of operation?
I will know if the school is successful at the end of the first year of operation if documented progress towards its annual goals is evidenced.

3. How will you know at the end of four years of the school is successful?

I will know if the school is successful at the end of the first year of operation if documented progress towards its annual goals is evidenced.

4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?

Commitment, clear goals, data driven instruction, reinforced learning and transparency

5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?

See AAAHS' Conflict of Interest Policy.

6. If your school intends to contract with a third-party ESP:
   a. Summarize your involvement in the selection process;
   b. Explain your understanding of the legal relationship between yourself as a board member and the ESP; and
   c. Indicate whether you have been involved in the review/negotiation of the management agreement.

N/A

Disclosures

1. Indicate whether you or your spouse knows other prospective board members for the proposed school. If so, please indicate the precise nature of your relationship.
   ☐ I / we do not know these individuals ☐ Yes

Yes-Auri Brown, Ruben Morris and Tramayne Russell

2. Indicate whether you or your spouse knows any person who is, or has been in the last two years, a school employee. If so, indicate the precise nature of your relationship.
   ☐ I / we do not know any such employees ☐ Yes

I/we do not know any such employees

3. Indicate whether you or your spouse knows anyone who is doing, or plans to do, business with the charter school (whether as an individual or as a director, officer, employee, or agent of an entity). If so, indicate and describe the precise nature of your relationship and the nature of the business that such person or entity is transacting, or will be transacting, with the school.
   ☐ I / we do not know any such persons ☐ Yes

I/we do not know any such persons

4. Indicate if you, your spouse, or other immediate family members anticipate conducting, or are conducting, any business with the school. If so, indicate the precise nature of the business that is being or will be conducted.
   ☐ I / we do not anticipate conducting any such business ☐ Yes

I/we do not anticipate conducting any such business

5. If the school intends to contract with an education service provider or management organization, indicate whether you or your spouse knows any employees, officers, owners, directors, or agents of that provider. If the answer is in the affirmative, please describe any such relationship.

☐ Not applicable because the school does not intend to contact with an education service provider or school management organization.
☐ I / we do not know any such persons ☐ Yes

I/we do not know any such persons

6. If the school contracts with an education service provider, please indicate whether you, your spouse, or other immediate family members have a direct or indirect ownership, employment, contractual, or management interest in the provider. For any interest indicated, provide a detailed description.
☐ N/A. ☐ I / we have no such interest ☐ Yes

N/A

7. If the school plans to contract with an education service provider, indicate if you, your spouse, or other immediate family member anticipate conducting, or are conducting, any business with the provider. If so, indicate the precise nature of the business that is being, or will be, conducted.
☐ N/A ☐ I / we or my family do not anticipate conducting any such business ☐ Yes

N/A

8. Indicate whether you, your spouse, or other immediate family members are a director, officer, employee, partner or member of, or are otherwise associated with, any organization that is partnering with the charter school. To the extent you have provided this information in response to prior items, you may so indicate.
☐ Does not apply to me, my spouse or family ☐ Yes

Does not apply to me, my spouse or family

9. Indicate any potential ethical or legal conflicts of interests that would, or are likely to exist, should you serve on the school's board.
☐ None ☐ Yes

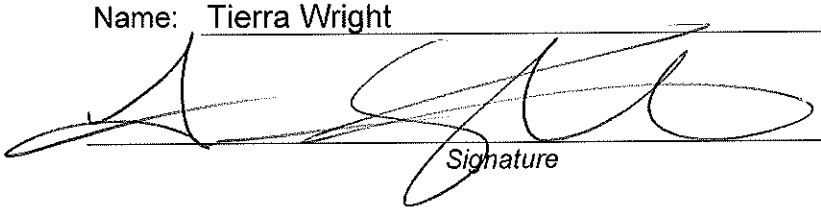
None

Certification

I recognize that all information submitted with this conflict of interest disclosure becomes a matter of public record, subject by law to disclosure upon request to members of the general public. I will hold Birmingham City Schools, its trustees, officers, employees, or authorized agents harmless from liability for the disclosure of any information it reasonably believes is true based upon my representations.

I hereby certify that the information contained in this document is true and complete to the best of my knowledge and, if the proposed charter school is approved, agree to notify the chair of the board at the charter school at which I will serve of any change that may create a conflict of interest. I have attached all required documents.

Name: Tierra Wright



Signature

11/30/2020

Date

Board Member Information Form

To be completed individually by each proposed charter school board member.
All forms must be signed by hand.

Serving on a public charter school board is a position of public trust and fiduciary responsibility. As a board member of a public school, you are responsible for ensuring the quality of the school program, competent stewardship of public funds, and the school's fulfillment of its public obligations and all terms of its charter. The purposes of this questionnaire are: to give application reviewers a clearer introduction to the applicant team behind each school proposal in advance of the applicant interview, in order to be better prepared for the interview; to encourage board members to reflect individually, as well as collectively, on their common mission, purposes, and obligations at the earliest stage of school development; and to identify any potential conflict of interest you may have as a board member.

Each board member should complete this form individually, print, and sign. Along with the completed, signed form, each board member should provide a resume, a background check, and (if applicable), appropriate academic data.

Where narrative responses are required, brief responses are sufficient. You may delete these instructions.

Background and Contact Information

1. Name of charter school on whose Board of Directors you intend to serve: **Alabama Aerospace and Aviation High School**

2. Full name: **Jeffery T. Walker**
   Home address: **1825 Saulter Road**
   Business name and address:
   Phone number: **205-975-5701**
   E-mail address: **jeffatuab@gmail.com**

☒ Resume and professional bio are attached here.
☐ Resume and professional bio are attached elsewhere in the application (specify). _____

3. Indicate whether you currently, or have previously, served on a board of a school district, another charter school, a non-public school, or any not-for-profit corporation. If yes, explain.
   ☐ Yes ☒ No

---

4. Indicate whether you currently, or have previously, served as the leader or on the leadership team of ANY school, regardless of type (charter/traditional/private, etc.). If yes, explain and attach the required academic data.
   ☐ Yes ☒ No

   ☐ Academic evidence is attached here as required. (Should include annual student achievement data, disaggregated by subgroup, for every school under your current or prior management.)

---

5. Why do you wish to serve on the board of the proposed charter school?
Assist underserved youth in achieving a quality education that can lead to a productive career.

6. What is your understanding of the appropriate role of a public charter school board member?
Guide and advise the development and operation of the school.

7. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.
I have served and been a leader on many public service boards and commissions, including non-profit boards, professional organizational boards, and Governor-appointed boards.

8. Describe the specific knowledge and experience that you would bring to the board.
Helping understand and navigate higher education and the transition from high school to university.

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?
Inspiring school-aged children to go into aviation careers. All children should have the resources needed for a successful career. Primary school should all a choice between a skilled job and higher education.

2. What is your understanding of the school's proposed educational program?
Workforce development and university preparation for careers in education.

3. What do you believe to be the characteristics of a successful school?
Focus on underserved children. Dual career paths. Strong primary school pedagogy.

4. How will you know that the school is succeeding (or not) in its mission?
Success of graduates of the school

Governance

1. Describe the role that the board will play in the school's operation.
Oversight and guidance

2. How will you know if the school is successful at the end of the first year of operation?
Metrics of the success of students

3. How will you know at the end of four years of the school is successful?
Percent of students employed in aviation and those going on to universities.

4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?
Monitor development of the curriculum and qualifications of teachers.

5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?

Talk to the president of the board and encourage appropriate action.

6. If your school intends to contract with a third-party ESP:
   a. Summarize your involvement in the selection process;
   b. Explain your understanding of the legal relationship between yourself as a board member and the ESP; and
   c. Indicate whether you have been involved in the review/negotiation of the management agreement.

Disclosures

1. Indicate whether you or your spouse knows other prospective board members for the proposed school. If so, please indicate the precise nature of your relationship.
   ☐ I / we do not know these individuals ☒ Yes

Friends with one of the prospective board members.

2. Indicate whether you or your spouse knows any person who is, or has been in the last two years, a school employee. If so, indicate the precise nature of your relationship.
   ☒ I / we do not know any such employees ☐ Yes

3. Indicate whether you or your spouse knows anyone who is doing, or plans to do, business with the charter school (whether as an individual or as a director, officer, employee, or agent of an entity). If so, indicate and describe the precise nature of your relationship and the nature of the business that such person or entity is transacting, or will be transacting, with the school.
   ☒ I / we do not know any such persons ☐ Yes

4. Indicate if you, your spouse, or other immediate family members anticipate conducting, or are conducting, any business with the school. If so, indicate the precise nature of the business that is being or will be conducted.
   ☒ I / we do not anticipate conducting any such business ☐ Yes

5. If the school intends to contract with an education service provider or management organization, indicate whether you or your spouse knows any employees, officers, owners, directors, or agents of that provider. If the answer is in the affirmative, please describe any such relationship.
   ☒ Not applicable because the school does not intend to contact with an education service provider or school management organization.
   ☐ I / we do not know any such persons ☐ Yes

6. If the school contracts with an education service provider, please indicate whether you, your spouse, or other immediate family members have a direct or indirect ownership,

employment, contractual, or management interest in the provider. For any interest indicated, provide a detailed description.
☒ N/A. ☐ I / we have no such interest ☐ Yes

7. If the school plans to contract with an education service provider, indicate if you, your spouse, or other immediate family member anticipate conducting, or are conducting, any business with the provider. If so, indicate the precise nature of the business that is being, or will be, conducted.
☒ N/A ☐ I / we or my family do not anticipate conducting any such business ☐ Yes

8. Indicate whether you, your spouse, or other immediate family members are a director, officer, employee, partner or member of, or are otherwise associated with, any organization that is partnering with the charter school. To the extent you have provided this information in response to prior items, you may so indicate.
☒ Does not apply to me, my spouse or family ☐ Yes

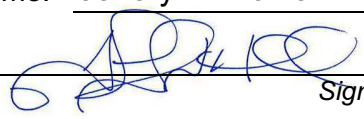
9. Indicate any potential ethical or legal conflicts of interests that would, or are likely to exist, should you serve on the school's board.
☒ None ☐ Yes

Certification

I recognize that all information submitted with this conflict of interest disclosure becomes a matter of public record, subject by law to disclosure upon request to members of the general public. I will hold Birmingham City Schools, its trustees, officers, employees, or authorized agents harmless from liability for the disclosure of any information it reasonably believes is true based upon my representations.

I hereby certify that the information contained in this document is true and complete to the best of my knowledge and, if the proposed charter school is approved, agree to notify the chair of the board at the charter school at which I will serve of any change that may create a conflict of interest. I have attached all required documents.

Name: Jeffery T. Walker



Signature

06 July 2021

Date

ATTACHMENT 20

AAHS Board Code of Ethics

Alabama Aerospace and Aviation Schools, Inc. Governing Board
Code of Ethics

Alabama Aerospace and Aviation Schools, Inc. Governing Board desires to operate with the highest standards of stewardship and principles of public service possible and to that end the board adopts this Code of Conduct to provide that members of this public governing board will:

I. CONDUCT OF INDIVIDUAL

1. Attend and participate in regularly scheduled and called board meetings.

2. Read and prepare in advance to discuss issues to be considered on the board agenda.

3. Recognize that the authority of the board rests only with the board as a whole and not with individual board members.

4. Uphold and enforce applicable laws, rules and regulations of the local board and the State Board of Education, and court orders pertaining specifically to the school system.

5. Render all decisions based on available facts by exercising independent judgment instead of the opinion of individuals or special interest groups.

6. Work with other board members and the CEO/Head of School to establish effective policies to further the educational goals of the school system.

7. Make decisions on policy matters only after full consideration at public board meetings.

8. Comply with the requirements of the School Board Governance Improvement Act.

9. Communicate in a respectful, professional manner with and about fellow board members and the CEO/Head of School.

10. Take no action that will compromise the board or school system administration.

11. Refrain from using the position of school board member for personal or partisan gain or to benefit any person or entity over the interests of the school system.

12. Inform the CEO/Head of School and fellow board members of business relationships or personal relationships for any matter that will come before the board. (Modeled after the Alabama Association of School Board's Model Code of Ethics, 2020.)

13. Abstain from voting on or seeking to influence personnel or other actions involving family members or close associates or private interests.

14. Communicate to the board and the CEO/Head of School public reaction to board policies and school programs.

15. Advocate for the needs, resources, and interests of the public school students and the school system.

16. Safeguard the confidentiality of nonpublic information.

17. Show respect and courtesy to staff members.

II. CONDUCT OF INDIVIDUALS AT BOARD MEETINGS

1. Work with other board members in a spirit of harmony and cooperation in spite of differences of opinion that may arise during the discussion and resolution of issues at board meetings.

2. Take actions that reflect that the first and foremost concern is for the educational welfare of all students attending system schools.

3. Make decisions in accordance with the interests of the school system as a whole based on system finances available to accomplish educational goals and comply with the School Fiscal Accountability Act.

4. Abide by and support all majority decisions of the board.

5. Act on personnel recommendations of the CEO/Head of School in a timely manner, particularly when there are financial implications of such decisions.

6. Approve operating budgets and budget amendments that are aligned with system goals and objectives and are fiscally responsible.

7. Honor and protect the confidentiality of all discussions during executive session of the board.

III. CONDUCT OF THE BOARD AS A WHOLE

1. Recognize that the CEO/Head of School serves as the chief executive officer and secretary to the board and should be present at all meetings of the board except when his or her contract, salary or performance is under consideration.

2. Honor the CEO/Head of School's authority for the day-to-day administration of the school system.

3. In concert with the CEO/Head of School, regularly and systematically communicate board actions and decisions to students, staff and the community.

4. Review and evaluate the effectiveness of policies and programs to improve system performance.

5. Develop, in concert with the CEO/Head of School, the vision and goals for the school system to address student needs, advance student performance, and monitor the implementation of policies and programs.

6. Provide opportunities for all members to express opinions prior to board action.

Advisory Bodies

In an effort to further involve key stakeholder groups, Alabama Aerospace and Aviation High School's By-Laws provide for the creation of an Advisory Board. This advisory board will be composed of diverse community and industry leaders who have a desire to serve the community and support the mission of the AAHS by providing expertise and professional knowledge in areas such as curriculum alignment, apprenticeship development, industry related extracurricular activities, as well as cultural responsive practices, college and career readiness / work-force development capacity building. The Advisory Boards' role will be to provide input and suggestions on career pathway curriculum development and alignment with current industry standards. The Industry Advisory Board will consist of aerospace, aviation, defense, engineering, and STEM professionals with years of leadership and experience in the industry and post-secondary education. The Advisory Board is one-way AAHS will attempt to receive community participation and input on various topics affecting the school.

AAHS will actively seek the participation of the various stakeholder groups listed above through community outreach and suggestions provided by current industry partners. At least one member of the Board of Directors will serve on each Advisory Board in an effort to facilitate and ensure communication between the Advisory Board and the Board of Directors. The Director(s) serving on the Advisory Board will keep the Board of Directors current on any issues with the relevant Advisory Board and can invite members of the Advisory Board to present at a Board of Directors meeting. Further, the Advisory Board will report to the CEO / Head of School to assist the CEO / Head of School in addressing issues relevant to the Advisory Board.

Grievance Procedures

The Alabama Aerospace and Aviation High School is committed to providing the best possible conditions for all members of the school community including students, families, visitors, teachers and administrators. Part of this commitment is encouraging an open and frank atmosphere in which any problem, complaint, suggestion or question receives a timely response from school supervisors and administrators. Fair and honest treatment of all students, family members, visitors and employees is our goal. In pursuit of that end, we encourage everyone to treat the other with respect.

If a student, parent/guardian, or visitor disagrees with established rules of conduct, policies or practices, or feel that he/she have been treated unfairly, he or she may express his or her concerns through the following problem resolution procedure. No person will be retaliated against or penalized formally or informally, for voicing a complaint with Alabama Aerospace and Aviation High School in a reasonable, professional manner or for participating in the investigation of a complaint pursuant to the grievance procedure.

A student, parent or guardian may initiate the grievance procedure to appeal any final decision of school personnel except as provided in section A below. A person may initiate the grievance procedure to resolve complaints of discrimination based upon race, color, national origin, sex, age or disability. This grievance procedure does not bar individuals from filing claims in other forums to the extent permitted by state or federal law.

A. This policy does not apply in the case of suspension or expulsion or in the case of alleged sexual harassment where the provisions of the Sexual Harassment Policy apply.

Step I – School Leader Conference – A parent or guardian wishing to invoke the grievance procedure shall make a written request for a conference with the principal to discuss the grievance and seek resolution. If a complaint of discrimination is being made against the Principal, the written request can be submitted to the Chairman of the Board of Trustees, who will designate an appropriate individual to investigate the complaint. The request shall state in detail the basis for the grievance, name the specific policy, rule or law believed to have

been violated, and specify the relief being sought. The written complaint can be sent or delivered to the Alabama Aerospace and Aviation High School.

(a) No grievance will be heard unless it has been filed in writing within thirty (30) calendar days after the act or condition giving rise to the grievance and such filing must state with particularity the basis for the grievance, the policy regulation and/or procedure, rule or law believed to have been violated, and the remedy sought.

(b) The principal shall initiate an adequate, reliable and impartial investigation and grant a conference within five (5) school days following receipt of the written complaint.

(c) The person making the complaint will be permitted to present any information, documents, or witnesses that he/she would like to be considered as part of this conference and investigation. All information related to the conference and investigation will remain confidential.

(d) Within ten (10) school days of the conference, the School Leader (or chairman of the Board) will respond to the complaint in writing summarizing the outcome of the investigation and any corrective or remedial action necessary.

Step II – Appeal to Chairman of the Board – If the grievance is not resolved at Step I, the grievant may appeal the decision in writing to the Chairman of the Board. The written appeal can be sent or delivered to AAHS.

(a) The appeal must be made within five (5) school days following receipt of the principal's written response. The Chairman of the Board, or his designee shall review the complaint, the principal's response, and all information presented as part of the investigation, and meet with the individuals involved if necessary.

(b) Within 15 school days of receiving the appeal, the Chairman or his designee shall respond in writing summarizing the outcome of the appeal and any corrective or remedial action necessary.

Step III – Appeal to the Alabama Public Charter School Commission – If the grievance is not resolved at Step II, and it involves an alleged violation of state public charter policy or state or federal law or state rule, it may be appealed in writing to the Alabama Public Charter School Commission. The Commission's consideration of these appeals will take place according to the authorizing charter school contract.

HIGH SCHOOL

ATTACHMENT 21

Staff Structure

Staff Structure

Year	Year 0 21-22	Year 1 22-23	Year 2 23-24	Year 3 24-25	Year 4 25-26	Year 5 26-27	Capacity
Student enrollment	0	125	250	375	500	500	500
School Staff							
CEO	1	1	1	1	1	1	1
Principals	0	0	0	0	0	1	1
Director of Teaching and Learning	1	1	1	1	1	1	1
Director of Student Success	0	0	0	1	1	1	1
Director of Operations	1	1	1	1	1	1	1
Director of Community Engagement	0	0	1	1	1	1	1
Director of Work-Based Learning	0	0	0	1	1	1	1
Classroom Teachers (Core Subjects)	0	4	8	12	16	16	16
Classroom Teachers (Electives)	0	2 (.5)+1	3	4	6	6	6
Social Workers	0	0	1	1	1	1	1
Nurse	0	1	1	1	1	1	1
Sped support	0	1	1	2	3	3	3
Interventionists	0	0	1	2	3	3	3
ESL support	0	.5	1	1	1	1	1
Director of Child Nutrition	0	1	1	1	1	1	1
Cafeteria Support Staff	0	1	2	3	3	3	3
School Operations Support Staff	.5	1	3	3	3	3	3
Total Network FTEs	3.5	14.5	26	36	44	45	45

A cooperative approach will be taken in managing the relationship between Alabama Aerospace and Aviation High School's Leadership Team and the rest of the staff. The AAHS Leadership Team will include the CEO/Head of School, Director of Teaching and Learning, and the Director of Operations. The CEO/Head of School will report directly to the AAHSS Board of Directors. It is anticipated the Team will meet regularly to discuss, monitor, and track the direction of AAHS and its alignment with the school's mission, vision, and purpose. The CEO/Head of School, as the school leader, will be responsible for all aspects of day-to-day operations and administration of the school, within the scope of the Board of Directors' operating policy and in compliance with all state and federal guidelines for school operations. The Director of Operations will work directly with and report to the CEO/Head of School to ensure

effective management of the business model and reaching of the school's goals. The Director of Teaching and Learning will oversee and evaluate the instructional facility and staff. The Director of Teaching and Learning will establish and implement procedures for the day-to-day instruction including but not limited to procedures for curriculum and instruction, classroom management, discipline, faculty and staff evaluation, testing, parental communication, and professional development. The Director of Operations will conduct data analysis and oversee non-instructional support services, community outreach, facilities and internal financial controls, etc.

The Director of Teaching and Learning and the Director of Operations will deliver information from their departments to the CEO/Head of Schools, and create collaborative strategies for advancing AAHS. These strategies will be shared with the entire staff and other constituents and key stakeholders for suggestions, comments and additional ideas.

AAHS will maintain a teacher to student ratio of no more than 1 teacher to every 25 students in a given class section. In year 1 there will be one adult in the building for every 8 students. At full capacity there will be one adult for every 11 students in the building.

Staffing Plans, Hiring, Management, and Evaluation

Alabama Aerospace and Aviation High School employees will receive an annual employment contract, which outlines their terms of employment, annual pay, supervisor and job description. This contract will be eligible to be renewed every year and represents the defined expectations between AAHS and the employee.

Example Contract

CONTRACT OF EMPLOYMENT FOR TEACHERS

STATE OF ALABAMA
COUNTY OF BIRMINGHAM

This contract is entered into between the Alabama Aerospace and Aviation High School and:

NAME: _____ DATE CONTRACT ISSUED:_____
ADDRESS: _____ SOCIAL SECURITY NO: _____
SCHOOL YEAR: _____ POSITION: _____
HOME TEL. NO: _____ YRS. OF EXP.: _____
TERM OF CONTRACT: EFFECTIVE DATE OF CONTRACT: __July 1, 20__ until June 30, 20___

The above-named Teacher is hereby appointed to the position shown. Teacher understands that employment is with the Alabama Aerospace and Aviation High School ("School") for the Term of Contract stated hereinabove. The School may in its sole discretion offer the Teacher a new contract of employment for the ensuing year if it gives notice of its intention on or before June 1, 20__.

The above-named Teacher agrees to devote (his/her) time, attention, and energies to the business of the School and to use (his/her) best efforts, skills and abilities in performing the specific duties of such employment and to faithfully and efficiently perform the duties incumbent upon (him/her) and that may be assigned by the School. Teacher agrees to observe and abide by all applicable federal laws and the laws of the State of Alabama, the directives of the Board of Directors of Alabama Aerospace and Aviation High School, and the Principal of the School.

The School has the right to suspend or discharge, or otherwise discipline, Teacher for cause as shall be determined by the Board of Directors in its sole discretion. It is specifically understood that cause for suspension or discharge shall include but not be limited to: inadequacy of teaching, misconduct, neglect of duty, physical or mental incapacity, actions involving moral turpitude, violation of the terms of this Contract or School policy(ies), or conduct detrimental or reflecting poorly on the School or which impairs the Teacher's usefulness in his/her capacity as a teacher. Teacher's job description, salary and benefits shall be as stated Addendum #1 to this Contract which is incorporated herein as if copied herein in full. This Contract contains all the understandings and agreements between the parties concerning Teacher's employment, and Teacher acknowledges that Teacher may not orally or by conduct modify, delete, verify or

contradict, the terms and conditions set forth herein above unless contained in a mutual written agreement signed by the parties hereto. The Teacher acknowledges that

(1) he/she has read and understands all of the provisions of this Contract;
(2) he/she is entering into this Contract of his/her own free will;
(3) that this is the sole agreement between the parties and no other representations, be they oral or written, are binding between the parties; and,
(4) this Contract shall be governed by the laws of the State of Alabama law and that the Circuit Court of Sumter County, Alabama, shall be the sole venue for any lawsuits, claims or disputes related to this Contract.

THUS DONE AND SIGNED at Birmingham, Alabama, on the date(s) hereinbelow indicated.

Alabama Aerospace and Aviation High School

By:_____

Date:

_____
Teacher
Date:

At AAHS, we know that Teachers are the single most important within-school determinant of student learning, yet student's exposure to the most highly-effective educators can be a function of the neighborhood in which they live and the school to which they are assigned. With this understanding, our plan is to work with our Board of Directors to continue to design a competitive salary structure that will eventually include retention bonuses. UNC researchers have concluded that offering selective retention bonuses to the highest-rated teachers succeeded not only in increasing retention of highly-effective teachers in tested grades and subjects, but also in substantially elevating student performance in subsequent school years, especially in reading.

For the purposes of budgeting, we have assumed an average teaching salary of $47,500, which will allow a combination of new and experienced teachers that when averaged will be $47,500. For other staff positions, we have used market data for similar positions at local and regional (nearby state) charter schools. Salaries and wages are assumed to increase at least 2% year over year after the FY 2023. Any performance bonuses or incentives will always be subject to available resources. Compensation represents somewhere between 30% and 40% of total spending in a given year.

Employment benefits include all standard employer contributions towards Social Security and Medicare. We have also budgeted for providing health, unemployment, and workers compensation insurance, providing each employee with at least a $6,000 contribution towards health insurance coverage. AAHS has also budgeted employer contributions of 12.43% towards the TRS program for all staff starting in FY 2022. All in, employment benefits have been budgeted at about 34% of total salaries, and they represent somewhere between 11% and 13% of total spending in a given year.

Alabama Aerospace and Aviation High School will focus on hiring the most mission aligned and culturally competent staff available. Particular attention will be given to diversity, industry experience, vision and purpose, exposure to place-based learning, and the use of technology in the classroom. AAHS plans to recruit such staff by using the internet and social media to advertiseavailable positions and draw on its vast network of educators through its partnership with Tuskegee University. AAHS will also participate in regional career fairs, including those hosted by Tuskegee University. All available efforts will be made to encourage any local educators who are interested in available positions at AAHS to apply. The interview process will have multiple steps. First, interested applicants will complete an application and provide a resume and any college and graduate-level transcripts. Applicants will be encouraged to submit the application online and upload a resume. Second, following a review of applicants, qualified candidates will receive a phone interview to determine their fit within the AAHS mission, vision, and purpose. Third, an in-person interview will be scheduled where the candidate will prepare a lesson plan based on a "typical day" at AAHS and its curriculum. Fourth, top candidates will then be screened for background checks and reference checks in accordance with Alabama state law for educators. The CEO/Head of School and the Director of Teaching and Learning will be responsible for managing the interview process. The final decision on hiring will be based upon the recommendation of the CEO/Head of School and approved by the AAHS Board of Directors. It is anticipated if Alabama Aerospace and Aviation High School receives its Charter, it will immediately begin the process of recruiting interested teaching staff.

Alabama Aerospace and Aviation High School shall comply with all applicable federal laws, rules, and regulations regarding the qualifications of teachers and other instructional staff. AAHS acknowledges that, after approval, AAHS teachers shall be exempt from state teacher certification requirements. Furthermore, the AAHS acknowledges that the approaches to earning Alabama Educator and/or Leadership Certification shall be the same as those for individuals in the public local education agencies in Alabama.

The Alabama Aerospace and Aviation High School will follow the following hiring procedures for school personnel:

1. Advertise position for a minimum of five business days;
2. Follow the interview process as outlined above;
3. Select most qualified applicant(s) and make offer of employment; and
4. Enter into an employment contract and provide orientation to new employees.

Alabama Aerospace and Aviation School will implement a progressive discipline policy while attempting to educate the employee simultaneously. This policy, which will be incorporated into employment materials at a later date, will follow the following dismissal procedures:

1. Verbal Warning. A Verbal Warning will be used in situations involving minor infractions or early signs of poor work performance. Multiple Verbal Warnings may be used in situations where the conduct is of a minor nature. For major issues/infractions, Verbal Warnings may not be appropriate.

2. Written Warning. A Written Warning will be used in situations involving repeated minor infractions following the use of Verbal Warnings, or for more serious infractions. For major issues/infractions, Written Warnings may not be appropriate.

3. Performance Improvement Plan / Final Warning. A Performance Improvement Plan and/or Final Warning may be used in situations of repeated minor infractions or for more serious and major infractions. This step will incorporate the Principal / Head of School and applicable supervisors in determining a course of action to improve the employee's work performance by a certain date. If proper improvement has not been made by date certain, termination may be recommended. A Performance Improvement Plan / Final Warning may not be appropriate for major issues/infractions.

4. Suspension. Suspension may be used for repeated minor infractions or for more serious and major infractions. Suspensions may be in length up to 14 days.

5. Termination. Termination may be used in situations of repeated minor infractions or for more serious and major infractions. The Principal / Head of School will make the decision on termination of the employee after consulting with the employee, supervisors and other interested parties. An employee terminated will have the right to appeal to the AAHS Board of Directors to have the termination overturned.

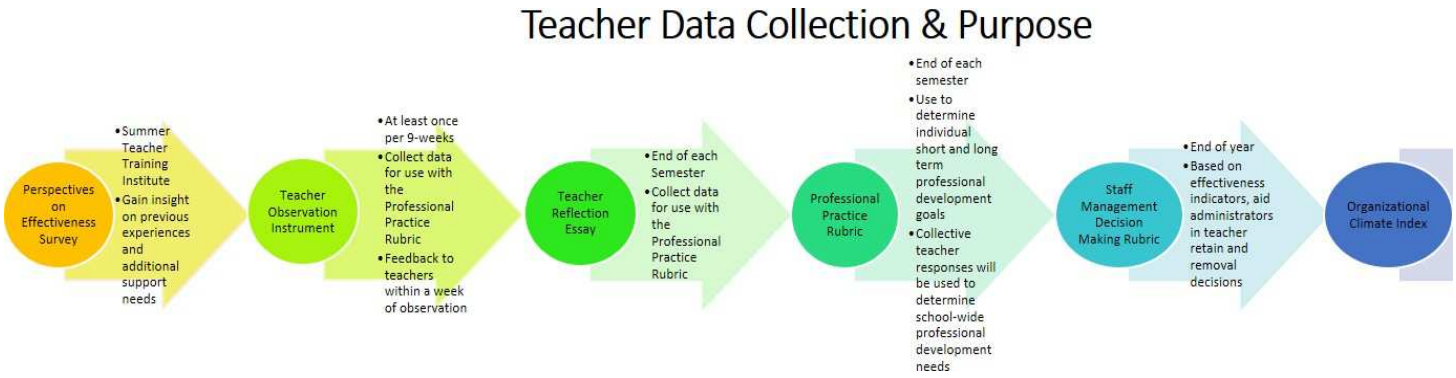
Alabama Aerospace and Aviation High School acknowledges an understanding of the ALSDE, Educator Certification Section, and criminal background check process. AAHS agrees to comply with this process and will implement the necessary steps to ensure such compliance.

Furthermore, AAHS shall be subject to the same civil rights, health, and safety requirements, including, but not limited to, state and local public health and building codes, employee fingerprinting, and critical background checks applicable to other public schools in the state, except as otherwise specifically provided for in the Act.

Alabama Aerospace and Aviation High School's leadership team will be coached, supported, and evaluated in a number of ways. The Director of Teaching and Learning and The Director of Operations will be coached and evaluated on a regular and consistent schedule by the CEO/Head of School. Regular formative feedback will be provided through weekly check-ins and joint observations. The DOTL and the DOO will be formally evaluated twice a year by the CEO/Head of School.

The AAHS Board of Directors will conduct a formal evaluation of the CEO/Head of School every Spring. A CEO Support/Evaluation committee will be formed that will be charged with creating or adopting a comprehensive evaluation tool that encompasses feedback from board members, staff, parents, leadership team members, students, and a third-party consultant to ensure AAHS has a highly effective leader.

AAHS believes in "Knowing and Growing". It also recognizes that teachers are the single most important school-level factor influencing student achievement. Teacher effectiveness should consider questions that relate to the professional experiences and supports that effective teachers themselves view as critical for equipping teachers with the skills and knowledge they need to help their students succeed. AAHS's evaluation plan will include a multi-tiered teacher data collection and analysis process based on instructional planning and delivery, data management, classroom management, student learning gains, and school climate connections.



Instrument Descriptions

Great Teachers to Leaders-Teacher Perspectives on Factors Influencing Effectiveness Survey

Teacher Observation Instrument

Using teacher observations to collect data tied to teacher effectiveness, AAHS will provide timely, explicit feedback to its teachers. Observation feedback will help AAHS identify teacher support needs; it will also help teachers reflect on practice and develop short- and long-term goals for self-improvement.

Professional Practice Rubric

AAHS will use an objective approach in analyzing teacher performance. The Professional Practice Rubric considers the following:

- Instructional planning encompasses decisions based on the standards combined with knowledge of the disciplines taught, research-based professional practices, and the students who are to learn the curriculum.
- Assessments can motivate the unmotivated, restore the desire to learn, encourage students to keep learning, and ultimately increase student achievement.
- Specific learning objectives that are essential to direct student learning and measure student progress are established and communicated.
- The delivery of instruction is such that learners are actively engaged with the content.
- Learning activities and materials provide coherent, relevant learning experiences that evoke and develop the desired understandings, promote interest, and lead to excellent performance.
- Students are intentionally placed into groups so they experience multiple ways of thinking, receive more feedback, and engage in higher levels of discussion and interaction.
- Time, structure, and routines are blended together to create a framework for the effective delivery of a lesson.
- The physical environment acts as an important resource for learning and provides flexibility in organizing students and activities.
- The classroom climate is positive. Everyone shows respect to one another; the learning environment is caring and supportive.

Staff Management Decision Making Framework

AAHS believes in the fair treatment of its faculty. The decision to retain or dismiss teachers will be based on an objective approach using several factors, including those tied to peer, student, and parent

engagement. One important factor is whether AAHS provided timely, corrective feedback and professional development. AAHS will demonstrate its commitment to supporting teachers by providing opportunities to enrich teaching practices tied to student performance. Evidence of this commitment will be considered during the decision-making process.

Organizational Climate Index (OCI)

AAHS will use teacher feedback on the OCI in evaluating the overall school climate to make revisions to school plans and to identify additional teacher and student supports, The Organizational Climate Index (OCI) is a short organizational climate descriptive measure for schools. The index has four dimensions — principal leadership, teacher professionalism, achievement press for students to perform academically, and vulnerability to the community. The index captures open and healthy dimensions of high school climates. Different dimensions of high school climate explain distinct aspects of faculty trust-faculty trust in colleagues, in principals, and in (students and parents).

AAHS will act in the best interests of the students and understands that, unfortunately, there will be occasions where there is unsatisfactory instructional leadership/administrator or educator performance. In such situations where there is unsatisfactory performance, a performance improvement plan will be created. The CEO/Head of School and Director of Teaching and Learning will be responsible for implementing a corrective plan. The plan will be based on the data driven approaches and proven best practices. Plans could include school-wide plans, grade level corrective plans, and subject area and/or individual teacher corrective plans. Each plan will be prescriptive based on the needs.

Corrective actions could include:

- Termination
- Placement on a School Improvement Plan
- Mentor teacher provided for additional support
- On-going professional development

Alabama Aerospace and Aviation High School understands there will also be changes and turnover with educators and administrators. To address this obvious concern, AAHS will look to build leaders and administrators from within its educator ranks. AAHS will work to ensure decision making is shared throughout the educator ranks with the use of an Instructional Leadership Team. Additionally, AAHS will focus on hiring from within and creating additional leadership roles, when possible, to reward deserving and promising educators. Promising educators will be given multiple opportunities to observe, participate and lead activities to better prepare them for administrative positions. AAHS will also constantly work with its educators in professional development and career building exercises to address the educator's goals and needs in an effort to provide the educator self-fulfillment and growth. Through this multi-faceted approach, the AAHS hopes to address the concerns with unsatisfactory instructional leadership/administrator or educator performance, as well as instructional leadership, administrator, and/or educator changes and turnover.

HIGH SCHOOL

ATTACHMENT 22
AAHS Employee Manual

Mission Statement

At AAHS, our mission is to provide a diverse group of students rigorous, authentic, industry-aligned STEM education as well as the leadership skills necessary to pursue careers in the aerospace and aviation industry.

Vision Statement

Our vision is to create clearly defined pathways into aviation and aerospace careers for all students creating a diverse pipeline of future industry leaders. AAHS will be located at the Southern Museum of Flight campus in the heart of the East Lake neighborhood serving approximately 520 students grades 9-12 at full capacity. The school will begin with a founding Freshman class of 125 “Young Aviation Professionals.

The purpose of the Alabama Aerospace and Aviation High School Employee Manual is to provide employees with general information and specific policies which relate to employment. The Human Resource Services staff values employee feedback and input. Please contact Human Resources at Phone Number, or email address,regarding the content of this Manual or to make suggestions for the next revision.

Employee Handbook Disclaimer Statements

The Alabama Aerospace and Aviation High School Employee Manual is provided as a guide and is not meant to create, nor should it be construed as creating, a contract of employment. Alabama Aerospace and Aviation High School reserves the right to make changes to the policies, procedures and other statements made in the Employee Manual. Organizational needs, charter, federal, and state law are constantly in flux and may require portions of the handbook to be rewritten.

Equal Opportunity

Alabama Aerospace and Aviation High School affirms adherence to equal access / equal opportunity in accordance with all relevant state and federal laws, rules, and regulations. Discrimination on the basis of race, national origin, sex, age, veteran status, disability, or marital status against a student or employee is strictly prohibited. The Equal Opportunity supervisor responsible for compliance is Name; he/she may be contacted by calling Phone Number.

Employment Policies & Procedures- Page 5-22+

ABSENT WITHOUT LEAVE POLICY

Administrative and instructional - Any member of the administrative or instructional staff who is willfully absent from duty without leave shall forfeit compensation for the time of the absence and the employee's contract shall be subject to cancellation by the Board of Directors. Any other employee who is willfully absent from duty without leave shall be subject to dismissal from employment and shall forfeit compensation for the time of the absence. If an employee fails to report for duty for three (3) consecutive working days, and is not on approved leave, the employee will be determined to have abandoned his/her position and the employee will be subject to termination.

ALCOHOL AND DRUG-FREE WORKPLACE POLICY

No employee of the Board of Directors shall manufacture, distribute, dispense, possess, or use on or in the workplace any drug as defined in this policy. As a condition of employment, each employee shall notify his or her supervisor of his or her conviction of any criminal drug statute for a violation occurring in the workplace no later than forty-eight (48) hours after such conviction. Any employee who violates the terms of this policy may be subject to non-renewal of his or her contract or employment or he or she may be disciplined, suspended or terminated. When an employee has a positive confirmed drug test, such action by the Board of Directors will be considered to be for cause. When a job applicant has a positive confirmed drug test, or otherwise violates the terms of this policy, the Board of Directors may refuse to hire the applicant and such refusal to hire will be considered to be for cause. The Board of Directors will not discharge, discipline, or discriminate against an employee solely upon the employee's voluntarily seeking treatment, while under the employ of the Governing Board, for a drug-related problem if there has been no communication to the employee of a demand for a drug test and the employee has not previously tested positive for drug use, employee enters an employee assistance program for drug-related problems, or an alcohol and drug rehabilitation

program. An employee's request for voluntary treatment under these conditions does not constitute reasonable suspicion for ordering a drug test.

(The intent is to allow an employee one (1) opportunity to voluntarily seek treatment for a substance abuse problem.)
A drug-free awareness program is hereby established, and is to be implemented by the Governing Board, to inform employees of the dangers of drug abuse in the workplace, of the Governing Board's policy of maintaining a drug-free workplace, of available drug counseling, rehabilitation, and assistance programs, and of the penalties to be imposed upon employees for drug abuse violations occurring in the workplace. As a part of this program, all employees and applicants for employment will be given notice of Governing Board's policy regarding the maintenance of a drug-free workplace. Except where the context otherwise requires, and as used in this policy: Drug means alcohol, including distilled spirits, wine, malt beverages and intoxicating liquors; amphetamines; cannabinoids; cocaine; phencyclidine (PCP); hallucinogens; methalqualone; opiates; barbiturates; benzodiazepines; synthetic narcotics; designer drugs; or, a metabolite of any of the substances listed herein."Initial drug test" means a sensitive, rapid, reliable procedure to identify negative and presumptive positive specimens using an immunoassay procedure or an equivalent, or a more accurate scientifically accepted method approved by the United States Food and Drug Administration or the Agency for Health Care Administration until such time as a more accurate technology becomes available in a cost-effective form. "Confirmation test, confirmed test, or confirmed drug test" means a second analytical procedure used to identify the presence of a specific drug or metabolite in a specimen. The confirmation test must be different in scientific principle from that of the initial test procedure and must be capable of providing requisite specificity, sensitivity, and quantitative accuracy. (The confirmation test for alcohol will be gas chromatography and the confirmation test for all other drugs will be gas chromatography/mass spectrometry.) "Prescription or non-prescription medication" means a drug or medication obtained pursuant to a prescription as defined by Alabama law or a medication that is authorized pursuant to Federal or State law for general distribution and use without a prescription in the treatment of human diseases, ailments or injuries. "Specimen" means tissue, hair, or a product of the human body capable of revealing the presence of drugs or their metabolites, as approved by the United States Food and Drug Administration or Agency for Health Care Administration. "Workplace" is the site of the performance of work done in connection with employment. That includes any school building or any school premises; any vehicle owned, leased, rented or used on official business by the Governing Board; and any vehicle used to transport students to and from school and school activities off school property during any school-sponsored or school activity, event or function, such as field trip or athletic event, where students are under the jurisdiction of the School. The Employee Health Care Program or a similar Board of Directors approved drug abuse assistance or rehabilitation program. The Board of Directors will communicate to the employee prior to

conducting the drug test the reasons for ordering the test and will conduct drug testing in the following circumstances:

JOB APPLICANT DRUG TESTING: This drug testing will be required of all job applicants selected for employment. Refusal of the job applicant to submit to a drug test is a basis for refusal to hire any applicant for a period of six (6) months from the date of the receipt of the test results. The following will also be considered a refusal:

Failure to complete and sign testing form(s), to provide an adequate specimen, or otherwise to cooperate with the testing process in a way that prevents the completion of the test will be considered a refusal to test and will be deemed a positive test result. Any attempt to alter a specimen or provide a specimen that is altered will also be considered a refusal to test and will be deemed a positive test result. Any obstruction to, or lack of cooperation with, the testing process will be considered a refusal to test and deemed a positive test result.

Failure or refusal to be available for testing within twenty-four (24) hours may be deemed a refusal to submit to testing and is a basis for refusal to hire an applicant for a period of six (6) months from the date of the refusal.

Special consideration will be given when there is a complication with the test results, because of special medical condition. The information for Special Handling Collection will be provided when the applicant signs the drug referral form.

REASONABLE SUSPICION DRUG TESTING: This drug testing is based on a belief that an employee is using or has used drugs in violation of the Governing Board's policy drawn from specific objective and articulable facts and reasonable inferences drawn from those facts in light of experience. Among other things, such facts and inferences may be based upon:

Observable phenomena while at work, such as direct observation of drug use or the physical symptoms or manifestations of being under the influence of a drug.

Abnormal conduct or erratic behavior while at work or a significant deterioration in work performance.

A report of drug use in the workplace, provided by a reliable and credible source.

Evidence that an individual has tampered with a drug test during his employment with the Governing Board.

Evidence that an employee has caused or contributed to an accident while at work.

Evidence that an employee has used, possessed, sold, solicited, or transferred drugs while working or while on any Board of Directors premises or while operating a Board of Directors vehicle, machinery or equipment.

FITNESS FOR DUTY DRUG TESTING: The Board of Directors will require an employee to submit to a drug test if the test is conducted as part of a routinely scheduled employee fitness for duty medical examination that is part of or becomes part of the Governing Board's established policy or that is scheduled routinely for all members of an employment classification or group.

FOLLOW-UP DRUG TESTING: This type of test will be required if the employee, in the course of employment, enters an employee assistance drug-related programs or an alcohol or drug rehabilitation program, unless the employee voluntarily entered the program. Such an employee will be required to submit to a drug test, as a follow-up to such a program on a quarterly, annual or semi-annual basis for up to two (2) years thereafter. No advance notice of the follow-up testing date will be given to the employee. The following procedures shall apply to drug testing under this policy:

Samples shall be collected with due regard for the privacy of the individual providing the sample, and in a manner reasonably calculated to prevent substitution or contamination of the sample.

Specimen collection shall be documented and the documentation procedures shall include:

- o Labeling specimen containers so as to reasonably preclude the likelihood of erroneous identification of test results; and,

- o A form for the employee or job applicant to provide any information he may feel is relevant to the test. Such information may include currently or recently used prescription or non-prescription medication or any other relevant medical information. The form must provide notice of the most common medications by brand name or common name, as applicable, as well as by chemical name, which may alter or affect a drug test. Providing such information shall not preclude the administration of a drug test, but shall be taken into account in interpreting any positive results.

- o Specimen collection, storage and transportation to the testing site shall be performed in a manner in which will reasonably preclude specimen contamination or adulteration.

o The Board of Directors will use a certified medical review officer (include name and address, telephone number in your policy). The MRO will be responsible for: Interpreting the drug test results.Contacting the employee if the initial drug test is positive. The MRO will contact the donor who has a positive test result before reporting the results of the test to the employer. Within 5 days of notification of the positive test result, the applicant/employee will have an opportunity to discuss the results and to submit documentation of any prescriptions relevant to the test results. The applicant/employee is responsible for providing all necessary documentation to the MRO within the 5-day period after notification of the test results. The MRO determines there is a legitimate explanation for the test result showing positive (i.e.,legal use of prescription or prescription medication), as determined by the MRO, the MRO will report the test result as negative to the Governing Board. The MRO cannot be an employee of the testing laboratory. If the MRO is unable to contact an applicant/employee who tested positive within 3 working days of receipt of the test results from the laboratory, the MRO will contact the Board of Directors and request the Board of Directors to direct the applicant/employee to contact the MRO. If the applicant/employee fails to contact the MRO within 2 working days from the MRP's request to the Governing Board, the MRO will verify the test as positive.

o Each initial and confirmation test, not including the taking or collecting of a specimen to be tested, shall be conducted by a licensed laboratory.

o Specimens for drug testing may be collected or taken by any of the following persons: A physician, a physician's assistant, a registered professional nurse, a licensed practical nurse, or a nurse practitioner. A certified paramedic who is present at the scene of an accident for the purpose of rendering emergency medical services or treatment.A qualified person employed by a licensed laboratory who has the necessary training and skills for the assigned tasks.

A person who collects or takes a specimen for a drug test will collect an amount sufficient for two drug tests as determined by the Agency for Health Care Administration.
A drug test may be conducted at any reasonable time during the employee's work day.
Every specimen that produces a positive test result must be preserved by the licensed or certified laboratory that conducted the test for a period of at least 210 days after the result of the test was mailed or otherwise delivered to the MRO. If the employee or job applicant challenges the test result, the laboratory is to retain the sample until the case is settled.
The employee or job applicant has 180 days after receiving written notification of a positive test result, and to have the sample retested at his or her expense at another laboratory that is

licensed and approved by the Agency for Health Care Administration chosen by the employee or job applicant. Within five (5) working days of the receipt of a positive confirmed test result from the MRO, the Board of Directors or designee will inform the employee in writing of such positive test result, the consequences of such results, and the options available to the employee or job applicant. The Board of Directors will provide to the employee or the job applicant, upon request, a copy of the test results. Within five (5) working days after receiving notice of a positive confirmed test result, the employee or job applicant may submit information to the Board of Directors explaining or contesting the test results and why the results do not constitute a violation of the Governing Board's policy.

If an employee's or job applicant's explanation or challenge of the positive test results is unsatisfactory to the Governing Board, within fifteen (15) days of receipt of the explanation or challenge, the Board of Directors shall issue to the employee or job applicant a written explanation as to why the employee's or applicant's explanation is unsatisfactory, along with a report of positive results, and all such documentation shall be kept confidential by the Board of Directors pursuant to the confidentiality section of this policy and shall be retained by the Board of Directors for at least one year. The Board of Directors may not discharge, discipline, refuse to hire, discriminate against, or request or require rehabilitation of an employee or job applicant on the sole basis of a positive test result that has not been verified by a confirmation test and by a Medical Review Officer. If an initial drug test is negative, the Board of Directors may, at its sole discretion, seek a confirmation test, to be conducted by licensed or certified laboratories as described elsewhere in this policy.

All positive initial tests shall be confirmed by the MRO by using gas chromatography/mass spectrometry (GC/MS) or an equivalent or more accurate scientifically accepted method approved by the Agency for Health Care Administration or the United States Food and Drug Administration as such technology becomes available in a cost-effective form.
If an employee has a confirmed-positive test result for an alcohol level or an unlawful drug or substance, the employee may be subject to disciplinary action up to and including termination of employment, consistent with the applicable collective bargaining agreement, if applicable.
If testing is conducted based on reasonable suspicion, within seven (7) days after testing of an employee has been completed, the Board of Directors will promptly detail, in writing, the circumstances which formed the basis of the determination that reasonable suspicion existed to warrant the testing. A copy of this documentation shall be given to the employee upon request, and the original documentation shall be kept confidential by the Board of Directors pursuant to the confidentiality provisions of this policy and retained by the Board of Directors for at least one Year. When an employee refuses to submit to a drug test, the Board of Directors authorizes the Principal or designee to take appropriate action including, but not limited to, disciplinary action up to and including dismissal from employment with the Board of Directors of that employee.

There is no physician/patient relationship created between an employee or job applicant and the Board of Directors or any person performing or evaluating a drug test solely by the establishment, implementation, or administration of this drug testing program. Nothing in this policy shall be construed to prevent the Board of Directors from establishing reasonable work rules related to an employee's possession, sale or solicitation of drugs, including convictions for drug-related offenses, and taking action based upon any violation of those rules. Nothing in this policy will be construed to prohibit the Board of Directors from conducting medical screening or other tests required by any statute, rule, or regulation for the purpose of monitoring exposure of employees to toxic or other unhealthy substances in the workplace or in performance of job responsibilities. Such screening tests shall be limited to the specific substances expressly identified in the applicable statute rules or regulations, unless prior written consent of the employee is obtained for other tests. Special categories of employees, primarily transportation employees, may be subject to separate and/or additional policies.

APPROVAL OF LEAVES POLICY

All requests for leave shall be submitted on the proper form and shall be approved either by the Board of Directors or the Principal as provided herein:

The following types of leave require approval of the Governing Board:

- Any compensated leave in excess of ten (10) consecutive days
- Extended Illness Leave or Disability Leave including Maternity Leave in excess of ten (10)
- consecutive unpaid days
- Military Leave in excess of seventeen (17) days
- Personal Leave in excess of ten (10) consecutive unpaid days
- Illness or Injury in Line-of-Duty Leave in excess of ten (10) days
- Leave to seek political office
- Professional Leave in excess of ten (10) days
- Sabbatical Leave
- Family and Medical Leave
- The Principal is authorized to grant the following types of leave:
- Sick Leave or unpaid sick leave not to exceed ten (10) days
- Personal Leave not in excess of ten (10) days
- Personal Leave chargeable to sick leave
- Annual Leave
- Professional Leave not to exceed ten (10) days

- Jury Duty assignment
- Military Leave not to exceed seventeen (17) days
- Witness Duty absence
- Temporary Duty

CERTIFICATION OF INSTRUCTIONAL PERSONNEL

Certification of instructional personnel is handled through the CEO/Head of School and Governing Board. A valid Educator's Certificate is required for all teachers. Exceptions may be granted to highly-skilled individuals teaching specialized courses. Each instructional employee must secure and update his or her certificate. Newly-hired teachers, teachers who have a change in their certification status, and teachers who have renewed their special certificates must file their valid certificates and their official transcripts of credits with the Human Resource staff.

CHANGE OF NAME AND/OR ADDRESS

Changes in personal information – such as name, address and phone number – must be reported to Human Resources staff. Human Resource staff is the only department authorized to access employee personal information. Name changes must be handled through your HR staff. Please email the appropriate HR staff for more information regarding the process to complete a name change.

CIVILITY POLICY

Employees of AAHS will treat parents and other members of the public with respect and expect the same in return. The Board of Directors must keep schools and administrative offices free from disruptions and prevent unauthorized persons from entering school grounds.Accordingly, this policy promotes civility, mutual respect, and orderly conduct among employees, parents, and the public. It is not the intent of this policy to deprive anyone of his or her right to freedom of expression. Rather, we seek to maintain, to the extent possible and reasonable, a safe, harassment-free workplace for our students and staff. In the interest of promoting teachers and other employees as positive role models, we encourage positive communication and discourage volatile, hostile, or aggressive actions. This school seeks public cooperation with this endeavor. Disruptive Individual Must Leave School Grounds. Any individual who:

(1) disrupts or threatens to disrupt school/office operations;
(2) threatens to or attempts to do or does physical harm to school personnel, students or others lawfully on school or Board of Directors premises;

(3) threatens the health and safety
of school personnel, students, or others lawfully on school or school premises;
(4) intentionally causes
damage to school or school property, or property of others lawfully on school or school premises;
(5) uses loud and/or offensive language; or
(6) has without authorization come on school or school premises will be directed to leave school or school property promptly by the school's principal or designee, or any school administrator. If the person refuses to leave the premises as directed, the administrator or other authorized personnel shall seek the assistance of law enforcement and request that law enforcement take such action as is deemed necessary. Directions to Staff in Dealing with Abusive Individual. If any member of the public uses obscenities or speaks in a demanding, loud, insulting, and/or demeaning manner, the administrator or employee to whom the remarks are directed will calmly and politely warn the speaker to communicate civilly. If the abusive individual does not stop the behavior, the employee will verbally notify the abusing individual that the meeting, conference, or telephone conversation is terminated; and, if the meeting or conference is on school or school premises, the employee shall direct the abusive individual to leave promptly. If the person refuses to leave the premises as directed, an administrator or other authorized personnel shall seek the assistance of law enforcement and request that law enforcement take such action as is deemed necessary.

CODE OF ETHICS POLICY

An effective educational program requires the services of men and women of integrity, high ideals, and human understanding. Members of the Board, Instructional Personnel and School Administrators, and all other employees, regardless of their position, collective bargaining status or role, because of their dual roles as public servants and educators, are bound by this policy. All employees acknowledge receipt of this policy, which is designed to create a culture of honesty and integrity that will help AAHS meet the goal of providing a safe environment and high quality education to all of the students. The purpose of this policy is to promote the highest level of ethical conduct on the part of all employees associated with AAHS to ensure the highest public confidence in the impartiality and independent judgment of all employees and to provide guidance concerning ethics-related matters. All Instructional Personnel and School Administrators shall adhere to the Code of Ethics. All Administrative, instructional, and non-instructional personnel shall familiarize themselves with the Code of Ethics for Public Officers and Employees. All employees shall abide by the Code at all times, and shall be held to the standards of the Code in all matters related to their employment with AAHS. No employee shall engage in conduct unbecoming of an employee of AAHS that brings the school into

disrepute or that disrupts the orderly processes of the school. All Instructional Personnel and School Administrators shall adhere to the principles enumerated above and shall be required to complete training on the standards established herein. All employees are required to report employee misconduct and known or suspected violations of Board policy to the Principal. In the event an employee is directed by a supervisor to perform any act that will result in a violation of Board policy, the employee is hereby directed to ignore any such requests and report the requested to the Board.

DATA NETWORK ACCEPTABLE USE POLICY

The data network systems of the school are available for employees and students in order to provide them with access to the computing resources which serve public education. All personnel having authorization to use the computer network will have access to a variety of information. Some material on the network might not be considered to be of educational value in the context of the school setting. In addition, some material, individual contacts or communications may not be suitable for school-aged children. The school views information retrieval from the network in the same capacity as information retrieval from reference materials identified by schools. Specifically, the Schools supports those which will enhance the research and inquiry of the learner with directed guidance from faculty and staff. Each student's access to use of the network will be under staff direction and monitored as a regular instructional activity. The School notices shall be conspicuously posted electronically or as hard copies that state the following: Users of the data network system of the Alabama Aerospace and Aviation High School are responsible for their activity on the network. The School has developed a data network acceptable use policy. All users of the computer networks are bound by that policy. Any violation of the policy will result in the suspension of access privileges or other disciplinary action, including student expulsion and employee dismissal. The use of computer networks shall be consistent with the mission, goals, policies, and priorities of the School. Successful participation in computer networks requires that its users regard it as a shared resource and that members conduct themselves in a responsible, ethical, and legal manner while using the computer networks. Any use of computer networks for illegal, inappropriate, or obscene purposes, or in support of such activities, will not be tolerated. The following are examples of unacceptable use of telecommunications resources.

Users must not:

- Send or display offensive messages or pictures.
- Use obscene or abusive language.
- Harass, insult, or attack others.
- Damage computers, computer systems, or computer networks.

- Violate copyright law or plagiarize.
- Share accounts or passwords.
- Leave computer unattended while logged on.
- Use for private, commercial or illegal purposes.
- Use for anonymous communications.
- Circumvent security measures on school or remote computers or networks.
- Post personal information about yourself or others.
- Agree to meet with anyone you have met on-line.
- Intentionally waste limited resources.

Failure to adhere to this policy may result in suspending or revoking the offender's privilege of access to computer networks and other disciplinary action up to and including termination of the employee or expulsion in the case of a student. Any student shall be exempt from instruction or use requiring accessing computer networks upon request in writing from the parents or guardians to the principal. The request for exemption shall expire at the end of each school year. It shall be the responsibility of the parent or guardian to renew the request yearly.

DISCRIMINATION PROHIBITED POLICY

No person shall, on the basis of race, color, religion, sex, age, national or ethnic origin, marital status, qualified handicap or disability, or social or family background be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity, or in any employment conditions or practices conducted by this School, except as provided by law. The Board of Directors shall admit students to the school and program without regard to race, color, religion, sex, age, national or ethnic origin, marital status, qualified handicap or disability, or social and family background.

EDUCATIONAL PARAPROFESSIONALS AND INSTRUCTIONAL ASSISTANTS POLICY

Teacher assistants and paraprofessionals are persons assigned by the Board to assist instructional staff members in performing his/her instructional or professional duties or responsibilities. A paraprofessional has additional responsibilities consistent with the requirements of any applicable laws. The conditions of employment of a teacher assistant or paraprofessional shall be governed by Board policy and shall include the following:

A teacher assistant shall have a high school diploma or hold a high school equivalency diploma issued pursuant to State Board of Education rules.

A paraprofessional shall meet one of the following requirements:
o Hold an associate's or higher degree.
o Two (2) years of study at an institution of higher education (60 hours), or
o A rigorous state or local assessment of knowledge of and the ability to assist in instruction in reading, writing, and mathematics or reading readiness, writing readiness, or mathematics readiness.
o Be at least eighteen (18) years of age.
o Present a complete set of fingerprints taken by a law enforcement agency or properly trained School personnel and the appropriate processing fee. The fingerprints shall be acceptable for processing by the Alabama Department of Law Enforcement and the Federal Bureau of Investigation. The Department of Personnel shall initiate a records check by the two (2) agencies.
o A pre-employment drug test shall be required of all non-instructional applicants recommended for hire.

The principal shall assure that the teacher assistant or paraprofessional assigned to the school possesses a clear understanding of state and school rules relating to his or her responsibilities and to the safety, welfare, and health of students. It shall be the principal and the instructional staff member's responsibility to ascertain that a teacher assistant or paraprofessional possesses the necessary knowledge about rules to perform duties of a special nature in a proper and reasonable manner. It shall be the principal's responsibility to assure the Board that each teacher assistant or paraprofessional possesses a clear understanding of all state and school instructional practices and rules relevant to his or her responsibilities if he/she is expected to assist a teacher in promoting learning activities. When a teacher assistant is assigned duties requiring knowledge of instructional practices and policies or providing prescribed physical care for students of a specialized nature, it is the instructional staff member's responsibility to ascertain in advance whether the teacher assistant possesses the necessary knowledge and skills. The teacher assistant or paraprofessional shall complete a period of supervised practice when assigned to a new instructional staff member or assigned a type of duty which he/she has not previously performed. The length of such supervised practice may vary depending upon previous experiences of the teacher assistant or paraprofessional. A record shall be maintained in the school to show the length, nature, and inclusive dates of each supervised practice assignment for each teacher assistant or paraprofessional. A teacher assistant or paraprofessional shall not perform any of the following:

Establish instructional objectives;
Render decisions regarding the relevancy of certain activities or procedures to achieve instructional objectives;

Make decisions regarding the appropriateness of training materials for accomplishing instructional objectives;
and, Evaluate a student's attainment of instructional objectives unless clear and objective criteria such as a specific achievement standard on an objective test are defined.

The principal and instructional staff members who are assigned teacher assistants or paraprofessionals personnel shall be responsible for assigning duties which are consistent with State Board of Education rules, Board of Directors rules and other controlling regulations.

EMPLOYEE DISCIPLINE PLAN POLICY

To Be Determined by AAHS's Board of Directors

EMPLOYMENT DEFINED POLICY

Full-time. A regular full-time employee is a person who is employed for the school term or for the school fiscal year to render the minimum number of hours each day as established by the Board for that position or job. Part-time. A part-time employee is a person who is employed to render less than the number of hours each day as established by the Board for a regular full-time employee. Temporary. A temporary employee is a person whose employment is expected to be for a limited time to fill a vacancy for which a permanent employee is not available or to perform some work of a temporary nature. Such employment will cease at the close of the school term or school fiscal year or when the temporary work has been completed. A temporary employee may be a part-time or a full-time employee.

EMPLOYMENT OF PERSONNEL POLICY

All personnel shall be appointed or re-appointed as prescribed by Board of Directors rules.
The Principal is directed to develop appropriate employment procedures governing the recruitment, selection, appointment and employment of all personnel consistent with Board of Directors rules.

FINGERPRINTING AND BACKGROUND SCREENING POLICY

To Be Determined by AAHS's Board of Directors

IDENTIFYING & REPORTING PROFESSIONAL MISCONDUCT

To Be Determined by AAHS's Board of Directors

INJURIES – WORK-RELATED

Employees should immediately report all work-related injuries to their supervisor. State law requires injuries to be reported in writing (First Notice of Injury). Minor First Aid Treatment – First aid kits are kept in the front office and in the employee lounge. If an employee sustains an injury or is involved in an accident requiring minor first aid treatment: Inform the supervisor.
Administer first aid treatment to the injury or wound. If a first aid kit is used, indicate usage on the accident investigation report. Access to a first aid kit is not intended to be a substitute for medical attention. Provide details for the completion of the accident investigation report.
Non-Emergency Medical Treatment – Management must first authorize treatment for non-emergency work-related injuries requiring professional medical assistance. If an employee sustains an injury requiring treatment other than first aid:
Inform the supervisor
Proceed to the posted medical facility. Supervisors will assist with transportation, if necessary.
Provide details for the completion of the accident investigation report.
Emergency Medical Treatment – If an employee sustains a severe injury requiring emergency treatment:
Call for help and seek assistance from a co-worker.
Use the emergency telephone numbers and instructions posted next to the telephone in your work area to request assistance and transportation to the local hospital emergency room.
Provide details for the completion of the accident investigation report.

GUIDELINES FOR EMPLOYEE USE OF SOCIAL MEDIA NETWORKS

To Be Determined by AAHS's Board of Directors

GRIEVANCE PROCEDURE FOR PERSONNEL POLICY

The Board of Directors and CEO/Head of School shall strive to maintain good morale among its employees and, as problems arise, shall encourage all individuals concerned to make sincere efforts in working toward constructive solutions of problems in a courteous and cooperative atmosphere. When a Board employee voices a complaint, every effort shall be made to informally arrive at a satisfactory resolution of the problem, while maintaining confidentiality to the extent possible. Formal procedures as provided herein shall be used if informal procedures do not produce a satisfactory resolution of the employee's problem. The provisions herein shall

not prohibit any employee from contacting any Board member, the Principal, or both about any school problem of the employee. This grievance procedure is separate and has no relation to any grievance procedure which may be contained in any bargaining agreement between the Board and the recognized collective bargaining unit(s). A complaint shall be defined as a claim by a Board employee of unfair or inequitable treatment by reason of an act or condition which is contrary to established Board rules, procedures, or regulations.

A Board employee who has a complaint shall contact his/her immediate administrative supervisor and explain the complaint and desired action to relieve the situation. If the complaint is against the employee's immediate supervisor, then the employee should contact the appropriate Human Resources staff. If the complaint is not resolved, the employee shall take the following steps:

Write a letter to the immediate administrative supervisor explaining the grievance. The immediate administrative supervisor shall have two (2) working days in which to provide a written response to the employee.
Make an appointment with the Principal to discuss the problem when the difference is not reconciled.

Contact the Board for a conference when the complaint cannot be resolved. If the conference with the Principal does not result in the employee's satisfaction, the Principal shall refer the matter to the complaint committee for study and a recommendation.
Confidentiality and protection from retaliation will be provided to the extent possible to any employee,student, applicant or affected party who alleges discrimination or harassment.

MAINFRAME DATA NETWORK ACCEPTABLE USE POLICY

To Be Determined by AAHS's Board of Directors

NEPOTISM POLICY

An employee may not be recommended for employment or be supervised by a close relative. Close relatives are defined as mother, father, son, daughter, brother, sister and spouse and in-laws of the employee.

NOTIFICATION OF ABSENCE POLICY

An employee who is absent from duty for any reason shall notify the principal or his/her immediate supervisor as early as possible. Such notification shall be given in advance unless conditions beyond the control of the employee make such advance notification impossible.
A principal shall notify a Board representative when he/she plans to be away from school. The principal shall designate a responsible member of the administrative or instructional staff to be in charge during his/her absence. Where possible, the name of the person to be in charge of the school when the principal is absent shall be submitted to the Board each year.

PROBATIONARY STATUS FOR INSTRUCTIONAL PERSONNEL

To Be Determined by AAHS's Board of Directors

PROBATIONARY STATUS FOR NON-INSTRUCTIONAL (BARGAINING and NON-BARGAINING) PERSONNEL

To Be Determined by AAHS's Board of Directors

PROFESSIONAL DEVELOPMENT

AAHS, through a comprehensive professional development system, provides all personnel with in-service opportunities that lead directly to the improvement of student achievement and promote a climate of self-renewal for all. This In-service Plan is one element of a comprehensive system designed to enhance classroom instructional practices and job skills to improve student performance. The intent of the In-service Plan is to achieve national, state, and local goals through the provision of a framework for professional growth in
the knowledge, attitudes, skills, attributes, and behaviors of all employees. Through the application of this continuous improvement model, AAHS's students benefit from a safe, technology rich environment and effective instruction that meets their needs. In-service opportunities are developed in response to the school strategic plan, school improvement plans, an annual professional development survey, professional development evaluations, and individual professional development plans.

PUBLIC INFORMATION AND INSPECTION OF RECORDS POLICY

To Be Determined by AAHS's Board of Directors

PUBLIC RECORDS – EMPLOYEE EXEMPTION

To Be Determined by AAHS's Board of Directors

RESIGNATIONS – POLICY 6.52 38

To Be Determined by AAHS's Board of Directors

SAFETY COMMITTEE

Workplace Safety Committee Organization
A workplace safety committee will be established at each school/worksite to recommend improvements to our workplace safety program and to identify corrective measures needed to eliminate or control recognized safety and health hazards. The safety committee consists of the following:

- Workplace Safety Program Coordinator: School – Principal or his/her designee
- Worksite: Management Team Member
- Supervisory Employee Members: Two members of the supervisory team
- Non-Supervisory Employee Members: Three members of the non-supervisory team responsibilities

The workplace safety committee shall determine the schedule for evaluating the effectiveness of control measures used to protect employees from safety and health hazards in the workplace. The workplace safety committee will be responsible for assisting management in reviewing and updating workplace safety rules based on accident investigation findings, any inspection findings and employee reports of unsafe conditions or work practices; and accepting and addressing anonymous complaints and suggestions from employees. The workplace safety committee will be responsible for assisting management in updating the workplace safety program by evaluating employee injury and accident records, identifying trends and patterns and formulating corrective measures to prevent recurrence. The workplace safety committee will be responsible for assisting management in evaluating employee accident and illness prevention programs, and promoting safety and health awareness and coworker participation

through continuous improvements to the workplace safety program. Workplace safety committee members will participate in safety training and be responsible for assisting management in monitoring workplace safety education and training to ensure that it is in place, that it is effective and that it is documented.
Meeting Workplace safety committee meetings will be held quarterly and more often if needed. The Workplace Safety Program Coordinator will post the minutes of each meeting within one week after each meeting.

(A copy of the minutes must be sent to the Risk Management office).

SOCIAL SECURITY NUMBERS POLICY

To Be Determined by AAHS's Board of Directors

SOCIAL SECURITY NUMBERS – NOTICE OF USE

To Be Determined by AAHS's Board of Directors

COMPENSATION COMPENSATORY TIME

To Be Determined by AAHS's Board of Directors

DIRECT DEPOSIT

To Be Determined by AAHS's Board of Directors

OVERTIME

To Be Determined by AAHS's Board of Directors

SCHEDULE OF PAYROLL

To Be Determined by AAHS's Board of Directors

WAGES / SALARY

To Be Determined by AAHS's Board of Directors

YEAR OF SERVICE DEFINED FOR ADMINISTRATIVE AND INSTRUCTIONAL PERSONNEL POLICY

To Be Determined by AAHS's Board of Directors

BENEFITS

403(b) INVESTMENT PLAN

To Be Determined by AAHS's Board of Directors

Board of Directors Provided Benefits

HEALTH INSURANCE

To Be Determined by AAHS's Board of Directors

HEALTH INSURANCE – STEPS TO FOLLOW TO ENSURE COVERAGE

To Be Determined by AAHS's Board of Directors

LIFE INSURANCE

To Be Determined by AAHS's Board of Directors

DENTAL PLAN

To Be Determined by AAHS's Board of Directors

VISION CARE

To Be Determined by AAHS's Board of Directors

FLEXIBLE SPENDING ACCOUNT (FSA)

To Be Determined by AAHS's Board of Directors

EMPLOYEE ASSISTANCE PROGRAM (EAP)

To Be Determined by AAHS's Board of Directors

ANNUAL / VACATION LEAVE

To Be Determined by AAHS's Board of Directors

FAMILY AND MEDICAL LEAVE (FMLA) POLICY

In compliance with the Family and Medical Leave Act of 1993 (FMLA), eligible full-time school employees, i.e. school employees who have been employed by the Board for at least 12 months (the 12 months referenced need not be consecutive, but special eligibility rules may apply where an employee has had a break in service), and who have worked at least 1,250 hours within the 12 months preceding the application for FMLA Leave, may be entitled to take up to twelve (12) weeks unpaid leave a year for the following reasons:

-
- The birth of the employee's child;
- The placement of a child with the employee for adoption or foster care;
- To care for the employee's spouse, child or parent who has a serious health condition; or,
- A serious health condition rendering the employee unable to perform his/her job.

Military Active Duty and Military Caregiver Leave Active Duty Leave

Eligible employees are entitled to take up to twelve (12) weeks of unpaid leave per year because of any qualifying exigency arising out of the fact that an employee's spouse, son, daughter or parent is a member of the Reserves, National Guard, and certain retired members of the Armed Forces is called to active duty status by the Federal government, or has been notified of an impending call to active duty status in support of a contingency operation. The Board of Directors may require certification of the covered military service member's active duty orders or other certification of a qualifying exigency. Qualifying exigencies for such leave may include:

- Short-notice deployment;
- Military events and activities;
- Childcare and school activities;
- Financial and legal arrangements;
- Counseling;
- Rest and recuperation; or
- Post-deployment activities.

Military Caregiver Leave

Eligible employees may also qualify for Military Caregiver Leave to care for a covered military service member with a serious injury or illness. Military caregiver leave allows an eligible employee who is the spouse, son, daughter, parent or next of kin of a covered service member to take up to 26 workweeks of leave during a 12-month period to care for the service member. Employees are to provide at least 30 days' notice of their need to take FMLA leave, Active Duty Leave, or Military Caregiver Leave, if the leave is foreseeable. Medical certification that the leave is needed is required for the employee's own serious health condition or that of a family member or service member. During the FMLA leave, the Board of Directors will continue the employee's health insurance under the same conditions as if the employee were working. However, while on leave, benefits do not continue to accrue or accumulate, but will remain at status quo until the employee returns from leave. Upon returning from leave, the employee will be restored to the same or equivalent position with equivalent pay, benefits, and other terms and conditions of employment. The Board of Directors may require employees to use accrued sick time, sick bank time, vacation time, paid or unpaid leave or any combination concurrently with the employee's FMLA leave. The Board of Directors may, at its own discretion, designate any other type of leave as "FMLA Leave" under this policy, if the Board of Directors becomes aware of any such leave an employee is taking that would qualify as FMLA leave, regardless of whether the employee has requested FMLA leave. Any issues regarding this policy or FMLA eligibility, definitions or interpretation of the FMLA policy or FMLA leave will be interpreted

consistent with the FMLA, Federal Law and regulations. Any questions regarding this policy or FMLA leave shall be directed to the Employee Relations Department.

ILLNESS OR INJURY IN LINE-OF-DUTY LEAVE POLICY

To Be Determined by AAHS's Board of Directors

JURY / WITNESS DUTY POLICY

To Be Determined by AAHS's Board of Directors

MILITARY LEAVE POLICY

To Be Determined by AAHS's Board of Directors

PERSONAL LEAVE POLICY

Personal Leave is chargeable to sick leave. Employees may be allowed five (5) days paid leave for personal reasons each year to be charged against accrued sick leave. Such leave shall be non-cumulative and any request for such leave shall be approved, in advance, by the Principal. Unpaid Personal Leave. Employees shall make written application for such leave without compensation. Personal leave shall terminate at the end of the contractual period. Non-instructional staff shall not be eligible for extended leave without pay until they have three (3) or more years of continuous service. The three (3) year requirement may be waived in extenuating circumstances as recommended by the Principal and approved by the Board. Maternity leave and Domestic/Sexual Violence leave are exempt from the three (3) year provision. Extended leave shall not exceed the current year, except that military leave shall be granted for a longer period as necessary for the completion of active duty.mPersonal leave may be granted at the discretion of the Board of Directors as hereinafter provided:

- Leave for child rearing (for natural or adoptive child)
- Leave for childbearing or adoption
- Leave for victim of domestic/sexual violence or a family or household member has been a victim

- of domestic/sexual violence
- Leave for political campaigning (maximum thirty (30) calendar days prior to the election)

Return from leave is contingent on there being a vacant position in the system which the employee is qualified to fill. Requests for extended leave to take another position for salary shall be denied.

SICK LEAVE POLICY

To Be Determined by AAHS's Board of Directors

SICK LEAVE BANK POLICY

To Be Determined by AAHS's Board of Directors

UNPAID LEAVE-IMPACT ON BENEFITS

To Be Determined by AAHS's Board of Directors

RETIREMENT POLICY

Any employee who plans to retire shall concurrently submit his/her resignation to the AAHS Board of Directors and his/her application to the retirement system for retirement benefits. Employees are encouraged to submit the resignation and application form at least ninety (90) days in advance of the retirement date to ensure the retirement check is issued the month following the last month of service with the AAHS Governing Board.

Acknowledgment

I hereby acknowledge receipt of the Alabama Aerospace and Aviation High School (AAHS) Employee Manual. If I have any questions, I should contact Human Resource staff. I understand the employee manual is not an employment contract, but does provide some the employment policies and procedures of AAHS. I agree to comply with the guidelines, policies and procedures of AAHS. I hereby acknowledge receipt of the AAHS Governing Board's Drug-Free Workplace Policy. I understand that the name, address and telephone number of the employee assistance program is available to me by contacting the Human Resources staff. I hereby acknowledge receipt of the AAHS Governing Board's Code of Ethics Policy. I hereby acknowledge receipt of AAHS Governing Board, Violation of State and/or Federal laws which outlines the Self-Reporting of Arrests and Convictions by all employees. I understand that I shall self-report to my immediate supervisor and to the Principal's office within forty-eight (48) Hours:

- o Any arrest/charges involving the abuse of a child or the sale and/or possession of a controlled substance or any disqualifying offense.
- o Any conviction, finding of guilt, withholding of adjudication, commitment to a pretrial diversion program, or entering a plea of guilty or Nolo Contendere for any criminal offense other than a minor traffic violation.
- o Any employee in violation of the reporting requirements may be subject to disciplinary action by the AAHS Board of Directors up to or including dismissal.

This manual is subject to change without notice. It is understood that changes in procedure will supersede or eliminate those found in this manual and I will be notified of such changes through normal communication channels.

_____

Employee Name (Please print)

_____ _____

Employee Signature Date

Please send completed form to Human Resources Staff

HIGH SCHOOL
ATTACHMENT 23

Leadership Evaluation Tools

2013 Marzano School Leader Evaluation Model Rubric

Exclusive partners with Dr. Robert J. Marzano
for the Teacher Evaluation Model
and School Leader Evaluation Model

Learning Sciences International
175 Cornell Road, Suite 18
Blairsville, PA 15717

learningsciences.com

LearningSciencesInternational
LEARNING AND PERFORMANCE MANAGEMENT

Domain I: A Data-Driven Focus on Student Achievement

Element 1: The school leader ensures clear and measurable goals are established and focused on critical needs regarding improving overall student achievement at the school level.

Sample Evidences

- ❒ Written goals are established as a percentage of students who will score at a proficient or higher level on state assessments or benchmark assessments
- ❒ School-wide achievement goals are posted and discussed regularly at faculty and staff gatherings
- ❒ Written goals are established for eliminating the achievement gap for all students
- ❒ Written goals address the most critical and severe achievement deficiencies
- ❒ Written timelines contain specific benchmarks for each goal including individual(s) responsible for the goal
- ❒ Scales are in place to chart student and school progress towards meeting the standards
- ❒ When asked, faculty and staff can explain how goals eliminate differences in achievement for students of differing ethnicities
- ❒ When asked, faculty and staff can explain how goals eliminate differences in achievement for students at different socioeconomic levels, English language learners, and students with disabilities
- ❒ When asked, faculty and staff can describe the school-wide achievement goals
- ❒ When asked, faculty and staff can identify the school's most critical needs goals

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
I(1): The school leader ensures clear and measurable goals are established and focused on critical needs regarding improving overall student achievement at the school level.	The school leader attempts to ensure clear, measurable goals with specific timelines focused on critical needs regarding improving student achievement are established at the school level but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures clear, measurable goals with specific timelines focused on critical needs regarding improving student achievement are established at the school level.	The school leader ensures clear, measurable goals with specific timelines focused on critical needs regarding improving student achievement are established at the school level AND regularly monitors that everyone has understanding of the goals.	The school leader ensures adjustments are made or new methods are utilized so that all stakeholders sufficiently understand the goals.

Domain I: A Data-Driven Focus on Student Achievement

Element 2: The school leader ensures clear and measurable goals are established and focused on critical needs regarding improving achievement of individual students within the school.

Sample Evidences

- ❒ Written goals are established for each student in terms of their performance on state/district assessments, benchmark assessments, or common assessments
- ❒ Written goals accompanied by proficiency scales are established for each student in terms of their knowledge gain
- ❒ Students keep data notebooks regarding their individual goals
- ❒ Student led conferences focus on individual student's goals
- ❒ Parent-teacher conferences focus on the individual student's goals
- ❒ When asked, teachers can explain the learning goals of their students
- ❒ When asked, students perceive that their individual goals are academically challenging
- ❒ When asked, students are aware of their status on the achievement goals specific to them
- ❒ When asked, parents are aware of their child's achievement goals

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
I(2): The school leader ensures clear and measurable goals are established and focused on critical needs regarding improving achievement of individual students within the school.	The school leader attempts to ensure that written achievement goals that are clear, measurable, and focused, are established for each student, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures each student has written achievement goals that are clear, measurable, and focused on appropriate needs.	The school leader ensures each student has written achievement goals that are clear, measurable, and focused on appropriate needs AND regularly monitors that teachers and students have understanding of individual student goals.	The school leader ensures adjustments are made or new methods are utilized so that all faculty and students sufficiently understand the goals.

Domain I: A Data-Driven Focus on Student Achievement

Element 3: The school leader ensures that data are analyzed, interpreted, and used to regularly monitor progress toward school achievement goals.

Sample Evidences

- ❒ Reports, graphs, and charts are available for overall student achievement
- ❒ Student achievement is examined from the perspective of value-added results
- ❒ Results from multiple types of assessments are regularly reported and used (e.g. benchmark, common assessments)
- ❒ Reports, graphs, and charts are regularly updated to track growth in student achievement
- ❒ Achievement data for student subgroups within the school are routinely analyzed
- ❒ School leadership teams regularly analyze school growth data
- ❒ Data briefings are conducted at faculty meetings
- ❒ When asked, faculty and staff can describe the different types of reports available to them
- ❒ When asked, faculty and staff can explain how data are used to track growth in student achievement

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
I(3): The school leader ensures that data are analyzed, interpreted, and used to regularly monitor progress toward school achievement goals.	The school leader attempts to ensure that data are available for tracking overall student achievement, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader regularly ensures that data are available for tracking overall student achievement.	The school leader ensures that data are available for tracking overall student achievement AND monitors the extent to which student data are used to track progress toward goal.	The school leader ensures that data are analyzed in a variety of ways to provide the most useful information and refines achievement goals or the tracking process as achievement data accrue.

Domain I: A Data-Driven Focus on Student Achievement

Element 4: The school leader ensures that data are analyzed, interpreted, and used to regularly monitor progress toward achievement goals for individual students.

Sample Evidences

- ❒ Reports, charts, and graphs are available for individual students depicting their status and growth
- ❒ Individual student achievement is examined from the perspective of value-added results
- ❒ Individual student results from multiple types of assessments are regularly reported and used (e.g. benchmark, common assessments)
- ❒ Individual student reports, graphs, and charts are regularly updated to track growth in student achievement
- ❒ Teachers regularly analyze school growth data for individual students
- ❒ School leadership teams regularly analyze individual student performance
- ❒ When asked, individual students and their parents can describe their achievement status and growth
- ❒ When asked, faculty can describe the different types of individual student reports available to them
- ❒ When asked, faculty and staff can analyze data of their individual students including all subgroups

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
I(4): The school leader ensures that data are analyzed, interpreted, and used to regularly monitor progress toward achievement goals for individual students.	The school leader attempts to ensure that data are available for individual student achievement, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that data are available for individual student achievement.	The school leader ensures that data are available for individual student achievement AND monitors the extent to which data are used to track progress toward individual student goals.	The school leader ensures that data are analyzed in a variety of ways to provide the most useful information and refines individual achievement goals or the tracking process as achievement data accrue.

Domain I: A Data-Driven Focus on Student Achievement

Element 5: The school leader ensures that appropriate school-level and classroom-level programs and practices are in place to help all students meet individual achievement goals when data indicate interventions are needed.

Sample Evidences

- ❒ Extended school day, week, or year programs are in place
- ❒ Tutorial programs are in place (during the school day and/or after school)
- ❒ Individual student completion of programs designed to enhance their academic achievement is monitored (i.e. gifted and talented, advanced placement, STEM, etc.)
- ❒ Response to intervention measures are in place
- ❒ Enrichment programs are in place
- ❒ Data are collected and available to monitor student progress and achievement as a result of enrollment in intervention or enrichment programs
- ❒ When asked, teachers can explain how interventions in place help individual students met their goals
- ❒ When asked, student and/or parents can identify interventions in place to meet their goals
- ❒ When asked, students report their school has programs in place to help them meet their achievement goals

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
I(5): The school leader ensures that appropriate school-level and classroom-level programs and practices are in place to help all students meet individual achievement goals when data indicate interventions are needed.	The school leader attempts to ensure that programs and practices are in place for individual students who are not making adequate progress, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that programs and practices are in place for individual students who are not making adequate progress.	The school leader ensures that programs and practices are in place for individual students who are not making adequate progress AND monitors whether interventions are helping students meet their achievement goals.	The school leader continually examines and expands the options for individual students to make adequate progress.

Domain II: Continuous Improvement of Instruction

Element 1: The school leader provides a clear vision as to how instruction should be addressed in the school.

Sample Evidences

- ❒ A written document articulating the school-wide model of instruction is in place
- ❒ The school-wide language of instruction is used regularly by faculty in their professional learning communities, faculty and/or department meetings
- ❒ Professional development opportunities are provided for new teachers regarding the school-wide model of instruction
- ❒ Professional development opportunities are provided for all teachers regarding the school-wide model of instruction
- ❒ New initiatives are prioritized and limited in number to support the instructional model
- ❒ The school-wide language of instruction is used regularly by faculty in their informal conversations
- ❒ When asked, teachers can describe the major components of the school-wide model of instruction
- ❒ When asked, teachers can explain how strategies in the instructional framework promote learning for the school's diverse population

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
II(1): The school leader provides a clear vision as to how instruction should be addressed in the school.	The school leader attempts to ensure that a school-wide language or model of instruction is in place, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that a school-wide language or model of instruction is in place.	The school leader ensures that a school-wide language or model of instruction is in place AND monitors the extent to which the faculty and staff understands the instructional model.	The school leader continually examines and makes adjustments so that all faculty and staff understand the nuances of the instructional model and integrates new instructional initiatives into the school instructional model.

Domain II: Continuous Improvement of Instruction

Element 2: The school leader effectively supports and retains teachers who continually enhance their pedagogical skills through reflection and professional growth plans.

Sample Evidences

- ❒ Individual teachers have written pedagogical growth goals
- ❒ Individual teachers keep track of their progress on their pedagogical growth goals
- ❒ Evaluation results, growth plans, and interventions for struggling teachers are available
- ❒ Meetings are regularly scheduled with teachers regarding their growth goals and tracking of their progress
- ❒ A system is in place to effectively evaluate and revise the school's new teacher induction program
- ❒ The school leader has demonstrated a track record of hiring effective teachers
- ❒ The school leader has a track record of retaining effective teachers
- ❒ When asked, teachers can describe their progress on their pedagogical growth goals
- ❒ When asked, teachers can share documented examples of how reflection has improved their instructional practice

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
II(2): The school leader effectively supports and retains teachers who continually enhance their pedagogical skills through reflection and professional growth plans.	The school leader attempts to ensure that teachers establish growth goals regarding their pedagogical skills and track their individual progress, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that teachers establish growth goals regarding their pedagogical skills and track their individual progress.	The school leader ensures that teachers establish growth goals regarding their pedagogical skills and track their individual progress, AND monitors the extent to which teachers achieve their growth goals.	The school leader regularly intervenes with and supports teachers who are not meeting their growth goals or adequately enhancing the achievement of their students.

Domain II: Continuous Improvement of Instruction

Element 3: The school leader is aware of predominant instructional practices throughout the school.

Sample Evidences

- ❒ Walk-through or other informal observation data are aggregated in such a way as to disclose predominant instructional practices in the school
- ❒ Forthright feedback is provided to teachers regarding their instructional practices
- ❒ Systems are in place to monitor the effect of the predominant instructional practices for all subgroups in the school
- ❒ Data are available to document the predominant instructional practices in the school
- ❒ The school leader can describe effective practices and problems of practice
- ❒ When asked, teachers can describe the predominant instructional practices used in the school

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
II(3): The school leader is aware of predominant instructional practices throughout the school.	The school leader attempts to ensure that information about predominant instructional strategies in the school is collected and regularly interacts with teachers about the effectiveness of these strategies, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that information about predominant instructional strategies in the school is collected and regularly interacts with teachers about the effectiveness of these strategies.	The school leader ensures that information about predominant instructional strategies in the school is collected, regularly interacts with teachers about the effectiveness of these strategies, AND monitors the extent to which the information is used to identify effective and ineffective practices.	The school leader regularly intervenes to ensure that ineffective instructional practices are corrected and effective instructional practices are proliferating.

Domain II: Continuous Improvement of Instruction

Element 4: The school leader ensures that teachers are provided with clear, ongoing evaluations of their pedagogical strengths and weaknesses that are based on multiple sources of data and are consistent with student achievement data.

Sample Evidences

- ❒ Highly specific scales are in place to provide teachers accurate feedback on their pedagogical strengths and weaknesses
- ❒ Teacher feedback and evaluation data are based on multiple sources of information including, but not limited to: direct observation, teacher self-report, analysis of teacher performance as captured on video, student reports on teacher effectiveness, and peer feedback to teachers
- ❒ Teacher evaluation data are regularly used as the subject of conversation between school leaders and teachers
- ❒ Data shows the school leader provides frequent observations and meaningful feedback to teachers
- ❒ Ongoing data are available to support that teacher evaluations are consistent with student achievement data
- ❒ When asked, teachers can describe their instructional strategies that have the strongest and weakest relationships to student achievement

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
II(4): The school leader ensures that teachers are provided with clear, ongoing evaluations of their pedagogical strengths and weaknesses that are based on multiple sources of data and are consistent with student achievement data.	The school leader attempts to ensure that specific evaluation data are collected on each teacher regarding their pedagogical strengths and weaknesses and that these data are gathered from multiple sources, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that specific evaluation data are collected on each teacher regarding their pedagogical strengths and weaknesses and that these data are gathered from multiple sources.	The school leader ensures that specific evaluation data are collected on each teacher regarding their pedagogical strengths and weaknesses and that these data are gathered from multiple sources AND monitors the extent to which teacher evaluations are consistent with student achievement data.	The school leader ensures that teacher evaluation processes are updated regularly to ensure the results are consistent with student achievement data.

Domain II: Continuous Improvement of Instruction

Element 5: The school leader ensures that teachers are provided with job-embedded professional development that is directly related to their instructional growth goals.

Sample Evidences

- ❒ Online professional development courses and resources are available to teachers regarding their instructional growth goals
- ❒ The school leader tracks teacher participation in professional development activities
- ❒ Teacher-led professional development is available to teachers regarding their instructional growth goals
- ❒ Instructional coaching is available to teachers regarding their instructional growth goals
- ❒ Data are collected linking the effectiveness of professional development to the improvement of teacher practices
- ❒ Data are available supporting deliberate practice is improving teacher performance
- ❒ When asked, teachers can describe how the professional development supports their attainment of instructional growth goals

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
II(5): The school leader ensures that teachers are provided with job-embedded professional development that is directly related to their instructional growth goals.	The school leader attempts to ensure that job--embedded professional development is provided to teachers that is directly related to their instructional growth goals, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that job-embedded professional development that is directly related to their instructional growth goals is provided to teachers.	The school leader ensures that job-embedded professional development is provided to teachers that is directly related to their instructional growth goals AND monitors the extent to which teachers improve their instructional practices.	The school leader continually re-evaluates the professional development program to ensure that it remains job-embedded and focused on instructional growth goals and intervenes with teachers who are not making sufficient progress toward achieving growth goals.

Domain III: A Guaranteed and Viable Curriculum

Element 1: The school leader ensures that the school curriculum and accompanying assessments adhere to state and district standards.

Sample Evidences

- ❒ Curriculum documents are in place that correlate the written curriculum to state and district standards
- ❒ Rubrics or proficiency scales are in place that clearly delineate student levels of performance on essential elements of the state and district standards
- ❒ Information is available correlating what is taught in the classrooms (i.e., the taught curriculum) and the written curriculum
- ❒ Information is available examining the extent to which assessments accurately measure the written and taught curriculums
- ❒ School teams regularly analyze the relationship between the written curriculum, taught curriculum, and assessments
- ❒ Evidence is available demonstrating the assessments are accurately measuring the state and district standards
- ❒ When asked, teachers can describe the essential content and standards for their subject area(s) or grade level(s)
- ❒ When asked, teachers demonstrate understanding of how the curriculum and assessments are aligned

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
III(1): The school leader ensures that the school curriculum and accompanying assessments adhere to state and district standards.	The school leader attempts to ensure that both the written curriculum and accompanying assessments adhere to state and district standards, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that both the written curriculum and accompanying assessments adhere to state and district standards.	The school leader ensures that both the written curriculum and accompanying assessments adhere to state and district standards AND monitors the extent to which the curriculum is delivered and the assessments measure the curriculum.	The school leader ensures that the assessment and reporting system focuses on state and district standards and the leader intervenes with teachers who do not follow the state and district standards.

Domain III: A Guaranteed and Viable Curriculum

Element 2: The school leader ensures that the school curriculum is focused enough that it can be adequately addressed in the time available to teachers.

Sample Evidences

- ❒ A written list of essential elements is in place
- ❒ A curriculum audit has been conducted that delineates how much time it would take to adequately address the essential elements
- ❒ Teams regularly meet to discuss the progression and viability of documents that articulate essential content and timing of delivery (e.g. pacing guides, curriculum maps)
- ❒ Time available for specific classes and courses meets the state or district specifications for those classes and courses
- ❒ Data are available to show that students are ready to be contributing members of society and participate in a global community
- ❒ Data are available to show that students are college and career ready
- ❒ A plan is in place to monitor the curriculum is taught in the time available to teachers
- ❒ When asked, teachers can describe which elements are essential and can be taught in the schedule time
- ❒ When asked, students report they have time to learn the essential curriculum

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
III(2): The school leader ensures that the school curriculum is focused enough that it can be adequately addressed in the time available to teachers.	The school leader attempts to ensure that the written curriculum has been unpacked in such a manner that essential elements have been identified, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that the written curriculum has been unpacked in such a manner that essential elements have been identified.	The school leader ensures that the written curriculum has been unpacked in such a manner that essential elements have been identified AND monitors the extent to which the essential elements are few enough to allow adequate time for students to learn them.	The school leader ensures that essential elements of the curriculum are regularly examined and revised with an eye toward making instruction more focused and efficient.

Domain III: A Guaranteed and Viable Curriculum

Element 3: The school leader ensures that all students have the opportunity to learn the critical content of the curriculum.

Sample Evidences

- ❒ Tracking systems are in place that examine each student's access to the essential elements of the curriculum
- ❒ Parents are aware of their child's current access to the essential elements of the curriculum
- ❒ All students have access to advanced placement or other rigorous courses
- ❒ All students have a prescribed program of study that documents access to courses
- ❒ Data are available to show teachers have completed appropriate content area training in their subject area courses
- ❒ Data are available to verify student achievement in critical content and standards
- ❒ When asked, teachers can describe the content strategies that result in the highest student learning for specific courses and topics
- ❒ When asked, students report they have the opportunity to learn the critical content of the curriculum

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
III(3): The school leader ensures that all students have the opportunity to learn the critical content of the curriculum.	The school leader attempts to ensure that all students have access to the courses and classes that directly address the essential elements of the curriculum, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that all students have access to the courses and classes that directly address the essential elements of the curriculum.	The school leader ensures that all students have access to the courses and classes that directly address the essential elements of the curriculum AND monitors the extent to which those courses and classes utilize instructional strategies that most strongly increase their chances of learning the essential elements.	The school leader intervenes with teachers whose students do not have adequate access to essential elements and instructional strategies that most strongly increase their chances of learning the essential elements.

Domain IV: Cooperation and Collaboration

Element 1: The school leader ensures that teachers have opportunities to observe and discuss effective teaching.

Sample Evidences

- ❒ Teachers have opportunities to engage in instructional rounds
- ❒ Teachers have opportunities to view and discuss video-based examples of exemplary teaching
- ❒ Teachers have regular times to meet and discuss effective instructional practices (e.g. lesson study, professional learning communities)
- ❒ Teachers have opportunities to interact about effective teaching via technology
- ❒ Instructional practices are regularly discussed at faculty and department meetings
- ❒ Video segments of instructional practices are regularly viewed and discussed at faculty and department meetings
- ❒ Procedures are in place for scheduling teachers to observe and discuss effective instructional practices
- ❒ Data are available to document that teachers who participate in observational rounds improve their pedagogy
- ❒ When asked, teachers report their participation in observing other teachers results in individual self-reflection and pedagogical growth

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
IV(1): The school leader ensures that teachers have opportunities to observe and discuss effective teaching.	The school leader attempts to ensure that teachers have regular opportunities to interact regarding effective instructional practices and observe specific examples of effective teaching virtually or in person, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that teachers have regular opportunities to interact regarding effective instructional practices and observe specific examples of effective teaching virtually or in person.	The school leader ensures that teachers have regular opportunities to interact regarding effective instructional practices and observe specific examples of effective teaching virtually or in-person AND monitors the extent to which teachers who actively participate in these opportunities improve their pedagogy.	The school leader intervenes and supports teachers who do not actively participate in opportunities to interact regarding effective instructional practices.

Domain IV: Cooperation and Collaboration

Element 2: The school leader ensures that teachers have formal roles in the decision-making process regarding school initiatives.

Sample Evidences

- ❒ Teachers are advised of the specific types of decisions in which they will have direct input
- ❒ Data-gathering techniques are in place to collect information from teachers
- ❒ Notes and reports are in place that describe how teacher input was used when making specific decisions
- ❒ Electronic tools are utilized to collect and report teacher opinions regarding specific decisions (e.g. online surveys)
- ❒ Groups of teachers are selected and utilized to provide input regarding specific decisions
- ❒ Teacher leaders are enabled to proactively initiate, plan, implement and monitor projects
- ❒ The school leadership team has critical roles in facilitating school initiatives
- ❒ Data are available to show input is used by the school leader
- ❒ When asked, teachers report they feel their input is valued and used by the school leader

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
IV(2): The school leader ensures that teachers have formal roles in the decision-making process regarding school initiatives.	The school leader attempts to ensure that formal processes are in place to collect data from all teachers regarding their preferences on specific decisions, but does not complete the task or does so partially OR the school leader does not attempt to do so.	For specific types of decisions, the school leader ensures that formal processes are in place to collect data from all teachers regarding their preferences.	For specific types of decisions, the school leader ensures that formal processes are in place to collect data from all teachers regarding their preferences AND monitors the extent to which those data are used to make decisions and the transparency of those decisions.	The school leader continually seeks new venues for teacher input regarding important decisions.

Domain IV: Cooperation and Collaboration

Element 3: The school leader ensures that teacher teams and collaborative groups regularly interact to address common issues regarding curriculum, assessment, instruction, and the achievement of all students.

Sample Evidences

- ❒ Professional learning communities (PLCs) are in place and meet regularly
- ❒ PLCs have written goals
- ❒ The school leader regularly examines the PLC's progress toward goals
- ❒ Common assessments are created by PLCs
- ❒ Student achievement and growth are analyzed by PLCs
- ❒ Data teams are in place and have written goals
- ❒ The progress of each data team towards reaching its goals is regularly examined
- ❒ To maintain a focus on student achievement, the school leader collects and reviews minutes, notes, and goals from meetings
- ❒ When asked, teachers can explain how being a member of a PLC has helped them grow their pedagogy
- ❒ When asked, teachers can explain how PLC's analyze data to identify appropriate instructional practices

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
IV(3): The school leader ensures that teacher teams and collaborative groups regularly interact to address common issues regarding curriculum, assessment, instruction, and the achievement of all students.	The school leader attempts to ensure that formal teams or collaborative groups of teachers and other relevant staff meet regularly and have specific goals relative to curriculum, assessment, and instruction, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that formal teams or collaborative groups of teachers and other relevant staff meet regularly and have specific goals relative to curriculum, assessment, and instruction.	The school leader ensures that formal teams or collaborative groups of teachers and other relevant staff meet regularly and have specific goals relative to curriculum, assessment, and instruction AND monitors the extent to which these goals are designed to enhance the achievement of all students.	The school leader ensures that group goals relative to curriculum, assessment, and instruction are regularly revised to reflect the changes in student achievement data and intervenes and supports teacher teams whose goals do not adequately address the achievement of all students.

Domain IV: Cooperation and Collaboration

Element 4: The school leader ensures that teachers and staff have formal ways to provide input regarding the optimal functioning of the school and delegates responsibilities appropriately.

Sample Evidences

- ❒ Data collection systems are in place to collect opinion data from teachers and staff regarding the optimal functioning of the school
- ❒ Data are archived and reports regularly generated regarding these data
- ❒ The manner in which data are used is made transparent
- ❒ The school improvement team provides input to the leader regarding the school improvement plan
- ❒ Appropriate faculty and staff are identified and mentored for succession planning and provided appropriate growth opportunities
- ❒ Faculty and staff are assisted with career planning and continuing educational opportunities
- ❒ Teacher leaders and other faculty are empowered to share in the leadership of the school
- ❒ Potential leaders are identified and guided in career development
- ❒ The school leader can cite examples of where teacher input has resulted in effective change at the school
- ❒ The school leader demonstrates ongoing mentoring of teacher leaders
- ❒ When asked, teachers explain formal ways they have to give input regarding optimal functioning of the school
- ❒ When asked, teachers can identify examples of when their input has resulted in effective change at the school

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
IV(4): The school leader ensures that teachers and staff have formal ways to provide input regarding the optimal functioning of the school and delegates responsibilities appropriately.	The school leader attempts to ensure that input is regularly collected from teachers and staff and appropriately delegates responsibilities, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that input is regularly collected from teachers and staff and appropriately delegates responsibilities.	The school leader ensures that input is regularly collected from teachers and staff, appropriately delegates responsibilities, AND monitors the extent to which the inputs and delegations are contributing to the optimal functioning of the school.	The school leader intervenes and provides support when delegation of authority and teacher input is not working to optimize the function of the school.

Domain IV: Cooperation and Collaboration

Element 5: The school leader ensures that students, parents, and community have formal ways to provide input regarding the optimal functioning of the school.

Sample Evidences

- ❒ Data collection systems are in place to collect opinion data from students, parents, and community regarding the optimal functioning of the school
- ❒ Data are archived and reports regularly generated regarding these data
- ❒ The manner in which these data are used is made transparent
- ❒ Data are available to show that input from the school's diverse population is valued and used
- ❒ An interactive website is provided for students, parents, and the community to provide input
- ❒ Appropriate social networking technologies (e.g. Twitter, Facebook) is utilized to involve students, parents, and community
- ❒ Focus group meetings with students and parents are routinely scheduled
- ❒ The school leader hosts or speaks at community/business luncheons
- ❒ The school leader can explain how the use of input from the school community has resulted in improved functioning of the school
- ❒ The school leader can demonstrate how data gathered from subpopulations at the school are incorporated in school planning
- ❒ When asked, students, parents, and community members report their input is valued and used by the school leader to better the functioning of the school

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
IV(5): The school leader ensures that students, parents, and community have formal ways to provide input regarding the optimal functioning of the school.	The school leader attempts to ensure that input is regularly collected from students, parents, and community, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that input is regularly collected from students, parents, and community.	The school leader ensures that input is regularly collected from students, parents, and community AND monitors the extent to which the inputs are contributing to the optimal functioning of the school.	The school leader intervenes and provides support when students, parents, and community input is not working to optimize the function of the school.

Domain V: School Climate

Element 1: The school administrator is recognized as the leader of the school who continually improves his or her professional practice.

Sample Evidences

- ❒ A written annual growth plan is in place to address how the school leader will address strengths and weaknesses
- ❒ Professional development activities consistent with the leader's growth plan have been identified
- ❒ Evidence of leadership initiatives is available
- ❒ Adherence to district and state policies and procedures is evident
- ❒ The school leader has demonstrated his or her ability to be a problem solver
- ❒ The school leader has identified mentors and regularly interacts with them
- ❒ When asked, faculty and staff identify the school administrator as the leader of the school
- ❒ When asked, faculty and staff describe the school leader as uncompromising in regards to raising student achievement
- ❒ When asked, faculty and staff describe the school leader as effectively communicating those non-negotiable factors that have an impact on student achievement
- ❒ When asked, faculty and staff generally agree as to the vision provided by the school leader

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
V(1): The school administrator is recognized as the leader of the school who continually improves his or her professional practice.	The school leader attempts to demonstrate leadership skills and engages in activities to improve his or her professional practices, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader demonstrates leadership skills and continually engages in activities to improve his or her professional practices.	The school leader demonstrates leadership skills and continually engages in activities to improve his or her professional practices AND monitors the extent to which these activities enhance personal leadership skills and the staff's confidence about his or her ability to lead.	The school leader actively seeks expertise/mentors for validation and feedback to confirm or improve leadership skills.

Domain V: School Climate

Element 2: The school leader has the trust of the faculty and staff that his or her actions are guided by what is best for all student populations.

Sample Evidences

- ❒ The school leader is recognized by the school community as one who is willing to "take on tough issues"
- ❒ The school leader acknowledges when school goals have not been met or initiatives have failed and revises the plan for success
- ❒ When asked, faculty and staff describe the school leader as an individual whose actions are guided by a desire to help all students learn
- ❒ When asked, faculty and staff describe the school leader as an individual who will follow through with his or her initiatives
- ❒ When asked, faculty and staff describe the school leader as one whose actions support his or her talk and expectations
- ❒ When asked, faculty and staff describe the school leader as one who speaks with candor and "takes on tough issues"

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
V(2): The school leader has the trust of the faculty and staff that his or her actions are guided by what is best for all student populations.	The school leader attempts to perform with integrity and in the best interest of all students, but does so sporadically or inconsistently OR the school leader does not attempt to do so.	The school leader performs with integrity and in the best interest of all students.	The school leader performs with integrity and his/her actions are in the best interest of all students AND monitors the extent to which faculty and staff perceive him or her as an individual who will follow through with initiatives and whose actions are guided by the desire to help all students learn.	The school leader actively seeks expertise/mentors for validation and feedback to confirm or improve how he or she performs or is perceived.

Domain V: School Climate

Element 3: The school leader ensures that faculty and staff perceive the school environment as safe and orderly.

Sample Evidences

- ❒ Clear and specific rules and procedures are in place for the running of the school
- ❒ Faculty and staff are provided the means to communicate about the safety of the school
- ❒ Faculty and staff know the emergency management procedures and how to implement them for specific incidents
- ❒ Evidence of practicing emergency management procedures for specific incidents is available
- ❒ Evidence of updates to the emergency management plans and communication of them to the faculty and staff is available
- ❒ When asked, faculty and staff describe the school as a safe and orderly place
- ❒ When asked, the faculty and staff describe the school leader as highly visible and accessible
- ❒ When asked, faculty and staff describe the school as a place focused on learning

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
V(3): The school leader ensures that faculty and staff perceive the school environment as safe and orderly.	The school leader attempts to ensure that well-defined routines and procedures are in place that lead to orderly conduct, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that well-defined routines and procedures are in place that lead to orderly conduct.	The school leader ensures that well-defined routines and procedures are in place that lead to safe and orderly conduct AND monitors the extent to which faculty and staff share the perception that the school environment is safe and orderly.	The school leader ensures that rules and procedures are reviewed and updated as necessary to ensure a safe and orderly school environment and the perception of such by school faculty and staff.

Domain V: School Climate

Element 4: The school leader ensures that students, parents, and the community perceive the school environment as safe and orderly.

Sample Evidences

- ❒ Clear and specific rules and procedures are in place for the running of the school
- ❒ Social media is utilized so that students may anonymously report potential incidents
- ❒ A system is in place for mass communicating to parents about issues regarding school safety (e.g. a call out system)
- ❒ Coordination with local law enforcement agencies regarding school safety issues is a routine event
- ❒ Parents and community are engaged to give input regarding issues of school safety
- ❒ When asked, parents and students describe the school as a safe place
- ❒ When asked, parents and students describe the school as an orderly place
- ❒ When asked, community members perceive the school as safe and orderly
- ❒ When asked, parents, students and community members describe the leader as highly visible and accessible

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
V(4): The school leader ensures that students, parents, and the community perceive the school environment as safe and orderly.	The school leader attempts to ensure that well-defined routines and procedures are in place that lead to orderly conduct, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader ensures that well-defined routines and procedures are in place that lead to orderly conduct.	The school leader ensures that well-defined routines and procedures are in place that lead to orderly conduct AND monitors the extent to which students, parents, and the community share the perception that the school environment is safe and orderly.	The school leader ensures that rules and procedures are reviewed and updated as necessary to ensure a safe and orderly school environment and the perception of such by students, parents, and the community.

Domain V: School Climate

Element 5: The school leader manages the fiscal, operational, and technological resources of the school in a way that focuses on effective instruction and the achievement of all students.

Sample Evidences

- ❒ Materials and resources for specific classes and courses meet the state or district specifications for those classes and courses
- ❒ Detailed budgets are developed, submitted, and implemented
- ❒ The school leader successfully accesses and leverages a variety of resources (e.g. grants, local, state, and federal funds)
- ❒ Data are available to show that resources and expenditures produce results (i.e. curriculum programs improve student learning)
- ❒ The school leader manages time effectively in order to maximize focus on instruction
- ❒ The school leader appropriately directs the use of technology to improve teaching and learning
- ❒ Adequate training is provided for the instructional technology teachers are expected to use
- ❒ When asked, faculty and staff report that they have adequate materials to teach effectively
- ❒ When asked, faculty and staff report that they have adequate time to teach effectively

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
V(5): The school leader manages the fiscal, operational, and technological resources of the school in a way that focuses on effective instruction and the achievement of all students.	The school leader attempts to manage the fiscal, operational, and technological resources necessary to support effective teaching, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader manages the fiscal, operational, and technological resources necessary to support effective teaching.	The school leader manages the fiscal, operational, and technological resources necessary to support effective teaching AND monitors the extent to which the resources and efficiencies enhance instruction and the achievement of all students.	The school leader actively seeks and procures extra resources to enhance instruction and the achievement of all students.

Domain V: School Climate

Element 6: The school leader acknowledges the success of the whole school, as well as individuals within the school.

Sample Evidences

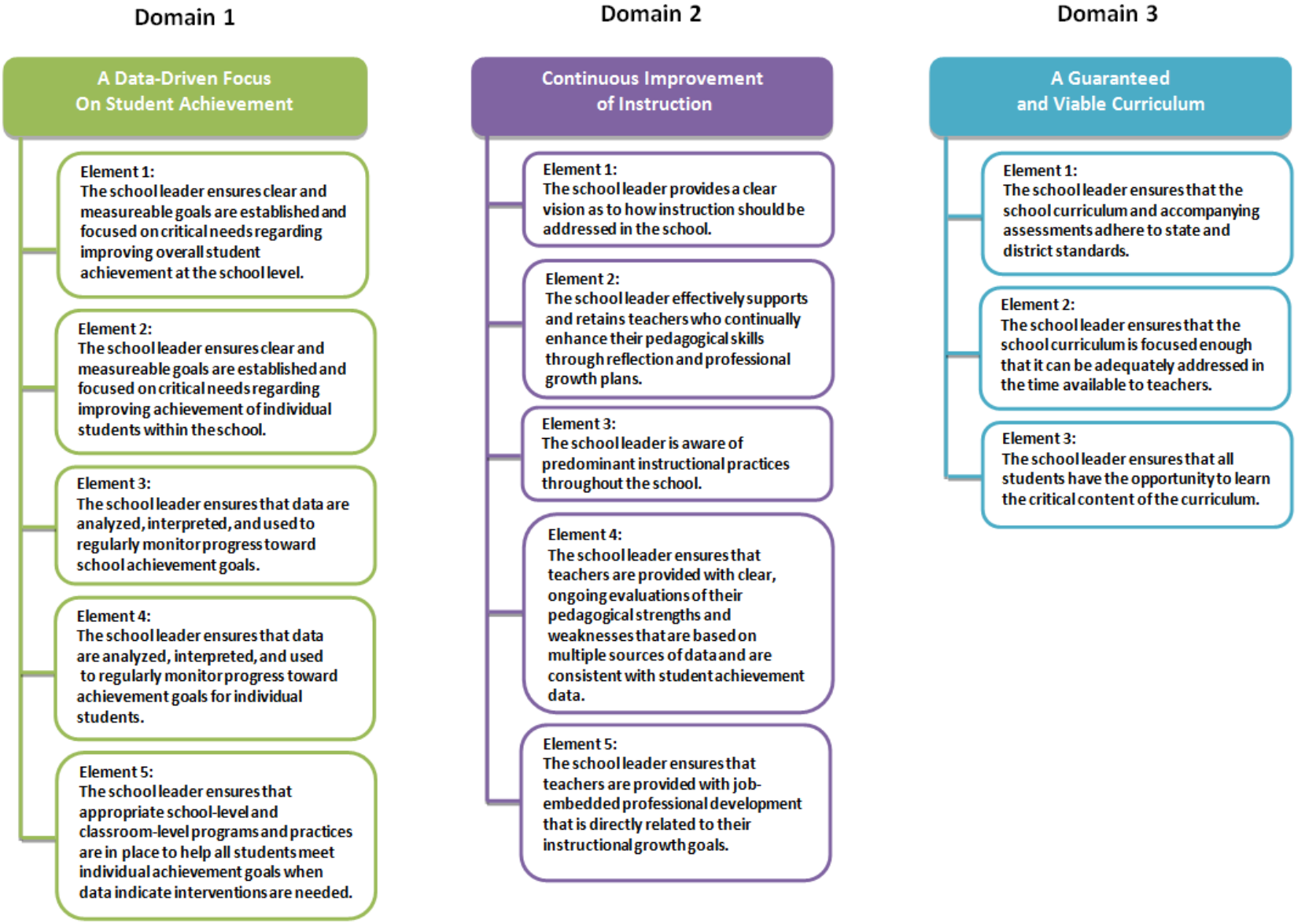
- ❒ The accomplishments of individual teachers, teams of teachers, and the whole school is celebrated in a variety of ways (e.g. faculty celebrations, newsletters to parents, announcements, websites, social media) is recognized
- ❒ The incremental successes of students and teachers is routinely recognized
- ❒ The successes of the diverse school community is celebrated
- ❒ When asked, faculty and staff report that accomplishments of the school and their individual accomplishments have been adequately acknowledged and celebrated
- ❒ When asked, students, parents and community report their accomplishments are adequately acknowledged and celebrated

Notes:

Scale

	Ineffective (1)	Developing (2)	Effective (3)	Highly Effective (4)
V(6): The school leader acknowledges the success of the whole school, as well as individuals within the school.	The school leader attempts to acknowledge and celebrate the accomplishments of the school as a whole and the accomplishments of individuals within the school, but does not complete the task or does so partially OR the school leader does not attempt to do so.	The school leader at the appropriate time acknowledges and celebrates the accomplishments of the school as a whole and the accomplishments of individuals within the school.	The school leader at the appropriate time acknowledges and celebrates the accomplishments of the school as a whole and the accomplishments of individuals within the school AND monitors the extent to which people feel honored for their contributions.	The school leader actively seeks a variety of methods for acknowledging individual and school-wide success that meet the unique needs of faculty and staff.

2013 Marzano School Leader Evaluation Model - New York



Domain 4

Cooperation and Collaboration

Element 1:
The school leader ensures that teachers have opportunities to observe and discuss effective teaching.

Element 2:
The school leader ensures that teachers have formal roles in the decision-making process regarding school initiatives.

Element 3:
The school leader ensures that teacher teams and collaborative groups regularly interact to address common issues regarding curriculum, assessment, instruction, and the achievement of all students.

Element 4:
The school leader ensures that teachers and staff have formal ways to provide input regarding the optimal functioning of the school and delegates responsibilities appropriately.

Element 5:
The school leader ensures that students, parents, and community have formal ways to provide input regarding the optimal functioning of the school.

Domain 5

School Climate

Element 1:
The school administrator is recognized as the leader of the school who continually improves his or her professional practice.

Element 2:
The school leader has the trust of the faculty and staff that his or her actions are guided by what is best for all student populations.

Element 3:
The school leader ensures that faculty and staff perceive the school environment as safe and orderly.

Element 4:
The school leader ensures that students, parents, and the community perceive the school environment as safe and orderly.

Element 5:
The school leader manages the fiscal, operational, and technological resources of the school in a way that focuses on effective instruction and the achievement of all students.

Element 6:
The school leader acknowledges the success of the whole school, as well as individuals within the school.

OCI

Directions: The following are statements about your school, Please indicate the extent to which each statement characterizes your school from **rarely occurs** to **very frequently occurs**.

	Rarely Occurs	Sometimes Occurs	Often Occurs	Very Frequently Occurs
1. The principal explores all sides of topics and admits that other opinions exist.	①	②	③	④
2. A few vocal parents can change school policy.	①	②	③	④
3. The principal treats all faculty members as his or her equal.	①	②	③	④
4. The learning environment is orderly and serious.	①	②	③	④
5. The principal is friendly and approachable.	①	②	③	④
6. Select citizens groups are influential with the board.	①	②	③	④
7. The school sets high standards for academic performance.	①	②	③	④
8. Teachers help and support each other.	①	②	③	④
9. The principal responds to pressure from parents.	①	②	③	④
10. The principal lets faculty know what is expected of them.	①	②	③	④
11. Students respect others who get good grades.	①	②	③	④
12. Teachers feel pressure from the community.	①	②	③	④
13. The principal maintains definite standards of performance.	①	②	③	④
14. Teachers in this school believe that their students have the ability to achieve academically.	①	②	③	④
15. Students seek extra work so they can get good grades.	①	②	③	④
16. Parents exert pressure to maintain high standards.	①	②	③	④
17. Students try hard to improve on previous work.	①	②	③	④
18. Teachers accomplish their jobs with enthusiasm.	①	②	③	④
19. Academic achievement is recognized and acknowledged by the school.	①	②	③	④
20. The principal puts suggestions made by the faculty into operation.	①	②	③	④
21. Teachers respect the professional competence of their colleagues.	①	②	③	④
22. Parents press for school improvement.	①	②	③	④
23. The interactions between faculty members are cooperative.	①	②	③	④
24. Students in this school can achieve the goals that have been set for them.	①	②	③	④
25. Teachers in this school exercise professional judgment.	①	②	③	④
26. The school is vulnerable to outside pressures.	①	②	③	④
27. The principal is willing to make changes.	①	②	③	④
28. Teachers “go the extra mile” with their students.	①	②	③	④
29. Teachers provide strong social support for colleagues.	①	②	③	④
30. Teachers are committed to their students.	①	②	③	④

Center on
GREAT TEACHERS & LEADERS
at American Institutes for Research

NNSTOY
TEACHERSLEADING

Survey Instrument: Teacher Perspectives on Factors Influencing Effectiveness

Thank you for completing the NNSTOY survey. The survey should take approximately 40 minutes to complete. You do not have to complete the survey all at one sitting; you may exit the survey at any time and log back in to complete the survey at a later date. ***The final date for survey completion is Friday, November 22, 2013.*** *Your participation is voluntary, and you may skip questions or discontinue at any time without penalty.*

Section 1. Background Information

First, we have some questions about you and your teaching experience.

1. Are you currently teaching in a PK–12 classroom?
   - ☐ Yes, as a classroom teacher.
   - ☐ Yes, in a specialist role.
   - ☐ No, I am currently in school or district administration.
   - ☐ No, I am currently in an in-building teacher leadership role.
   - ☐ No, I am currently teaching at the college level.
   - ☐ No, I am currently at a non-profit education organization.
   - ☐ No, I am currently at a for-profit education organization.
   - ☐ No, I left the field of education.
   - ☐ No, I am currently retired but am still involved in education through community work.
   - ☐ No, I am currently retired and am not currently involved in education.
   - ☐ Other (specify):

2. Would you have chosen to remain in the classroom as a teacher if there had been more teacher leadership opportunities available to you at the time you left the classroom?
   - ☐ Yes
   - ☐ No
   - ☐ Maybe

3. Excluding student teaching, what is your total number of years of teaching experience overall in a PK–12 setting? *Include the current school year, experience as a substitute teacher, or other special circumstances.*

   ☐ Less than 5 years
   ☐ 5–10 years
   ☐ 11–15 years
   ☐ 16-20 years
   ☐ More than 20 years

4. What grade level(s) have you taught during your teaching career, excluding student teaching? *Check all that apply.*

   ☐ PK
   ☐ K–3
   ☐ 4–6
   ☐ 7–8
   ☐ 9–12

5. What teaching assignment(s) have you held during your career, excluding student teaching? *Check all that apply.*

   ☐ Elementary general education
   ☐ Math
   ☐ Science
   ☐ English
   ☐ Social studies
   ☐ World language
   ☐ English as a second language
   ☐ Special education
   ☐ Reading/language arts
   ☐ Early education
   ☐ Physical education
   ☐ Fine arts (music, drama, art)
   ☐ Family and consumer science
   ☐ Library media specialist
   ☐ School guidance counselor
   ☐ Career education
   ☐ Technology literacy
   ☐ Other (specify): _____

6. What type(s) of school(s) have you taught in during your teaching career, excluding student teaching? *Check all that apply.*

   ☐ Traditional public school

   ☐ Charter school

   ☐ Private school

   ☐ Alternative public school (for example, dropout center and special education center)

   ☐ Department of Defense Education Activity school

   ☐ Other (specify):

7. In which type of school location(s) have you taught during your teaching career, excluding student teaching? *Check all that apply.*

   ☐ Urban school

   ☐ Suburban school

   ☐ Rural school

   ☐ School in a foreign country

8. What percentage of students in the school(s) where you have taught during your teaching career were approved for free or reduced-price lunch? *Check all that apply.*

   ☐ 0–25 percent

   ☐ 26–50 percent

   ☐ 51–75 percent

   ☐ 76–100 percent

   ☐ Don't know

9. How old are you?

   ☐ Under 25

   ☐ 25–30

   ☐ 31–35

   ☐ 36–40

   ☐ 41–45

   ☐ 46–50

   ☐ 51–55

   ☐ 56–60

   ☐ Over 60

10. Are you currently a member of a union?

    ☐ Yes

    ☐ No

Section 2. Preservice Stage

In this section, we would like to ask you questions about the supports you received during the preservice stage of your career—that is, **before you became employed as a teacher.** Specifically, we would like to know what supports were most important to your gaining the skills needed to become effective as a teacher.

11. How did you receive your teaching certification?

- ☐ Bachelor's program
- ☐ Master's program
- ☐ Postbaccalaureate (with BA/BS from same institution)
- ☐ Postbaccalaureate (with BA/BS from different institution)
- ☐ Certification associated in any way with participation in an alternative program (e.g., Teach For America, The New Teacher Project). Specify program:
- ☐ Other (specify):

12. In what year did you complete your preparation program?

- ☐ Before 1990
- ☐ 1991–1995
- ☐ 1996–2000
- ☐ 2001–2005
- ☐ 2006–2010
- ☐ After 2010

13. A number of supports have been cited as helping preservice stage teachers develop their effectiveness as a teacher. Thinking back to the preservice stage of your career, please indicate whether you received the following supports:

	Yes	No	Don't Know
Theoretical coursework (that is, coursework focused on reading and researching issues directly and indirectly related to teaching)	☐	☐	☐
Content coursework in your certification area	☐	☐	☐
Pedagogy-related coursework	☐	☐	☐
Applied coursework on specific skills (such as classroom management, lesson planning, adapting instruction)	☐	☐	☐
Coursework on literacy instruction	☐	☐	☐
Coursework on data analysis (such as how to assess, interpret, adjust instruction based on data)	☐	☐	☐
A final clinical practicum (also referred to as "field experience," "residency," or "student teaching") that you found to be high quality	☐	☐	☐
Fieldwork preceding a final clinical practicum or full-time classroom experience	☐	☐	☐
Formal opportunities for conversations with practicing teachers through courses	☐	☐	☐
Informal opportunities for conversations with practicing teachers outside of class	☐	☐	☐
Early opportunities to observe in the PK–12 classroom	☐	☐	☐
Substitute teaching experiences	☐	☐	☐
Summer school teaching experiences	☐	☐	☐
Instruction by professors with a deep theoretical understanding of instruction	☐	☐	☐
Instruction by professors with recent, relevant PK–12 teaching experience	☐	☐	☐
Support for preservice teachers from your union or association	☐	☐	☐

14. You indicated that you received the following supports. Please rate the importance of each in developing your effectiveness as a teacher.

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't Know
Theoretical coursework (that is, coursework focused on reading and researching issues directly and indirectly related to teaching)	☐	☐	☐	☐	☐	☐
Content coursework in your certification area	☐	☐	☐	☐	☐	☐
Pedagogy-related coursework	☐	☐	☐	☐	☐	☐
Applied coursework on specific skills (such as classroom management, lesson planning, adapting instruction)	☐	☐	☐	☐	☐	☐
Coursework on literacy instruction	☐	☐	☐	☐	☐	☐
Coursework on data analysis (such as how to assess, interpret, adjust instruction based on data)	☐	☐	☐	☐	☐	☐
A final clinical practicum (also referred to as "field experience," "residency," or "student teaching") that you found to be high quality	☐	☐	☐	☐	☐	☐
Fieldwork preceding a final clinical practicum/full-time classroom experience	☐	☐	☐	☐	☐	☐
Formal opportunities for conversations with practicing teachers through courses	☐	☐	☐	☐	☐	☐
Informal opportunities for conversations with practicing teachers outside of class	☐	☐	☐	☐	☐	☐
Early opportunities to observe in the PK–12 classroom	☐	☐	☐	☐	☐	☐
Substitute teaching experiences	☐	☐	☐	☐	☐	☐
Summer school teaching experiences	☐	☐	☐	☐	☐	☐
Instruction by professors with a deep theoretical understanding of instruction	☐	☐	☐	☐	☐	☐
Instruction by professors with recent, relevant PK–12 teaching experience	☐	☐	☐	☐	☐	☐
Support for preservice teachers from your union or association	☐	☐	☐	☐	☐	☐

15. Of the supports that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). If you rated only one support "very important," choose 1 for that support in the drop-down menu. *If you rated more than three supports as "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
Theoretical coursework (that is, coursework focused on reading and researching issues directly and indirectly related to teaching)	☐	☐	☐
Content coursework in your certification area	☐	☐	☐
Pedagogy-related coursework	☐	☐	☐
Applied coursework on specific skills (such as classroom management, lesson planning, adapting instruction)	☐	☐	☐
Coursework on literacy instruction	☐	☐	☐
Coursework on data analysis (such as how to assess, interpret, adjust instruction based on data)	☐	☐	☐
A final clinical practicum (also referred to as "field experience," "residency," or "student teaching") that you found to be high quality	☐	☐	☐
Fieldwork preceding a final clinical practicum/full-time classroom experience	☐	☐	☐
Formal opportunities for conversations with practicing teachers through courses	☐	☐	☐
Informal opportunities for conversations with practicing teachers outside of class	☐	☐	☐
Early opportunities to observe in the PK–12 classroom	☐	☐	☐
Substitute teaching experiences	☐	☐	☐
Summer school teaching experiences	☐	☐	☐
Instruction by professors with a deep theoretical understanding of instruction	☐	☐	☐
Instruction by professors with recent, relevant PK–12 teaching experience	☐	☐	☐
Support for preservice teachers from your union or association	☐	☐	☐

16. You indicated that theoretical coursework was important in helping you develop your effectiveness as a teacher. What type(s) of theoretical coursework significantly improved your effectiveness? *Check all that apply.*

☐ Learning and the brain

☐ Human development

☐ Managing student behavior

☐ Social foundations of education and schooling

☐ Knowledge of school systems

☐ Collaborative practice models

☐ Other (specify): _____

17. You indicated that you had a final clinical practicum that you found to be high quality. Please indicate whether you received the following supports or experiences as part of your final clinical practicum:

	Yes	No	Don't know
I had opportunities to learn from multiple cooperating teachers (defined as the individuals who formally supervised your clinical work).	☐	☐	☐
I had a cooperating teacher who was effective in promoting student learning.	☐	☐	☐
I had a cooperating teacher who was an effective adult mentor.	☐	☐	☐
I had a cooperating teacher who was rather ineffective at teaching (which helped me differentiate strong from weak instruction).	☐	☐	☐
My final clinical practicum lasted one full school year.	☐	☐	☐
My final clinical practicum included multiple placements.	☐	☐	☐
My final clinical practicum was preceded by early clinical experiences before or at the start of my coursework.	☐	☐	☐
My final clinical practicum included observations from my university supervisor.	☐	☐	☐
I received written feedback from observations.	☐	☐	☐
My final clinical practicum involved co-teaching.	☐	☐	☐
My final clinical practicum involved observations conducted by clinical supervisors.	☐	☐	☐
My final clinical practicum involved videotaping.	☐	☐	☐
My final clinical practicum involved simulations.	☐	☐	☐

18. You indicated that you received the following supports or experiences during your final clinical practicum. Please rate the importance of each in developing your effectiveness as a teacher.

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't Know
I had opportunities to learn from multiple cooperating teachers (defined as the individuals who formally supervised your clinical work).	☐	☐	☐	☐	☐	☐
I had a cooperating teacher who was effective in promoting student learning.	☐	☐	☐	☐	☐	☐
I had a cooperating teacher who was an effective adult mentor.	☐	☐	☐	☐	☐	☐
I had a cooperating teacher who was rather ineffective at teaching (which helped me differentiate strong from weak instruction).	☐	☐	☐	☐	☐	☐
My final clinical practicum lasted one full school year.	☐	☐	☐	☐	☐	☐
My final clinical practicum included multiple placements.	☐	☐	☐	☐	☐	☐
My final clinical practicum was preceded by early clinical experiences before or at the start of my coursework.	☐	☐	☐	☐	☐	☐
My final clinical practicum included observations from my university supervisor.	☐	☐	☐	☐	☐	☐
I received written feedback from observations.	☐	☐	☐	☐	☐	☐
My final clinical practicum involved co-teaching.	☐	☐	☐	☐	☐	☐
My final clinical practicum involved observations conducted by clinical supervisors.	☐	☐	☐	☐	☐	☐
My final clinical practicum involved videotaping.	☐	☐	☐	☐	☐	☐
My final clinical practicum involved simulations.	☐	☐	☐	☐	☐	☐

19. Of the supports that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop-down menu. If you rated more than three supports as "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
I had opportunities to learn from multiple cooperating teachers (defined as the individuals who formally supervised your clinical work).	☐	☐	☐
I had a cooperating teacher who was effective in promoting student learning.	☐	☐	☐
I had a cooperating teacher who was an effective adult mentor.	☐	☐	☐
I had a cooperating teacher who was rather ineffective at teaching (which helped me differentiate strong from weak instruction).	☐	☐	☐
My final clinical practicum lasted one full school year.	☐	☐	☐
My final clinical practicum included multiple placements.	☐	☐	☐
My final clinical practicum was preceded by early clinical experiences before or at the start of my coursework.	☐	☐	☐
My final clinical practicum included observations from my university supervisor.	☐	☐	☐
I received written feedback from observations.	☐	☐	☐
My final clinical practicum involved coteaching.	☐	☐	☐
My final clinical practicum involved observations conducted by clinical supervisors.	☐	☐	☐
My final clinical practicum involved videotaping.	☐	☐	☐
My final clinical practicum involved simulations.	☐	☐	☐

20. Now, please think about the qualifications and experiences of effective cooperating teachers in general, that is, the individuals who formally supervise preservice teachers' clinical work. Please rate how important you believe it is that cooperating teachers possess the following qualifications and experiences in order to help preservice teachers become effective:

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't Know
The cooperating teacher has received training for the role of cooperating teacher.	☐	☐	☐	☐	☐	☐
The cooperating teacher has taught in the same grade level as the preservice teacher.	☐	☐	☐	☐	☐	☐
The cooperating teacher has taught in the same field as the preservice teacher.	☐	☐	☐	☐	☐	☐
The cooperating teacher has achieved National Board Certification, Teacher of the Year, department chairmanship, or another esteemed recognition.	☐	☐	☐	☐	☐	☐
The cooperating teacher has a teacher leader role in the school.	☐	☐	☐	☐	☐	☐
The cooperating teacher has at least five years of teaching experience.	☐	☐	☐	☐	☐	☐

20_text. Are there other very important qualifications or experiences that cooperating teachers should possess in order to help preservice teachers become effective, that were not captured in this list?

☐ Yes. Specify: _____

☐ No

21. Of the qualities that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop-down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
The cooperating teacher has received training for the role of cooperating teacher.	☐	☐	☐
The cooperating teacher has taught in the same grade level as the preservice teacher.	☐	☐	☐
The cooperating teacher has taught in the same field as the preservice teacher.	☐	☐	☐
The cooperating teacher has achieved National Board Certification, Teacher of the Year, department chairmanship, or another esteemed recognition.	☐	☐	☐
The cooperating teacher has a teacher leader role in the school.	☐	☐	☐
The cooperating teacher has at least five years of teaching experience.	☐	☐	☐

Section 3. Novice and Advanced Beginner Stage[1]

Now we would like to ask you questions about your development as a teacher during the novice and advanced beginner stage of your career—that is, **in your first five years on the job**. Specifically, we would like to know what supports or experiences have been most important in helping you develop the necessary skills needed to be effective as a teacher?

22. Please indicate whether you received the following supports or experiences during your first five years in the classroom:

	Yes	No	Don't know
I attended an orientation program that sufficiently acquainted me with school policies and protocols from Day 1.	☐	☐	☐
I attended new teacher workshops, trainings, or seminars in my content area.	☐	☐	☐
I attended new teacher workshops, trainings, or seminars on specific cross-content pedagogical issues such as classroom management, college- and career-ready standards, understanding of state teaching standards, or working with special student populations.	☐	☐	☐
I had a school placement that aligned with my talents, training, or certification.	☐	☐	☐
I received a reduced workload.	☐	☐	☐
I received ongoing support from my preparation program.	☐	☐	☐
I had a specific district support team for new teachers.	☐	☐	☐
I had common planning time with other teachers.	☐	☐	☐
I received access to a mentor (assigned or informal).	☐	☐	☐
I received access to a highly supportive principal.	☐	☐	☐
I received support for new teachers from my union or association.	☐	☐	☐
I engaged in professional organizations.	☐	☐	☐
I participated in professional conferences.	☐	☐	☐
I conducted continued coursework on a master's degree.	☐	☐	☐

22_text. Are there are other very important supports or experiences in your first five years in the classroom that were not captured in this list?

☐ Yes. Specify: _____

☐ No

[1] This stage was renamed Novice Stage.

23. You indicated that you received the following supports or experiences in your first five years in the classroom. Please rate the importance of each in developing your effectiveness as a teacher.

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't Know
I attended an orientation program that sufficiently acquainted me with school policies and protocols from Day 1.	☐	☐	☐	☐	☐	☐
I attended new teacher workshops, trainings, or seminars in my content area.	☐	☐	☐	☐	☐	☐
I attended new teacher workshops, trainings, or seminars on specific cross-content pedagogical issues such as classroom management, college- and career-ready standards, understanding of state teaching standards, or working with special student populations.	☐	☐	☐	☐	☐	☐
I had a school placement that aligned with my talents, training, or certification.	☐	☐	☐	☐	☐	☐
I received a reduced workload.	☐	☐	☐	☐	☐	☐
I received ongoing support from my preparation program.	☐	☐	☐	☐	☐	☐
I had a specific district support team for new teachers.	☐	☐	☐	☐	☐	☐
I had common planning time with other teachers.	☐	☐	☐	☐	☐	☐
I received access to a mentor (assigned or informal).	☐	☐	☐	☐	☐	☐
I received access to a highly supportive principal.	☐	☐	☐	☐	☐	☐
I received support for new teachers from my union or association.	☐	☐	☐	☐	☐	☐
I engaged in professional organizations.	☐	☐	☐	☐	☐	☐
I participated in professional conferences.	☐	☐	☐	☐	☐	☐
I conducted continued coursework on a master's degree.	☐	☐	☐	☐	☐	☐

24. Of the supports that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
I attended an orientation program that sufficiently acquainted me with school policies and protocols from Day 1.	☐	☐	☐
I attended new teacher workshops, trainings, or seminars in my content area.	☐	☐	☐
I attended new teacher workshops, trainings, or seminars on specific cross-content pedagogical issues such as classroom management, college- and career-ready standards, understanding of state teaching standards, or working with special student populations.	☐	☐	☐
I had a school placement that aligned with my talents, training, or certification.	☐	☐	☐
I received a reduced workload.	☐	☐	☐
I received ongoing support from my preparation program.	☐	☐	☐
I had a specific district support team for new teachers.	☐	☐	☐
I had common planning time with other teachers.	☐	☐	☐
I received access to a mentor (assigned or informal).	☐	☐	☐
I received access to a highly supportive principal.	☐	☐	☐
I received support for new teachers from my union or association.	☐	☐	☐
I engaged in professional organizations.	☐	☐	☐
I participated in professional conferences.	☐	☐	☐
I conducted continued coursework on a master's degree.	☐	☐	☐

25. Did you have an assigned mentor at any time during your first five years of teaching?

☐ Yes

☐ No

☐ Don't know

26. Please indicate whether your assigned mentor possessed the following characteristics:

	Yes	No	Don't know
My mentor was in the same subject area or grade level as I was.	☐	☐	☐
My mentor was a great teacher.	☐	☐	☐
My mentor modeled effective teaching practices for me.	☐	☐	☐
My mentor exhibited traits such as empathy or compassion.	☐	☐	☐
My mentor's personality or interests aligned with or were complementary to mine.	☐	☐	☐
My mentor had sufficient time to spend with me.	☐	☐	☐
My mentor was in close physical proximity within my school.	☐	☐	☐
My mentor provided me with helpful support/ advice.	☐	☐	☐
My mentor had previous mentoring experience.	☐	☐	☐

27. You indicated that your assigned mentor possessed the following characteristics. Please rate the importance of each in developing your effectiveness as a teacher during your first five years in the classroom.

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't Know
My mentor was in the same subject area or grade level as I was.	☐	☐	☐	☐	☐	☐
My mentor was a great teacher.	☐	☐	☐	☐	☐	☐
My mentor modeled effective teaching practices for me.	☐	☐	☐	☐	☐	☐
My mentor exhibited traits such as empathy or compassion.	☐	☐	☐	☐	☐	☐
My mentor's personality or interests aligned with or were complementary to mine.	☐	☐	☐	☐	☐	☐
My mentor had sufficient time to spend with me.	☐	☐	☐	☐	☐	☐
My mentor was in close physical proximity within my school.	☐	☐	☐	☐	☐	☐
My mentor provided me with helpful support/ advice.	☐	☐	☐	☐	☐	☐
My mentor had previous mentoring experience.	☐	☐	☐	☐	☐	☐

28. Of the characteristics that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
My mentor was in the same subject area or grade level as I was.	☐	☐	☐
My mentor was a great teacher.	☐	☐	☐
My mentor modeled effective teaching practices for me.	☐	☐	☐
My mentor exhibited traits such as empathy or compassion.	☐	☐	☐
My mentor's personality or interests aligned with or were complementary to mine.	☐	☐	☐
My mentor had sufficient time to spend with me.	☐	☐	☐
My mentor was in close physical proximity within my school.	☐	☐	☐
My mentor provided me with helpful support/ advice.	☐	☐	☐
My mentor had previous mentoring experience.	☐	☐	☐

29. Did you have an informal/unofficial mentor at any time during your first five years of teaching?

☐ Yes

☐ No

☐ Don't know

30. Please indicate whether your informal/unofficial mentor possessed the following characteristics:

	Yes	No	Don't know
My mentor was in the same subject area or grade level as I was.	☐	☐	☐
My mentor was a great teacher.	☐	☐	☐
My mentor modeled effective teaching practices for me.	☐	☐	☐
My mentor exhibited traits such as empathy or compassion.	☐	☐	☐
My mentor's personality or interests aligned with or were complementary to mine.	☐	☐	☐
My mentor had sufficient time to spend with me.	☐	☐	☐
My mentor was in close physical proximity within my school.	☐	☐	☐
My mentor provided me with helpful support/advice.	☐	☐	☐
My mentor had previous mentoring experience.	☐	☐	☐

31. You indicated that your informal/unofficial mentor possessed the following characteristics. Please rate the importance of each in developing your effectiveness as a teacher during your first five years in the classroom.

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't Know
My mentor was in the same subject area or grade level as I was.	☐	☐	☐	☐	☐	☐
My mentor was a great teacher.	☐	☐	☐	☐	☐	☐
My mentor modeled effective teaching practices for me.	☐	☐	☐	☐	☐	☐
My mentor exhibited traits such as empathy or compassion.	☐	☐	☐	☐	☐	☐
My mentor's personality or interests aligned with or were complementary to mine.	☐	☐	☐	☐	☐	☐
My mentor had sufficient time to spend with me.	☐	☐	☐	☐	☐	☐
My mentor was in close physical proximity within my school.	☐	☐	☐	☐	☐	☐
My mentor provided me with helpful support/advice.	☐	☐	☐	☐	☐	☐
My mentor had previous mentoring experience.	☐	☐	☐	☐	☐	☐

32. Of the characteristics that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
My mentor was in the same subject area or grade level as I was.	☐	☐	☐
My mentor was a great teacher.	☐	☐	☐
My mentor modeled effective teaching practices for me.	☐	☐	☐
My mentor exhibited traits such as empathy or compassion.	☐	☐	☐
My mentor's personality or interests aligned with or were complementary to mine.	☐	☐	☐
My mentor had sufficient time to spend with me.	☐	☐	☐
My mentor was in close physical proximity within my school.	☐	☐	☐
My mentor provided me with helpful support/advice.	☐	☐	☐
My mentor had previous mentoring experience.	☐	☐	☐

33. Please indicate whether you engaged in the following activities to accelerate your professional growth during your first five years in the classroom:

	Yes	No	Don't know
I developed my own professional growth plan.	☐	☐	☐
I had formal opportunities for self-reflection.	☐	☐	☐
I had structured activities around frameworks such as the National Board for Professional Teaching Standards or Teacher Leader Model Standards.	☐	☐	☐
I had exposure to my own teacher evaluation framework.	☐	☐	☐
I had formal evaluations of my strengths and weaknesses.	☐	☐	☐
I had informal evaluations of my strengths and weaknesses.	☐	☐	☐
I participated in collaborative activities with colleagues.	☐	☐	☐
I participated in data analysis teams.	☐	☐	☐
I participated in a professional learning community.	☐	☐	☐

34. You indicated that you engaged in the following activities during your first five years in the classroom. Please rate the importance of each in developing your effectiveness as a teacher during your first five years in the classroom.

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't Know
I developed my own professional growth plan.	☐	☐	☐	☐	☐	☐
I had formal opportunities for self-reflection.	☐	☐	☐	☐	☐	☐
I had structured activities on frameworks such as the National Board for Professional Teaching Standards or Teacher Leader Model Standards.	☐	☐	☐	☐	☐	☐
I had exposure to my own teacher evaluation framework.	☐	☐	☐	☐	☐	☐
I had formal evaluations of my strengths and weaknesses.	☐	☐	☐	☐	☐	☐
I had informal evaluations of my strengths and weaknesses.	☐	☐	☐	☐	☐	☐
I participated in collaborative activities with colleagues.	☐	☐	☐	☐	☐	☐
I participated in data analysis teams.	☐	☐	☐	☐	☐	☐
I participated in a professional learning community.	☐	☐	☐	☐	☐	☐

35. Of the supports that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
I developed my own professional growth plan.	☐	☐	☐
I had formal opportunities for self-reflection.	☐	☐	☐
I had structured activities on frameworks such as the National Board for Professional Teaching Standards or Teacher Leader Model Standards.	☐	☐	☐
I had exposure to my own teacher evaluation framework.	☐	☐	☐
I had formal evaluations of my strengths and weaknesses.	☐	☐	☐
I had informal evaluations of my strengths and weaknesses.	☐	☐	☐
I participated in collaborative activities with colleagues.	☐	☐	☐
I participated in data analysis teams.	☐	☐	☐
I participated in a professional learning community.	☐	☐	☐

Section 4. Career Stage

Now we would like to ask you questions about your ongoing development as a teacher after being grounded in your career, that is, **after the first five years of teaching**. Specifically, we would like to know what supports and experiences most significantly helped you continue to develop the skills needed to be effective as a teacher.

36. Considering your ongoing development after the first five years of teaching, please indicate whether you **have** received the following supports or experiences:

	Yes	No	Don't know
I have received ongoing formal education.	☐	☐	☐
I have received career advancement/teacher leader opportunities.	☐	☐	☐
I have received school- or district-mandated professional development.	☐	☐	☐
I have received external professional development that I chose, funded by the district.	☐	☐	☐
I have received self-directed, self-funded external professional development.	☐	☐	☐
I have received professional development delivered by teachers.	☐	☐	☐
I have received actionable feedback through formal and informal evaluation.	☐	☐	☐
I have achieved National Board Certification.	☐	☐	☐
I have served as a teacher leader. (Note: The teacher leader career stage will be addressed in the following section.)	☐	☐	☐
I have taught on a team with a teacher leader jointly accountable for my students' outcomes.	☐	☐	☐
I have participated in professional learning communities/collaboration activities with other teachers.	☐	☐	☐
I have presented at conferences or to peer groups.	☐	☐	☐
I have participated in activities aimed at improving my awareness of teaching as a profession, such as membership in a professional association or teachers' union.	☐	☐	☐

37. You indicated that you received the following supports or experiences. Please rate the importance of each in helping you continue to develop skills and knowledge to effectively help your students learn.

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't Know
I have received ongoing formal education.	☐	☐	☐	☐	☐	☐
I have received career advancement/teacher leader opportunities.	☐	☐	☐	☐	☐	☐
I have received school- or district-mandated professional development.	☐	☐	☐	☐	☐	☐
I have received external professional development that I chose, funded by the district.	☐	☐	☐	☐	☐	☐
I have received self-directed, self-funded external professional development.	☐	☐	☐	☐	☐	☐
I have received professional development delivered by teachers.	☐	☐	☐	☐	☐	☐
I have received actionable feedback through formal and informal evaluation.	☐	☐	☐	☐	☐	☐
I have achieved National Board Certification.	☐	☐	☐	☐	☐	☐
I have served as a teacher leader. (Note: The teacher leader career stage will be addressed in the following section.)	☐	☐	☐	☐	☐	☐
I have taught on a team with a teacher leader jointly accountable for my students' outcomes.	☐	☐	☐	☐	☐	☐
I have participated in professional learning communities/collaboration activities with other teachers.	☐	☐	☐	☐	☐	☐
I have presented at conferences or to peer groups.	☐	☐	☐	☐	☐	☐
I have participated in activities aimed at improving my awareness of teaching as a profession, such as membership in a professional association or teachers' union.	☐	☐	☐	☐	☐	☐

38. Of the supports or experiences that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
I have received ongoing formal education.	☐	☐	☐
I have received career advancement/teacher leader opportunities.	☐	☐	☐
I have received school- or district-mandated professional development.	☐	☐	☐
I have received external professional development that I chose, funded by the district.	☐	☐	☐
I have received self-directed, self-funded external professional development.	☐	☐	☐
I have received professional development delivered by teachers.	☐	☐	☐
I have received actionable feedback through formal and informal evaluation.	☐	☐	☐
I have achieved National Board Certification.	☐	☐	☐
I have served as a teacher leader. (Note: The teacher leader career stage will be addressed in the following section.)	☐	☐	☐
I have taught on a team with a teacher leader jointly accountable for my students' outcomes.	☐	☐	☐
I have participated in professional learning communities/collaboration activities with other teachers.	☐	☐	☐
I have presented at conferences or to peer groups.	☐	☐	☐
I have participated in activities aimed at improving my awareness of teaching as a profession, such as membership in a professional association or teachers' union.	☐	☐	☐

39. You indicated that ongoing formal education was an important support in helping you continue to develop skills and knowledge to effectively help your students learn. What type(s) of ongoing formal education significantly improved your continual development? *Check all that apply.*

☐ M.A.

☐ Ed.D.

☐ Ph.D.

☐ Additional certification

☐ Graduate coursework

☐ Licensure renewal activities

☐ National Board Certification

☐ Formal teacher leader training

☐ Conducting teaching and learning focused action research

☐ Other (specify): _____

40. You mentioned that participating in school- or district-mandated professional development helped you become the effective teacher that you are today. Please rate the importance of the following characteristics of your school- or district-mandated professional development in terms of helping you continue to develop skills and knowledge to effectively help your students learn:

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't know/Not relevant to my experience
The professional development is grounded in my day-to-day teaching practice.	☐	☐	☐	☐	☐	☐
The professional development involves, at least, two hours per week to practice the new skills and knowledge.	☐	☐	☐	☐	☐	☐
The professional development is sustained over a period of, at least, 6 months.	☐	☐	☐	☐	☐	☐
The professional development is offered during school hours with substitute teachers available to cover classes.	☐	☐	☐	☐	☐	☐
The professional development is self-selected to be specifically relevant to me.	☐	☐	☐	☐	☐	☐
The professional development is led by other teachers in my school or district.	☐	☐	☐	☐	☐	☐
The professional development involves observing or being observed by peers.	☐	☐	☐	☐	☐	☐

41. Of the characteristics of your school- or district-mandated professional development that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
The professional development is grounded in my day-to-day teaching practice.	☐	☐	☐
The professional development involves, at least, two hours per week to practice the new skills and knowledge.	☐	☐	☐
The professional development is sustained over a period of, at least, 6 months.	☐	☐	☐
The professional development is offered during school hours with substitute teachers available to cover classes.	☐	☐	☐
The professional development is self-selected to be specifically relevant to me.	☐	☐	☐
The professional development is led by other teachers in my school or district.	☐	☐	☐
The professional development involves observing or being observed by peers.	☐	☐	☐

42. You mentioned that participating in **external** professional development helped you become the effective teacher that you are today. Please rate the importance of the following characteristics of that professional development in terms of helping you become effective as a teacher:

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't know/Not relevant to my experience
The external professional development is job embedded (that is, it is grounded in my day-to-day teaching practice).	☐	☐	☐	☐	☐	☐
The external professional development is sustained over a significant period of time (for example, at least 6 months) rather than a one-off.	☐	☐	☐	☐	☐	☐
The external professional development is offered during school hours with substitute teachers available to cover classes.	☐	☐	☐	☐	☐	☐
The external professional development is self-selected to be specifically relevant to me.	☐	☐	☐	☐	☐	☐
The external professional development is led by individuals with recent teaching experience.	☐	☐	☐	☐	☐	☐

43. Of the aspects of your external professional development that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
The external professional development is job embedded (that is, it is grounded in my day-to-day teaching practice).	☐	☐	☐
The external professional development is sustained over a significant period of time (for example, at least 6 months) rather than a one-off.	☐	☐	☐
The external professional development is offered during school hours with substitute teachers available to cover classes.	☐	☐	☐
The external professional development is self-selected to be specifically relevant to me.	☐	☐	☐
The external professional development is led by individuals with recent teaching experience.	☐	☐	☐

44. You mentioned that participating in activities aimed at improving your awareness of teaching as a profession was an important support in terms of helping you continue to develop skills and knowledge to effectively help your students learn. Please rate the importance of the following experiences in terms of helping you continue to develop skills and knowledge to effectively help your students learn:

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't know/Not relevant to my experience
Membership in a teachers union or association.	☐	☐	☐	☐	☐	☐
Membership in professional organizations (for example, ASCD, Learning Forward).	☐	☐	☐	☐	☐	☐
Membership in subject-specific organizations (for example, organizations like	☐	☐	☐	☐	☐	☐
Serving as union/association leader or building representative.	☐	☐	☐	☐	☐	☐
Advocating for the profession.	☐	☐	☐	☐	☐	☐
Engaging in policy work at the local, state, or federal level.	☐	☐	☐	☐	☐	☐
Teaching on a team with a teacher leader jointly accountable for my students' outcomes.	☐	☐	☐	☐	☐	☐

44_text. Are there other very important activities that helped you, as a career stage teacher, to continue to develop skills and knowledge to effectively help your students learn, that were not captured in this list?

☐ Yes. Specify: _____

☐ No

45. Of the activities aimed at improving your awareness of teaching as a profession that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
Membership in a teachers union or association.	☐	☐	☐
Membership in professional organizations (for example, ASCD, Learning Forward).	☐	☐	☐
Membership in subject-specific organizations (for example, organizations like NCTM or ALA)	☐	☐	☐
Serving as union/association leader or building representative.	☐	☐	☐
Advocating for the profession.	☐	☐	☐
Engaging in policy work at the local, state, or federal level.	☐	☐	☐
Teaching on a team with a teacher leader jointly accountable for my students' outcomes.	☐	☐	☐

46. Considering your ongoing development, please indicate whether you have received the following supports or experiences **after the first five years of teaching**:

	Yes	No	Don't know
I have had ongoing mentors (official or unofficial) to guide me through new experiences.	☐	☐	☐
I have had a collegial, collaborative school culture and colleagues.	☐	☐	☐
I have had a specific group of peers with whom to collaborate.	☐	☐	☐
I have had school leaders who have orchestrated meaningful professional learning opportunities.	☐	☐	☐
I have had a working environment that has encouraged emerging leadership roles for teachers beyond our classrooms.	☐	☐	☐
I have had opportunities for self-selection of learning activities.	☐	☐	☐
I have had access to journals, books, virtual resources, and other professional development resources.	☐	☐	☐
I have had access to classroom resources (for example, textbooks, technology).	☐	☐	☐
I have had access to supportive school leadership.	☐	☐	☐
I have had sufficient time to learn and grow.	☐	☐	☐

46_text. Are there other very important supports or experiences that helped you, as a career teacher, to continue to develop skills and knowledge to effectively help your students learn, that were not captured in this list?

☐ Yes. Specify: _____

☐ No

47. You indicated that you received the following supports or experiences. Please rate the importance of each in helping you continue to develop skills and knowledge to effectively help your students learn.

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't Know
I have had ongoing mentors (official or unofficial) to guide me through new experiences.	☐	☐	☐	☐	☐	☐
I have had a collegial, collaborative school culture and colleagues.	☐	☐	☐	☐	☐	☐
I have had a specific group of peers with whom to collaborate.	☐	☐	☐	☐	☐	☐
I have had school leaders who have orchestrated meaningful professional learning opportunities.	☐	☐	☐	☐	☐	☐
I have had a working environment that has encouraged emerging leadership roles for teachers beyond our classrooms.	☐	☐	☐	☐	☐	☐
I have had opportunities for self-selection of learning activities.	☐	☐	☐	☐	☐	☐
I have had access to journals, books, virtual resources, and other professional development resources.	☐	☐	☐	☐	☐	☐
I have had access to classroom resources (for example, textbooks, technology, etc.).	☐	☐	☐	☐	☐	☐
I have had access to supportive school leadership.	☐	☐	☐	☐	☐	☐
I have had sufficient time to learn and grow.	☐	☐	☐	☐	☐	☐

48. Of the supports or experiences that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
I have had ongoing mentors (official or unofficial) to guide me through new experiences.	☐	☐	☐
I have had a collegial, collaborative school culture and colleagues.	☐	☐	☐
I have had a specific group of peers with whom to collaborate.	☐	☐	☐
I have had school leaders who have orchestrated meaningful professional learning opportunities.	☐	☐	☐
I have had a working environment that has encouraged emerging leadership roles for teachers beyond our classrooms.	☐	☐	☐
I have had opportunities for self-selection of learning activities.	☐	☐	☐
I have had access to journals, books, virtual resources, and other professional development resources.	☐	☐	☐
I have had access to classroom resources (for example, textbooks, technology).	☐	☐	☐
I have had access to supportive school leadership.	☐	☐	☐
I have had sufficient time to learn and grow.	☐	☐	☐

Section 5. Teacher Leader Stage

In this final section, we would like to ask you questions about your ongoing development as a teacher since you became a teacher leader—that is, what supports and activities significantly helped you strengthen your craft as a teacher **after you became a Teacher of the Year and/or assumed other teacher leadership responsibilities**?

49. Considering your ongoing development as a teacher leader, please indicate whether you have had the following leadership experiences **since you became a Teacher of the Year and/or assumed other teacher leadership responsibilities**:

	Yes	No	Don't know
I have organized whole-school, whole-grade-level, or whole-team projects.	☐	☐	☐
I have had formal leadership roles in which I was jointly accountable for colleagues' student outcomes, while continuing to teach.	☐	☐	☐
I have had formal leadership roles in which I was jointly accountable for colleagues' student outcomes, but not continuing to teach.	☐	☐	☐
I have had informal leadership roles in improving colleagues' instructional practice.	☐	☐	☐
I have developed collaborative projects with the community.	☐	☐	☐
I have taken coursework in adult learning (demonstrated understanding of adult learning).	☐	☐	☐
I have had a leadership role in national, state, or local forums, workshops, or conferences.	☐	☐	☐
I have served on a school or district leadership team.	☐	☐	☐
I have served as a union/association leader, negotiating team member, union board member, committee member, or delegate to the union's representative assembly.	☐	☐	☐
I have interacted with policymakers.	☐	☐	☐
I have served on national, state, or local education policy and/or public policy committees, taskforces, or think tank activities.	☐	☐	☐
I have been involved in conducting or analyzing research.	☐	☐	☐
I achieved National Board Certification.	☐	☐	☐
I have had a role in which I reached more students than normal by using blended learning.	☐	☐	☐
I have had a role in which I reached more students than normal by leading a teaching team on which I was accountable for all student outcomes.	☐	☐	☐

49_text. Are there other very important leadership experiences that helped you, as a teacher leader, continually strengthen your craft, that were not captured in this list?

☐ Yes. Specify: _____

☐ No

50. You indicated that you have had the following experiences as a teacher leader. Please rate the importance of each in strengthening your craft as a teacher.

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't Know
I have organized whole-school, whole-grade-level, or whole-team projects.	☐	☐	☐	☐	☐	☐
I have had formal leadership roles in which I was jointly accountable for colleagues' student outcomes, while continuing to teach.	☐	☐	☐	☐	☐	☐
I have had formal leadership roles in which I was jointly accountable for colleagues' student outcomes, but not continuing to teach.	☐	☐	☐	☐	☐	☐
I have had informal leadership roles in improving colleagues' instructional practice.	☐	☐	☐	☐	☐	☐
I have developed collaborative projects with the community.	☐	☐	☐	☐	☐	☐
I have taken coursework in adult learning (demonstrated understanding of adult learning).	☐	☐	☐	☐	☐	☐
I have had a leadership role in national, state, or local forums, workshops, or conferences.	☐	☐	☐	☐	☐	☐
I have served on a school or district leadership team.	☐	☐	☐	☐	☐	☐
I have served as a union/association leader, negotiating team member, union board member, committee member, or delegate to the union's representative assembly.	☐	☐	☐	☐	☐	☐
I have interacted with policymakers.	☐	☐	☐	☐	☐	☐
I have served on national, state, or local education policy and/or public policy committees, taskforces, or think tank activities.	☐	☐	☐	☐	☐	☐
I have been involved in conducting or analyzing research.	☐	☐	☐	☐	☐	☐
I achieved National Board Certification.	☐	☐	☐	☐	☐	☐
I have had a role in which I reached more students than normal by using blended learning.	☐	☐	☐	☐	☐	☐
I have had a role in which I reached more students than normal by leading a teaching team on which I was accountable for all student outcomes.	☐	☐	☐	☐	☐	☐

51. Of the experiences that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
I have organized whole-school, whole-grade-level, or whole-team projects.	☐	☐	☐
I have had formal leadership roles in which I was jointly accountable for colleagues' student outcomes, while continuing to teach.	☐	☐	☐
I have had formal leadership roles in which I was jointly accountable for colleagues' student outcomes, but not continuing to teach.	☐	☐	☐
I have had informal leadership roles in improving colleagues' instructional practice.	☐	☐	☐
I have developed collaborative projects with the community.	☐	☐	☐
I have taken coursework in adult learning (demonstrated understanding of adult learning).	☐	☐	☐
I have had a leadership role in national, state, or local forums, workshops, or conferences.	☐	☐	☐
I have served on a school or district leadership team.	☐	☐	☐
I have served as a union/association leader, negotiating team member, union board member, committee member, or delegate to the union's representative assembly.	☐	☐	☐
I have interacted with policymakers.	☐	☐	☐
I have served on national, state, or local education policy and/or public policy committees, taskforces, or think tank activities.	☐	☐	☐
I have been involved in conducting or analyzing research.	☐	☐	☐
I achieved National Board Certification.	☐	☐	☐
I have had a role in which I reached more students than normal by using blended learning.	☐	☐	☐
I have had a role in which I reached more students than normal by leading a teaching team on which I was accountable for all student outcomes.	☐	☐	☐

52. Considering your ongoing development as a teacher leader, please indicate whether you have received the following supports or experiences **since you became a Teacher of the Year and/or assumed other teacher leadership responsibilities**:

	Yes	No	Don't know
I conducted research.	☐	☐	☐
I shared research findings with colleagues.	☐	☐	☐
I provided formal coaching or mentoring to colleagues to improve their instructional practice.	☐	☐	☐
I conducted peer review observations of colleagues.	☐	☐	☐
I was observed by less effective peers.	☐	☐	☐
I delivered professional development activities.	☐	☐	☐
I participated in coursework or developed knowledge in advanced pedagogical practice.	☐	☐	☐
I participated in coursework on teacher leadership.	☐	☐	☐
I served as a scorer of educator assessments.	☐	☐	☐
I assumed a department chairmanship.	☐	☐	☐
I conducted curriculum development.	☐	☐	☐
I conducted pre-clinical supervision of student teachers/teacher candidates.	☐	☐	☐
I taught teacher preparation at the university level.	☐	☐	☐
I became a mentor or instructional coach.	☐	☐	☐
I presented at conferences or to peer groups.	☐	☐	☐

52_text. Are there other very important leadership experiences that helped you, as a teacher leader, continually strengthen your craft that were not captured in this list?

☐ Yes. Specify: _____

☐ No

53. You indicated that you received the following supports or experiences as a teacher leader. Please rate the importance of each in strengthening your craft as a teacher.

	Very important	Somewhat important	Neither important or unimportant	Not very important	Not at all important	Don't Know
I conducted research.	☐	☐	☐	☐	☐	☐
I shared research findings with colleagues.	☐	☐	☐	☐	☐	☐
I provided formal coaching or mentoring to colleagues to improve their instructional practice.	☐	☐	☐	☐	☐	☐
I conducted peer review observations of colleagues.	☐	☐	☐	☐	☐	☐
I was observed by less effective peers.	☐	☐	☐	☐	☐	☐
I delivered professional development activities.	☐	☐	☐	☐	☐	☐
I participated in coursework or developed knowledge in advanced pedagogical practice.	☐	☐	☐	☐	☐	☐
I participated in coursework on teacher leader	☐	☐	☐	☐	☐	☐
I served as a scorer of educator assessments.	☐	☐	☐	☐	☐	☐
I assumed a department chairmanship.	☐	☐	☐	☐	☐	☐
I conducted curriculum development.	☐	☐	☐	☐	☐	☐
I conducted pre-clinical supervision of student teachers/teacher candidates.	☐	☐	☐	☐	☐	☐
I taught teacher preparation at the university level.	☐	☐	☐	☐	☐	☐
I became a mentor or instructional coach.	☐	☐	☐	☐	☐	☐
I presented at conferences or to peer groups.	☐	☐	☐	☐	☐	☐

54. Of the activities that you rated "very important," please rank up to the top 3 in order of importance (1 = Most important, 2 = Second most important, 3 = Third most important). *If you rated only one support "very important," choose 1 for that support in the drop down menu. If you rated more than three supports "very important," rate only top three of them, leaving the others unrated.*

	1	2	3
I conducted research.	☐	☐	☐
I shared research findings with colleagues.	☐	☐	☐
I provided formal coaching or mentoring to colleagues to improve their instructional practice.	☐	☐	☐
I conducted peer review observations of colleagues.	☐	☐	☐
I was observed by less effective peers.	☐	☐	☐
I delivered professional development activities.	☐	☐	☐
I participated in coursework or developed knowledge in advanced pedagogical practice.	☐	☐	☐
I participated in coursework on teacher leadership.	☐	☐	☐
I served as a scorer of educator assessments.	☐	☐	☐
I assumed a department chairmanship.	☐	☐	☐
I conducted curriculum development.	☐	☐	☐
I conducted pre-clinical supervision of student teachers/teacher candidates.	☐	☐	☐
I taught teacher preparation at the university level.	☐	☐	☐
I became a mentor or instructional coach.	☐	☐	☐
I presented at conferences or to peer groups.	☐	☐	☐

55. In your current role, would you be willing for NNSTOY to pass your name to teacher education programs to invite you to speak to preservice and/or other groups of teachers?

☐ Yes, definitely

☐ Yes, probably

☐ Maybe

☐ No

56. Please list any additional experiences or supports not covered by the survey that you believe have contributed to your teaching expertise.

_____

_____

_____

_____

HIGH SCHOOL

ATTACHMENT 24

Teacher Evaluation Tools

CLASSROOM TEACHER EVALUATION INSTRUMENT
(Document A)

	Performance rating			
	Requires Action *(0 points)*	**Developing** *(1 points)*	**Accomplished** *(2 points)*	**Exemplary** *(3 points)*
Domain 1: Planning and Preparation			*(Domain weight: 20%)*	
1a. Demonstrating Knowledge of Content and Pedagogy (Component weight: 4%)	The teacher's plans and practice display **little** knowledge of the content, prerequisite relationships between different aspects of the content, or the instructional practices specific to that discipline.	The teacher's plans and practice reflect **some** awareness of the important concepts in the discipline, prerequisite relationships between them, and the instructional practices specific to that discipline.	The teacher's plans and practice reflect **solid** knowledge of the content, prerequisite relationships between important concepts, and the instructional practices specific to that discipline.	The teacher's plans and practice reflect **extensive** knowledge of the content, the structure of the discipline and instructional practices. The teacher actively builds on knowledge of prerequisites and misconceptions when describing instruction or seeking causes for student misunderstanding. The teacher stays abreast of emerging research areas, new and innovative methods and incorporates them into lesson plans and instructional strategies.
	☐	☐	☐	☐
Elements include: *Knowledge of content and the structure of the discipline* *Knowledge of prerequisite relationships* *Knowledge of content-related pedagogy*				
1b. Demonstrating Knowledge of Students (Component weight: 4%)	The teacher demonstrates **little or no** knowledge of students' backgrounds, cultures, skills, learning levels / styles, language proficiencies, interests, and special needs, and does not seek such understanding.	The teacher **indicates** the importance of understanding students' backgrounds, cultures, skills, learning levels / styles, language proficiencies, interests, and special needs, and attains this knowledge for the class as a whole.	The teacher **actively seeks** knowledge of students' backgrounds, cultures, skills, learning levels / styles, language proficiencies, interests, and special needs, and attains this knowledge for groups of students.	The teacher **actively seeks** knowledge of students' backgrounds, cultures, skills, learning levels / styles, language proficiencies, interests, and special needs from a variety of sources, and **attains** this knowledge of individual students.
	☐	☐	☐	☐
Elements include: *Knowledge of child and adolescent development* *Knowledge of the learning process* *Knowledge of students' skills, knowledge, and language proficiency* *Knowledge of students' interests and cultural heritage* *Knowledge of students' special needs*				
1c. Setting Instructional Outcomes (Component weight: 2%)	Instructional outcomes are unsuitable for students, represent trivial or low-level learning, or are stated only as activities. They do not permit viable methods of assessment. The teacher develops **general** student achievement goals for her or his class **OR does not develop** a goal at all.	Instructional outcomes are of moderate rigor and are suitable for some students, but consist of a combination of activities and goals, some of which permit viable methods of assessment. They reflect more than one type of learning, but the teacher makes no attempt at coordination or integration. The teacher develops **measurable** student achievement goals for her or his class	Instructional outcomes are stated as goals reflecting high-level learning and curriculum standards. They are suitable for most students in the class, represent different types of learning, and can be assessed. The outcomes reflect opportunities for coordination. The teacher develops **measurable** student achievement goals for her or his class that are **aligned** to content standards.	Instructional outcomes are stated as goals that can be assessed, reflecting rigorous learning and curriculum standards. They represent different types of content, offer opportunities for both coordination and integration, and take account of the needs of individual students. The teacher develops **ambitious and measurable** student achievement goals for her or his class that are **aligned** to the content standards.
	☐	☐	☐	☐
Elements include: *Value, sequence, and alignment* *Clarity* *Balance* *Suitability for diverse learners*				
1d. Demonstrating Knowledge of Resources and Technology (Component weight: 2%)	The teacher demonstrates **little or no** familiarity with resources and technology to enhance own knowledge, to use in teaching, or to provide for students who need them. The teacher does not seek such knowledge.	The teacher demonstrates **some** familiarity with resources and technology available through the school or district to enhance own knowledge, to use in teaching, or to provide for students who need them. The teacher does not seek to extend such knowledge.	The teacher is **fully aware** of the resources and technology available through the school or district to enhance own knowledge, to use in teaching, or to provide for students who need them.	The teacher **seeks out** resources and technology (as available) in and beyond the school or district in professional organizations, on the Internet, and in the community to enhance own knowledge, to use in teaching, and to provide for students who need them.
	☐	☐	☐	☐
Elements include: *Resources and technology for classroom use* *Resources and technology to extend content knowledge and pedagogy* *Resources and technology for students*				

CLASSROOM TEACHER EVALUATION INSTRUMENT
(Document A)

	Performance rating			
	Requires Action *(0 points)*	**Developing** *(1 points)*	**Accomplished** *(2 points)*	**Exemplary** *(3 points)*
1e. Designing Coherent Instruction (Component weight: 4%)	The series of learning experiences is **poorly aligned** with the instructional outcomes and does not represent a coherent structure. The experiences are suitable for only some students. The teacher does not plan units by identifying the content standards that his or her students will master in each unit OR does not articulate well-designed essential questions for each unit.	The series of learning experiences demonstrates **partial alignment** with instructional outcomes, and some of the experiences are likely to engage students in significant learning. The lesson or unit has a **recognizable** structure and reflects partial knowledge of students and resources. Based on the annual student achievement goal, the teacher plans units by using 2 of the 4 practices: 1) **identifying** the content standards that his or her students will master in each unit; 2) **articulating** well-designed essential questions for each unit; 3) **employing** backward design in structuring units; and 4) **allocating** an instructionally appropriate amount of time for each unit.	The teacher coordinates knowledge of content, of students, and of content, with students, and of resources to design a series of learning experiences **aligned** to instructional outcomes and suitable for groups of students. The lesson or unit has a **clear** structure and is likely to engage students in significant learning. Based on the annual student achievement goal, the teacher plans units by using 3 of the 4 practices: 1) **identifying** the content standards that his or her students will master in each unit; 2) **articulating** well-designed essential questions for each unit; 3) **employing** backward design in structuring units; and 4) **allocating** an instructionally appropriate amount of time for each unit.	The teacher coordinates knowledge of content, of students, and of resources to design a series of learning experiences **aligned** to instructional outcomes, **differentiated** where appropriate to make them suitable for all students, and likely to engage them in significant learning. The lesson or unit structure is **clear** and allows for different pathways according to student needs. Based on the annual student achievement goal, the teacher plans units by using all 4 practices: 1) **identifying** the content standards that his or her students will master in each unit; 2) **articulating** well-designed essential questions for each unit; 3) **employing** backward design in structuring units; and 4) **allocating** an instructionally appropriate amount of time for each unit.
	☐	☐	☐	☐
Elements include: *Learning activities* *Instructional materials and resources* *Instructional groups* *Lesson and unit structure*				
1f. Designing Student Assessments (Component weight: 4%)	The teacher's plan for assessing student learning contains no clear criteria or standards, is **poorly aligned** with the instructional outcomes, or is inappropriate for many students. The results of assessment have minimal impact on the design of future instruction.	The teacher's plan for student assessment is **partially aligned** with the instructional outcomes, without clear criteria, and / or inappropriate for at least some students. The teacher intends to use assessment results to plan for future instruction for the **class as a whole**.	The teacher's plan for student assessment is **aligned** with the instructional outcomes, uses clear criteria, and is appropriate to the needs of students. The teacher intends to use assessment results to plan for future instruction for **groups of students**.	The teacher's plan for student assessment is **fully aligned** with the instructional outcomes, with clear criteria and standards that show evidence of student contributions to their development. The teacher may have adapted assessment for individuals, and the teacher intends to use assessment results to plan future instruction for **individual students**.
	☐	☐	☐	☐
Elements include: *Congruence with instructional outcomes* *Criteria and standards* *Design of formative assessments* *Use for planning*				

CLASSROOM TEACHER EVALUATION INSTRUMENT
(Document A)

	Performance rating			
	Requires Action *(0 points)*	**Developing** *(1 points)*	**Accomplished** *(2 points)*	**Exemplary** *(3 points)*
Domain 2: The Classroom Environment			*(Domain % of evaluation score: 20%)*	
2a. Creating an Environment of Respect and Rapport (Component weight: 5%)	Classroom interactions, both between the teacher and students and among students, are negative, inappropriate, or insensitive to students' cultural backgrounds and are characterized by sarcasm, put-downs, or conflict.	Classroom interactions, both between the teacher and students and among students, are generally appropriate and free from conflict, but may be characterized by occasional displays of insensitivity or lack of responsiveness to cultural or developmental differences among students.	Classroom interactions between the teacher and students and among students are polite and respectful, reflecting general warmth and caring, and are appropriate to the cultural and developmental differences among groups of students.	Classroom interactions among the teacher and individual students are respectful, reflecting genuine warmth and caring and sensitivity to students' cultures and levels of development. Students themselves ensure high levels of civility among members of the class.
	☐	☐	☐	☐
Elements include: *Teacher interaction with students* *Student interactions with other students*				
2b. Establishing a Culture for Learning (Component weight: 5%)	The classroom environment conveys a negative culture for learning, characterized by low teacher commitment to the subject, low expectations for student achievement, little or no student pride in work and no evidence that students believe that they can succeed if they work hard.	The teacher's attempt to create a culture for learning is partially successful, with little teacher commitment to the subject, little evidence that students believe they can succeed if they work hard, modest expectations for student achievement, and little student pride in work. Both teacher and students appear to be only "going through the motions."	The classroom culture is characterized by high expectations for most students, the belief that students can succeed if they work hard, and genuine commitment to the subject by both teacher and students, with students demonstrating pride in their work.	High levels of student energy and teacher passion for the subject create a culture of learning in which everyone shares a belief in the importance of the subject and the belief that students can succeed if they work hard. All students hold themselves to high standards of performance—for example, by initiating improvements to their work.
	☐	☐	☐	☐
Elements include: *Importance of the content* *Expectations for learning and achievement* *Student pride in work*				
2c. Managing Classroom Procedures (Component weight: 2.5%)	Much instructional time is lost because of inefficient classroom routines and procedures for transitions, handling of supplies, and performance of non-instructional duties.	Some instructional time is lost because classroom routines and procedures for transitions, handling of supplies, and performance of non-instructional duties are only partially effective.	Little instructional time is lost because of classroom routines and procedures for transitions, handling of supplies, and performance of non-instructional duties, which occur smoothly.	Students contribute to the seamless operation of classroom routines and procedures for transitions, handling of supplies, and performance of non-instructional duties.
	☐	☐	☐	☐
Elements include: *Management of instructional groups* *Management of transitions* *Management of materials and supplies* *Performance of noninstructional duties* *Supervision of volunteers and paraprofessionals*				
2d. Managing Student Behavior (Component weight: 5%)	There is no evidence that standards of conduct have been established and little or no teacher monitoring of student behavior. Response to student misbehavior is repressive or disrespectful of student dignity. The teacher **does not** reinforce positive behavior. The teacher **does not** address off-task, inappropriate, or challenging behavior efficiently. Inappropriate and off-task student behavior has **significant** negative impact on the learning of students in the class.	It appears that the teacher has made an effort to establish standards of conduct for students and tries to monitor student behavior and respond to student misbehavior, but these efforts are not always successful. The teacher **reinforces** positive behavior. The teacher addresses **some** off-task, inappropriate, or challenging behavior efficiently. Inappropriate and off-task student behavior has **some** negative impact on the learning of students in the class.	Standards of conduct appear to be clear to students, and the teacher monitors student behavior against those standards. The teacher's response to student misbehavior is appropriate and respectful to students. The teacher **strategically reinforces** positive behavior. The teacher addresses **most** off-task, inappropriate, or challenging behavior efficiently. Inappropriate and off-task student behavior has **little** negative impact on the learning of students in the class.	Standards of conduct are clear, with evidence of student participation in setting them. The teacher's monitoring of student behavior is subtle and preventive, and the teacher's response to student misbehavior is sensitive to individual student needs. Students take an active role in monitoring the standards of behavior. The teacher **strategically reinforces** positive behavior **AND** there is significant evidence that **students** reinforce positive classroom culture. The teacher addresses **almost all** off-task, inappropriate, or challenging behavior efficiently. Inappropriate and off-task student behavior has **no** negative impact on the learning of students in the class.
	☐	☐	☐	☐
Elements include: *Expectations* *Monitoring of student behavior* *Response to student misbehavior*				

CLASSROOM TEACHER EVALUATION INSTRUMENT
(Document A)

	Performance rating			
	Requires Action *(0 points)*	**Developing** *(1 points)*	**Accomplished** *(2 points)*	**Exemplary** *(3 points)*
2e. Organizing Physical Space (Component weight: 2.5%)	The physical environment is unsafe, or some students don't have access to learning. Alignment between the physical arrangement and the lesson activities is poor.	The classroom is safe, and essential learning is accessible to most students; the teacher's use of physical resources, including computer technology, is moderately effective. The teacher may attempt to modify the physical arrangement to suit learning activities with partial success.	The classroom is safe, and learning is accessible to all students; the teacher ensures that the physical arrangement supports the learning activities. The teacher makes effective use of physical resources, including computer technology.	The classroom is safe, and the physical environment ensures the learning of all students, including those with special needs. Students contribute to the use or adaptation of the physical environment to advance learning. The teacher uses technology skillfully, as appropriate to the lesson.
	☐	☐	☐	☐
Elements include: *Safety and accessibility* *Arrangement of furniture and use of physical resources*				

CLASSROOM TEACHER EVALUATION INSTRUMENT
(Document A)

	Performance rating			
	Requires Action *(0 points)*	**Developing** *(1 points)*	**Accomplished** *(2 points)*	**Exemplary** *(3 points)*
Domain 3: Instruction			*(Domain % of evaluation score: 40%)*	
3a. Communicating with Students (Component weight: 9%)	The teacher has an inadequate presence in the classroom. The teacher ineffectively develops students' understanding of the objective by not communicating it, OR teacher does not have a clear objective, OR teacher's lesson does not connect to the objective.	The teacher has a solid presence in the classroom. The teacher effectively develops students' understanding of the objective by 1) communicating what students will know or be able to do by the end of the lesson and 2) connecting the objective to prior knowledge.	The teacher has a solid presence in the classroom. The teacher effectively develops students' understanding of the objective by 1) communicating what students will know or be able to do by the end of the lesson; 2) connecting the objective to prior knowledge; and 3) explaining the importance of the objective.	The teacher has a dynamic presence in the classroom. The teacher effectively develops students' understanding of the objective by 1) communicating what students will know or be able to do by the end of the lesson; 2) connecting the objective to prior knowledge; 3) explaining the importance of the objective; and 4) referring to the objective at key points during the lesson.
	☐	☐	☐	☐
Elements include: *Expectations for learning* *Directions and procedures* *Explanations of content* *Use of oral and written language*				
3b. Using Questioning and Discussion Techniques (Component weight: 9%)	The teacher checks for understanding of content, but **misses nearly all** key moments and **does not get** an accurate pulse of the class's understanding from most checks; the teacher **does not** check for understanding. The teacher's questions are low-level or inappropriate, eliciting limited student participation and recitation rather than discussion. The teacher **never** responds to students' correct answers by probing for higher-level understanding in an effective manner.	The teacher checks for understanding of content, but misses **several** key moments and gets an accurate pulse of the class's understanding from **most** checks such that the teacher has enough information to adjust subsequent instruction if necessary. Some of the teacher's questions elicit a thoughtful response, but most are low-level, posed in rapid succession. The teacher **rarely** responds to students' correct answers by probing for higher-level understanding in an effective manner. The teacher's attempts to engage all students in the discussion are only partially successful.	The teacher checks for understanding of content, but **misses one or two** key moments and gets an accurate pulse of the class's understanding from **almost every** check such that the teacher has enough information to adjust subsequent instruction if necessary. Most of the teacher's questions elicit a thoughtful response, and the teacher allows sufficient time for students to answer. The teacher **sometimes** responds to students' correct answers by probing for higher-level understanding in an effective manner. All students participate in the discussion, with the teacher stepping aside when appropriate.	The teacher checks for understanding of content at **all** key moments and gets an accurate pulse of the class's understanding from **every** check such that the teacher has enough information to adjust subsequent instruction if necessary. Questions reflect high expectations and are culturally and developmentally appropriate. The teacher **frequently** responds to students' correct answers by probing for higher-level understanding in an effective manner. Students formulate many of the high-level questions and ensure that all voices are heard.
Elements include: *Quality of questions* *Discussion techniques* *Student participation*	☐	☐	☐	☐
3c. Engaging Students in Learning (Component weight: 9%)	Activities and assignments, materials, and groupings of students are **inappropriate** for the instructional outcomes or students' cultures or levels of understanding, resulting in little intellectual engagement. The lesson has no structure or is poorly paced.	Activities and assignments, materials, and groupings of students are partially appropriate for the instructional outcomes or students' cultures or levels of understanding, resulting in moderate intellectual engagement. The lesson has a recognizable structure, but that structure is not fully maintained.	Activities and assignments, materials, and groupings of students are **fully appropriate** for the instructional outcomes and students' cultures and levels of understanding. All students are engaged in work of a high level of rigor. The lesson's structure is coherent and is appropriately paced.	Students throughout the lesson are highly intellectually engaged in significant learning and make material and relevant contributions to the activities, student groupings, and materials. The lesson is adapted as necessary to the needs of individuals, and the structure and pacing allow for student reflection and closure.
	☐	☐	☐	☐
Elements include: *Activities and assignments* *Grouping of students* *Use of instructional materials, resources and technology (as available)* *Structure and pacing*				

CLASSROOM TEACHER EVALUATION INSTRUMENT
(Document A)

	Performance rating			
	Requires Action *(0 points)*	**Developing** *(1 points)*	**Accomplished** *(2 points)*	**Exemplary** *(3 points)*
3d. Using Assessment in Instruction (Component weight: 9%)	Assessment is **not used** in instruction, either through monitoring of progress by the teacher or students, or through feedback to students; students are unaware of the assessment criteria used to evaluate their work.	Assessment is **occasionally used** in instruction, through some monitoring of progress of learning by teacher and/or students. Feedback to students is uneven, and students are aware of only some of the assessment criteria used to evaluate their work.	Assessment is **regularly used** in instruction, through self-assessment by students, monitoring of progress of learning by the teacher and/or students, and high-quality feedback to students. Students are fully aware of the assessment criteria used to evaluate their work. The assessments provide students with **multiple ways** to demonstrate mastery.	Assessment is **routinely used** in a sophisticated manner in instruction through student involvement in establishing the assessment criteria, self-assessment by students, monitoring of progress by both students and teachers, and high-quality feedback to students from a variety of sources. The assessments provide students with **multiple ways** to demonstrate mastery and **multiple opportunities** during the unit to demonstrate mastery.
	☐	☐	☐	☐
Elements include: *Assessment criteria* *Monitoring of student learning* *Feedback to students* *Student self-assessment and monitoring of progress*				
3e. Demonstrating Flexibility and Responsiveness (Component weight: 4%)	The teacher adheres to the instruction plan, even when a change would improve the lesson or address students' needs. The teacher brushes aside student questions; when students experience difficulty, the teacher blames the students or their home environment. The teacher **does not re-teach.**	The teacher attempts to modify the lesson when needed and to respond to student questions with moderate success. The teacher accepts responsibility for student success, but has only a limited repertoire of strategies to draw upon. In response to student progress data, the teacher **re-teaches**, as appropriate.	The teacher promotes the successful learning of all students, making adjustments as needed to instruction plans and accommodating student questions, needs, and interests. In response to student progress data, the teacher 1) **re-teaches**, as appropriate, and 2) **modifies long-term plans**, as appropriate.	The teacher seizes an opportunity to enhance learning, building on a spontaneous event or student interests. The teacher ensures the success of all students, using an extensive repertoire of instructional strategies. In response to student progress data, the teacher 1) **re-teaches**, as appropriate, 2) **modifies long-term plans**, as appropriate, and 3) **modifies practice**, as appropriate.
	☐	☐	☐	☐
Elements include: *Lesson adjustment* *Response to students* *Persistence*				

CLASSROOM TEACHER EVALUATION INSTRUMENT
(Document A)

	Performance rating			
	Requires Action *(0 points)*	**Developing** *(1 points)*	**Accomplished** *(2 points)*	**Exemplary** *(3 points)*
Domain 4: Professional responsibilities			*(Domain % of evaluation score: 20%)*	
4a. Reflecting on Teaching (Component weight: 3%)	The teacher **does not** accurately assess the effectiveness of the lesson and has no ideas about how the lesson could be improved.	The teacher provides a **partially accurate** and objective description of the lesson but does not cite specific evidence. The teacher makes only general suggestions as to how the lesson might be improved.	The teacher provides an **accurate** and objective description of the lesson, citing specific evidence. The teacher makes some specific suggestions as to how the lesson might be improved.	The teacher's reflection on the lesson is **thoughtful and accurate**, citing specific evidence. The teacher draws on an extensive repertoire to suggest alternative strategies and predicts the likely success of each.
	☐	☐	☐	☐
Accuracy *Use in future teaching*				
4b. Maintaining Accurate Records (Component weight: 3%)	The teacher's systems for maintaining both instructional and non-instructional records are either **nonexistent or in disarray**, resulting in errors and confusion.	The teacher's system for maintaining both instructional and non-instructional records are **rudimentary** and only partially effective.	The teacher's systems for maintaining both instructional and non-instructional records are **accurate, efficient, and effective.**	The teacher's systems for maintaining both instructional and non-instructional records are **accurate, efficient, and effective**. Students contribute to the maintenance of these systems.
	☐	☐	☐	☐
Elements include: *Student completion of assignments* *Student progress in learning* *Noninstructional records*				
4c. Communicating with Families (Component weight: 4%)	The teacher's communication with families about the instructional program or about individual students is **sporadic or culturally inappropriate**. The teacher makes no attempt to engage families in the instructional program.	The teacher adheres to school procedures for communicating with families and makes **modest attempts** to engage families in the instructional program. However, communications are not always appropriate to the cultures of those families.	The teacher communicates **frequently** with families and successfully engages them in the instructional program. Information to families about individual students is conveyed in a culturally appropriate manner.	The teacher's communication with families is **frequent and sensitive** to cultural traditions; students participate in the communication. The teacher successfully engages families in the instructional program as appropriate.
	☐	☐	☐	☐
Elements include: *Information about the instructional program* *Information about individual students* *Engagement of families in the instructional program*				
4d. Participating in a Professional Community (Component weight: 3%)	The teacher **avoids participating** in a professional community or in school and district events and projects; rarely collaborates with colleagues; and relationships with colleagues are negative or self-serving.	The teacher **becomes involved** in the professional community and in school and district events and projects when specifically asked, makes some effort to collaborate with colleagues, and relationships with colleagues are cordial.	The teacher **participates actively** in the professional community and in school and district events and projects, actively seeks out opportunities to collaborate with others, and maintains positive and productive relationships with colleagues.	The teacher makes a **substantial contribution** to the professional community and to school and district events and projects, collaborates with / coaches others through difficult situations, and assumes a leadership role among the faculty.
	☐	☐	☐	☐
Elements include: *Relationships with colleagues* *Involvement in a culture of professional inquiry* *Service to the school* *Participation in school and district projects*				
4e. Growing and Developing Professionally (Component weight: 3%)	The teacher **does not participate** in professional development activities and makes no effort to share knowledge with colleagues. The teacher is **resistant** to feedback from supervisors or colleagues.	The teacher **participates** in professional development activities that are convenient or are required and makes limited contributions to the profession. The teacher **accepts**, with some reluctance, feedback from supervisors and colleagues.	The teacher **seeks out** opportunities for professional development based on an individual assessment of needs and actively shares expertise with others. The teacher **welcomes** feedback from supervisors and colleagues.	The teacher **actively pursues** professional development opportunities and initiates activities to contribute to the profession. In addition, the teacher **seeks** feedback from supervisors and colleagues.
	☐	☐	☐	☐
Elements include: *Enhancement of content knowledge and pedagogical skill* *Receptivity to feedback from colleagues* *Service to the profession*				

CLASSROOM TEACHER EVALUATION INSTRUMENT
(Document A)

	Performance rating			
	Requires Action *(0 points)*	**Developing** *(1 points)*	**Accomplished** *(2 points)*	**Exemplary** *(3 points)*
4f. Showing Professionalism (Component weight: 4%)	The teacher **inconsistently** adheres to standards for professional conduct and overall performance requirements, including attendance and punctuality. The teacher **fails to comply** with school and district regulations and time lines. The teacher has difficulty demonstrating respect, responsibility, honesty and integrity; requires frequent support supervision; resists feedback from colleagues and administrators and does not work cooperatively with school staff.	The teacher **strives** to adhere to standards for professional conduct and overall performance requirements, including attendance and punctuality. The teacher **complies minimally** with school and district regulations, doing just enough to get by. The teacher strives to develop behaviors that model the values of respect, responsibility, honesty and integrity. However, he or she requires some support supervision. He or she responds appropriately to and acts upon feedback. He or she works cooperatively with school staff most of the time.	The teacher **consistently** adheres to and models standards for professional conduct and overall performance requirements, including attendance and punctuality. The teacher **complies fully and voluntarily** with school and district regulations. Performs with minimum of supervision. The teacher helps members of school community understand and adhere to these professional obligations, responds well to and acts upon feedback and works cooperatively with school staff.	The teacher **consistently** adheres to standards for professional conduct and overall performance requirements; including attendance and punctuality. The teacher **complies fully and voluntarily** with school and district regulations. Performs with minimum of supervision. The teacher helps members of school community understand and adhere to these professional obligations. He or she actively seeks, responds well to and acts upon feedback. Community, families, and students are aware that the teacher models the values of respect, honesty and integrity. The teacher works cooperatively with school staff and actively encourages colleagues to do so.
	☐	☐	☐	☐

Elements include:

- *Integrity and ethical conduct*
- *Service to students*
- *Advocacy*
- *Demonstrates logical thinking and makes practical decisions*
- *Attendance*
- *Punctuality*
- *Compliance with school and district regulations*

Staff Management Decision Making Framework

Contract Type	Management Decision Framework Options
Probationary Year 1	1. Probationary contract for year 2 should be issued if: • Teacher performance level meets or exceeds expectations, and there is no reason to non-renew. 2. Termination should be proposed if: • Another teacher could be hired to better meet the needs of students in the school • Summative Annual Appraisal is below Expectations or Unsatisfactory – for example: o Poor classroom management practices o Poor relationships with students, parents, staff, etc. o High rate of unexcused absences and/or instances of tardiness • Other legal reason
Probationary Year 2	1. Probationary contract for year 3 should be issued if: • Teacher performance level meets or exceeds expectations, and there is no reason to non-renew o However, if a teacher has a one-year Running Cumulative Average between 0 and -3.00 in any one subject, a growth plan will be required for the coming year (i.e. team-teaching, mentoring, professional development) 2. Termination should be proposed if: • Another teacher could be hired to better meet the needs of students in the school • Summative Annual Appraisal is below Expectations or Unsatisfactory – for example: o Poor classroom management practices o Poor relationships with students, parents, staff, etc. o High rate of unexcused absences and/or instances of tardiness o If value-added data is available, the teacher has a one-year Running Cumulative Average of -3.00 or lower in any subject for the most recent school year—**UNLESS** a compelling reason is offered by the Principal and supported by the School Improvement Officer • Other legal reason

Staff Management Decision Making Framework

Probationary Year 3	1. Term contract should be issued if: • Teacher performance is above expected levels o If value-added data is available, the teacher's Cumulative Running Average is 0 (Zero) or higher for all subjects taught 2. Termination should be proposed if: • Another teacher could be hired to better meet the needs of students in the school • Summative Annual Appraisal is below Expectations or Unsatisfactory on any one or more of the Performance Criteria – for example: o Poor classroom management practices o Poor relationships with students, parents, staff, etc. o High rate of unexcused absences and/or instances of tardiness o If available, for any subject the teacher has a -2.00 or lower Running Cumulative Average based on a 2-running average **or** a Running Cumulative Average of -3.00 or lower for the most recent school year if only one year of data is available—**UNLESS** a compelling reason is offered by the Principal and supported by the School Improvement Officer • Other legal reason 3. Optional Probationary contract for year 4 may be issued if: o The teacher has a Running Cumulative Average based on 2-years of value added data between 0 and -2 for any subject **or** based on 3-years of value added data between 0 and -3.00 in any one subject **AND** the principal presents a compelling reason and it is supported by the School Improvement Officer o A growth plan is required for all teachers receiving a Year 4 Probationary Contract (i.e. team-teaching, mentoring, professional development)

Staff Management Decision Making Framework

Probationary Year 4	1. Term contract should be issued if: • Teacher performance meets standards ○ If value-added data is available, the teacher has a Cumulative Running Average of 0 (Zero) or higher for all subjects taught • Teacher performance meets standards ○ BUT, if value-added data is available, for any one subject the teacher has a Running Cumulative Average of greater than -1.00 but less than a 0 (Zero) based on a 3-year running average **or** a Running Cumulative Average of greater than -2.00 or less than a 0 (Zero) based on a 2-year running average **or** a Running Cumulative Average of greater than -3.00 but less than a 0 (Zero) for the most recent school year if only one year of data is available **AND** the principal presents a compelling reason and it is supported by the School Improvement Officer ○ A growth plan is required for all teachers receiving a Term Contract that have value added scores below 0. (i.e. team-teaching, mentoring, professional development) 2. Termination should be proposed if: • Another teacher could be hired to better meet the needs of students in the school • Summative Annual Appraisal Below Expectations or Unsatisfactory – for example: ○ Poor classroom management practices ○ Poor relationships with students, parents, staff, etc. ○ High rate of unexcused absences and/or instances of tardiness ○ If value-added data is available, the teacher has a -1.00 or lower Running Cumulative Average based on a 3-year running average **or** a -2.00 or lower Running Cumulative Average based on a 2-year running average **or** a Running Cumulative Average of -3.00 or lower for the most recent school year if only one year of data is available—**UNLESS** a compelling reason is offered by the Principal and supported by the School Improvement Officer • Other legal reason

Staff Management Decision Making Framework

Term	1. Contract should continue if: • Teacher performance meets or is above expected levels ○ But, if a teacher has a Running Cumulative Average that is regressive (i.e. Less than 0) in any one subject, a growth plan is required (i.e. team-teaching, mentoring, professional development) • There is no other compelling reason to terminate the contract 2. Termination should be proposed if: • Unsatisfactory performance on one or more of the 34 criteria as part of the district's evaluation system for teachers.
Continuing	1. Contract should continue if: • Teacher performance meets or is above expected levels ○ But, if a teacher has a Running Cumulative Average that is regressive (i.e. Less than 0) in any one subject, a growth plan is required (i.e. team-teaching, mentoring, professional development) • There is no other compelling reason to terminate the contract. 2. Termination should be proposed if: • Unsatisfactory performance on one or more of the 34 criteria as part of the district's evaluation system for teachers.

Domain of Planning Instruction and Assessment

Instructional Plans

This Indicator and Domain are evaluated over time (multiple observations/lessons being observed).

Planning instruction encompasses decisions based on the district standards combined with knowledge of the disciplines taught, research-based professional practices, and the students who are to learn the curriculum. — Paula Rutherford

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**

• The format of the standards-based instructional plans includes: review, introduction, presentation, activity, and closure.
• Instructional plans include *all five* of the following components:
  • Content that
  - Connects to previous learning and other powerful ideas
  - Is broken down into the concepts and vocabulary to be learned
  • Activities and materials that
  - Support the learning objective(s)
  - Provide students with choices
  - Are relevant to students' lives
  • Grouping size, compositions, and tasks that
  - Maximize opportunities for student practice, student interaction, and for students to learn from each other
  - Hold students accountable for group *and* individual work
  • Questioning that is
  - Varied
  - Sequenced to the learning objective(s)
  - Purposeful and coherent
  • Differentiated instruction that
  - Varies content, process, and product
• *Instructional plans are observable and utilized.*
	• The format of the standards-based instructional plans includes: review, introduction, presentation, activity, and closure.
	• Instructional plans include four of the following components:
	  • Content that
	  - Connects to previous learning and other powerful ideas
	  - Is broken down into the concepts and vocabulary to be learned
	  • Activities and materials that
	  - Support the learning objective(s)
	  - Provide students with choices
	  - Are relevant to students' lives
	  • Grouping size, compositions, and tasks that
	  - Maximize opportunities for student practice, student interaction, and for students to learn from each other
	  - Hold students accountable for group *and* individual work
	  • Questioning that is
	  - Varied
	  - Sequenced to the learning objective(s)
	  - Purposeful and coherent
	  • Differentiated instruction that
	  - Varies content, process, and product
		• The format of the standards-based instructional plans does not include: review, introduction, presentation, activity, or closure.
		• Instructional plans do not include the following components:
		  • Content that
		  - Connects to previous learning and other powerful ideas
		  - Is broken down into the concepts and vocabulary to be learned
		  • Activities and materials that
		  - Support the learning objective(s)
		  - Provide students with choices
		  - Are relevant to students' lives
		  • Grouping size, compositions, and tasks that
		  - Maximize opportunities for student practice, student interaction, and for students to learn from each other
		  - Hold students accountable for group *and* individual work
		  • Questioning that is
		  - Varied
		  - Sequenced to the learning objective(s)
		  - Purposeful and coherent
		  • Differentiated instruction that
		  - Varies content, process, and product

Domain of Planning Instruction and Assessment

Assessment Plans

This Indicator and Domain are evaluated over time (multiple observations/lessons being observed).

Effective assessment can motivate the unmotivated, restore the desire to learn,
encourage students to keep learning and ultimately increase student achievement. — Richard Stiggins

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
Assessment plans: • Are aligned with state content standards and instructional plans. • Have a clear desired student performance outcome. • Include a variety of formative measures aligned to the learning objective(s). • Include summative measures. • *Include goal setting* and documentation of student progress toward state content standards. • *Are observable and utilized to inform instruction.*	**Assessment plans:** • Are aligned with state content standards and instructional plans. • Have a clear desired student performance outcome. • Include a variety of formative measures aligned to the learning objective(s). • Include summative measures. • Include opportunities for goal setting and documentation of student progress toward state content standards.	**Assessment plans:** • Are not aligned with state content standards. • Do not have a clear student performance outcome. • Do not include a variety of formative measures aligned to the learning objective(s). • Do not include summative measures. • Do not include goal setting. • Are not observable or utilized to inform instruction.

Domain of Instruction

Standards and Objectives

This Indicator is evaluated based on a snapshot in time (lesson observed).

Establishing and communicating a specific learning objective is essential to direct student learning and to measure student progress.

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
• The standards-based learning objective(s) is specific, measurable, *demanding*, and meaningful. • The teacher communicates, displays, and *references* the learning objective(s) *throughout the lesson.* • The teacher *thoroughly* communicates the purpose of the learning objective(s). • The teacher makes the desired student performance outcome *thoroughly* clear to *all* students. • The lesson *is focused* on a limited set of skills and/or knowledge selected to help students reach the learning objective(s). • There is evidence that most students demonstrate mastery of the learning objective(s).	• The standards-based learning objective(s) is specific, measurable, and meaningful. • The teacher communicates and displays the learning objective(s). • The teacher communicates the purpose of the learning objective(s). • The teacher makes the desired student performance outcome clear to most students. • The lesson is mostly focused on a limited set of skills and/or knowledge selected to help students reach the learning objective(s). • There is evidence that most students demonstrate mastery of the learning objective(s).	• The standards-based learning objective(s) is not specific, measurable, demanding, or meaningful. • The learning objective(s) is not communicated. • The purpose of the learning objective(s) is not communicated. • Expectations for student performance are unclear. • The lesson is not focused on a limited set of skills or knowledge selected to help students reach the learning objective(s). • There is evidence that few students demonstrate mastery of the learning objective(s).

Domain of Instruction

Presenting Instructional Content

This Indicator is evaluated based on a snapshot in time (lesson observed).

The teaching and learning process is the interaction between the teacher and the students with the content. An effective teacher delivers instruction so that the learners are actively engaged with the content.

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
The teacher: • Previews what will be learned and connects it to previous learning. • Provides visuals to establish the organization of the lesson. • Breaks down the concept to be learned and teaches each part using appropriate, effective strategies and/or tools. • Highlights key concepts and ideas *and connects them to other powerful ideas*. • Provides for *frequent* student interactivity with content. • Communicates *all* essential information, is on topic, and is succinct. • *Frequently* includes internal summaries during the lesson. • Responds to students' cues to adjust instruction.	**The teacher:** • Previews what will be learned and connects it to previous learning. • Provides visuals to establish the organization of the lesson. • Breaks down the concept to be learned and teaches each part using appropriate, effective strategies and/or tools. • Highlights key concepts and ideas. • Provides for student interactivity with content. • Communicates most essential information, is on topic, and is succinct. • Includes internal summaries during the lesson. • Responds to students' cues to adjust instruction.	**The teacher:** • Does not preview what will be learned or connect it to previous learning. • Provides ineffective or no visuals to establish the organization of the lesson. • Does not appropriately break down the concept to be learned. • Does not highlight key concepts and ideas or connect them to other powerful ideas. • Does not provide for student interactivity with content. • Communication is off topic. • Includes no internal summaries during the lesson. • Does not respond to students' cues to adjust instruction.

Domain of Instruction

Learning Activities & Materials

This Indicator is evaluated based on a snapshot in time (lesson observed).

Learning activities and materials must provide coherent, relevant learning experiences that will evoke and develop the desired understandings, promote interest, and lead to excellent performance.

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
Activities and materials: • Support the learning objective(s). • Generate and sustain student engagement. • Provide opportunities for student-to-student interaction. • *Provide students with choices.* • *Are relevant to students' lives.* **AND include at least one of the following:** • Student interactivity with games or game-like materials. • Product creation. • Student use of multimedia. • Student use of technology. • Self-direction. • Self-monitoring. • Student use of resources beyond the school curriculum texts and materials.	**Activities and materials:** • Support the learning objective(s). • Generate and sustain student engagement. • Provide opportunities for student-to-student interaction. **AND include at least one of the following:** • Student interactivity with games or game-like materials. • Product creation. • Student use of multimedia. • Student use of technology. • Self-direction. • Self-monitoring. • Student use of resources beyond the school curriculum texts and materials.	**Activities and materials:** • Do not support the learning objective(s). • Does not generate or sustain student engagement. • Do not provide opportunities for student-to-student interaction. **AND do not include:** • Student interactivity with games or game-like materials. • Product creation. • Student use of multimedia. • Student use of technology. • Self-direction. • Self-monitoring. • Student use of resources beyond the school curriculum texts and materials.

Domain of Instruction

Learning Groups

This Indicator is evaluated over time (multiple observations/lessons being observed).

When students are intentionally placed into groups they experience multiple ways of thinking, receive more feedback, and engage in higher levels of discussion and interaction.

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
Over the course of multiple observations: • Group size, group composition, and group tasks create opportunities for student practice, student interaction, *and* for students to learn from each other. • Group work requires students to *set goals*, reflect on the group process, and evaluate their individual learning. • *All* students perform their responsibilities and are held accountable for *both* group *and* individual work.	**Over the course of multiple observations:** • Group size, group composition, and group tasks create opportunities for student practice, student interaction, or for students to learn from each other. • Group work requires students to reflect on the group process and evaluate their individual learning. • Most students perform their responsibilities and are held accountable for either group or individual work.	**Over the course of multiple observations:** • Group size, group composition, and group tasks do not create opportunities for student practice, student interaction, or for students to learn from each other. • Group work does not challenge students to set goals, reflect on the group process, or evaluate their individual learning. • Few students perform their responsibilities and are held accountable for group or individual work.

Domain of Instruction

Questioning

This Indicator is evaluated based on a snapshot in time (lesson observed).

When teachers use questions skillfully, they engage their students in an exploration of content.
A teacher's skill in questioning and in leading discussions makes a powerful contribution to student learning. – Charlotte Danielson

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
• Questions are varied (remembering, understanding, applying, analyzing, evaluating, creating). • Questions *are sequenced* with attention to the learning objective(s). • Questions *are* purposeful and coherent. • Questions *frequently* require active student responses. • Adequate wait time is *consistently* provided. • The teacher provides opportunities for students to generate *and answer* questions relevant to the learning objective(s). • The teacher asks *a high frequency of* questions to engage students. • The teacher calls on volunteers, non-volunteers, and a balance of students based on race, ability, and gender.	• Questions are varied (remembering, understanding, applying, analyzing, evaluating, creating). • Questions are mostly sequenced with attention to the learning objective(s). • Questions are usually purposeful and coherent. • Questions require active student responses. • Adequate wait time is usually provided. • The teacher provides opportunities for students to generate questions relevant to the learning objective(s). • The teacher asks questions to engage students. • The teacher calls on volunteers, non-volunteers, and a balance of students based on race, ability, and gender.	• Questions are not varied (remembering, understanding, applying, analyzing, evaluating, creating). • Questions are not sequenced with attention to the learning objective(s). • Questions are not purposeful or coherent. • Questions do not require active student responses. • Adequate wait time is rarely provided. • The teacher does not provide opportunities for students to generate questions relevant to the learning objective(s). • The teacher does not ask a high frequency of questions to engage students. • The teacher rarely calls on students.

Domain of Instruction

Academic Feedback

This Indicator is evaluated based on a snapshot in time (lesson observed).

Effective academic feedback tells students where they are on the continuum of mastery, what they are doing right, and next steps to take. It is just-in-time, just-for-me information delivered when and where it will do the most good.

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
The teacher: • Provides a *high frequency* of oral and/or written feedback that is timely, academically-focused, corrective/directive, and specific to the learning objective(s). • Circulates to prompt student thinking, assess each student's progress, and *to provide individual feedback.* • *Intentionally engages students in giving academically-focused, corrective/directive, and specific to the learning objective feedback to one another.*	**The teacher:** • Provides oral and/or written feedback that is timely, academically-focused, corrective/directive, and specific to the learning objective(s). • Circulates to prompt student thinking, assess each student's progress, and sometimes to provide individual feedback.	**The teacher:** • Does not provide oral and/or written feedback that is timely, academically-focused, corrective/directive, or specific to the objective. • Does not circulate to prompt student thinking, assess each student's progress, or provide individual feedback.

Domain of Instruction

Critical Thinking and Problem Solving

This Indicator is evaluated over time (multiple observations/lessons being observed).

The teaching of critical thinking and problem solving enables students to develop mental techniques or abilities that allow them to reason, judge, or formulate thoughts. Teaching thinking skills consists of teaching students how to engage in these behaviors.

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
Over the course of multiple observations, *all four* thinking/problem solving approaches are intentionally and explicitly taught and utilized. • Analytical thinking where students compare/contrast, evaluate/explain, classify/categorize, or draw/justify conclusions. • Practical thinking where students use, apply, and implement concepts and ideas they learned to work on real-life tasks. • Creative thinking where students generate ideas, create, design, and evaluate a final product. • Inquiry-based thinking where students hypothesize, observe, experiment, record, and report results.	**Over the course of multiple observations, three of the thinking/problem solving approaches are intentionally and explicitly taught and utilized.** • Analytical thinking where students compare/contrast, evaluate/explain, classify/categorize, or draw/justify conclusions. • Practical thinking where students use, apply, and implement concepts and ideas they learned to work on real-life tasks. • Creative thinking where students generate ideas, create, design, and evaluate a final product. • Inquiry-based thinking where students hypothesize, observe, experiment, record, and report results.	**Over the course of multiple observations, the teacher implements few learning experiences that thoroughly teach or utilize any type of thinking/problem solving.** • Analytical thinking where students compare/contrast, evaluate/explain, classify/categorize, or draw/justify conclusions. • Practical thinking where students use, apply, and implement concepts and ideas they learned to work on real-life tasks. • Creative thinking where students generate ideas, create, design, and evaluate a final product. • Inquiry-based thinking where students hypothesize, observe, experiment, record, and report results.

Domain of Instruction

Differentiated Instruction

This Indicator is evaluated over time (multiple observations/lessons being observed).

Not all students are alike. We must not differentiate *who will learn* what but rather *how we will teach* so that all students have access to, and support and guidance in, mastering the content. –Paula Rutherford

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
Over the course of multiple observations, the teacher: • Provides differentiated CONTENT according to *individual student* readiness, interest, and learning profile. • Provides differentiated PROCESS according to *individual student* readiness, interest, and learning profile. • As appropriate, provides opportunities for differentiated PRODUCT according to *individual student* readiness, interest, and learning profile.	**Over the course of multiple observations, the teacher:** • Provides differentiated CONTENT according to groups of students' readiness, interests, and learning profiles. • Provides differentiated PROCESS according to groups of students' readiness, interests, and learning profiles. • As appropriate, provides opportunities for differentiated PRODUCT according to groups of students' readiness, interests, and learning profiles.	**Over the course of multiple observations, the teacher:** • Does not differentiate CONTENT according to student readiness, interest, or learning profile. • Does not differentiate PROCESS according to student readiness, interest, or learning profile. • Does not differentiate PRODUCT according to student readiness, interest, or learning profile.

Domain of Instruction

Lesson Structure

This Indicator is evaluated based on a snapshot in time (lesson observed).

Time, structure, and routines blend together to create a framework for the effective delivery of a lesson.

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
• Lesson starts and ends *on time*. • Lesson structure is coherent and includes these aspects: review, introduction, presentation, activity, and closure. • The teacher provides time *throughout the lesson* for reflection on what was learned and why. • Procedures and routines are well established, efficient, and demonstrated by *all* students so that instructional time is maximized.	• Lesson starts and ends somewhat on time. • Lesson structure is coherent and includes these aspects: review, introduction, presentation, activity, and closure. • The teacher provides time for reflection on what was learned and why. • Procedures and routines are well established, efficient, and demonstrated by most students so that instructional time is maximized.	• Lesson does not start and/or end on time. • Lesson structure is not coherent and includes few of these aspects: review, introduction, presentation, activity, closure. • The teacher does not provide time for reflection on what was learned. • Procedures and routines are not well established or efficient.

Domain of Learning Environment

Academic Expectations

This Indicator and Domain are evaluated over time (multiple observations/lessons being observed).

Having high academic expectations for all students influences the instructional decisions and behavior of the teacher. By believing that all students can achieve, the teacher makes it a practice to behave in ways that communicate those high expectations to every student.

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
• High and demanding academic expectations are set for every student. • *All* students are consistently and meaningfully engaged. • *All* students are encouraged to learn from mistakes. • Learning opportunities are created where *all* students can experience success. • Most students *take initiative and follow through with their own work.* • Instructional time is optimized *and expectations are set for better performance from every student.*	• High and demanding academic expectations are set for every student. • Most students are consistently and meaningfully engaged. • Most students are encouraged to learn from mistakes. • Learning opportunities are created where most students can experience success. • Most students complete their work according to teacher expectations. • Instructional time is optimized.	• High and demanding academic expectations are not set for every student. • Students are not consistently or meaningfully engaged. • Students are not encouraged to learn from mistakes. • Learning opportunities are not created where all students can experience success. • Students do not take initiative or follow through with their own work. • Instructional time is not optimized.

Domain of Learning Environment

Managing Student Behavior

This Indicator and Domain are evaluated over time (multiple observations/lessons being observed).

Effective classroom management is essentially invisible, because when students are well-behaved and engaged, the focus is on instruction and learning. — Rick Smith

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
Students are consistently well-behaved and on task because the teacher: • Establishes clear standards of conduct. • Attends to misbehavior quickly, respectfully, and appropriately. • Addresses individual student behavior rather than the entire class and is sensitive to the students' individual needs. • Uses subtle responses to correct minor disruptions. • Assigns natural and logical consequences. • Overlooks inconsequential behavior when appropriate. • *Effectively uses research-based management strategies.*	**Students are usually well-behaved and on task because the teacher:** • Establishes clear standards of conduct. • Attends to misbehavior quickly, respectfully, and appropriately. • Addresses individual student behavior rather than the entire class and is sensitive to the students' individual needs. • Uses subtle responses to correct minor disruptions. • Assigns natural and logical consequences. • Overlooks inconsequential behavior when appropriate.	**Students are not-well behaved or on task because the teacher does not:** • Establish clear standards of conduct. • Attend to misbehavior quickly, respectfully, or appropriately. • Address individual student behavior and is not sensitive to the students' individual needs. • Use subtle responses to correct minor disruptions. • Assign natural and logical consequences. • Overlook inconsequential behavior.

Domain of Learning Environment

Physical Environment

This Indicator and Domain are evaluated over time (multiple observations/lessons being observed).

The physical environment is an important resource for learning and should provide flexibility in organizing students and activities.

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
The classroom *consistently*: • Is organized and understandable to *all* students. • Has supplies, equipment, and resources *easily and readily* accessible. • Displays relevant student work. • Is arranged to promote individual and group learning. • Is safe and clean. • Displays the state standards. • Displays content-specific references or resources.	**The classroom usually:** • Is organized and understandable to most students. • Has supplies, equipment, and resources accessible. • Displays relevant student work. • Is arranged to promote individual and group learning. • Is safe and clean. • Displays the state standards. • Displays content-specific references or resources.	**The classroom:** • Is not organized and understandable to all students. • Does not has have supplies, equipment, or resources easily or readily accessible. • Does not display relevant student work. • Is not arranged to promote individual or group learning. • Is not safe or clean. • Does not display the state standards. • Does not display content-specific references or resources.

Domain of Learning Environment

Respectful Culture

This Indicator and Domain are evaluated over time (multiple observations/lessons being observed).

Creating a positive classroom climate begins with showing respect to one another and leads to a caring and supportive learning environment.

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
***Consistently*,** • Interactions between teacher and student are respectful. • Interactions between students are respectful. • Interactions among members of the class reflect warmth, caring, and sensitivity. • Students take pride in their work. • The teacher seeks out the interests and opinions of all students. • The teacher *thoroughly* reinforces and rewards effort.	**Usually,** • Interactions between teacher and student are respectful. • Interactions between students are respectful. • Interactions among members of the class reflect warmth, caring, and sensitivity. • Students take pride in their work. • The teacher seeks out the interests and opinions of all students. • The teacher reinforces and rewards effort.	• Interactions between teacher and student are not respectful. • Interactions between students are not respectful. • Interactions among members of the class do not reflect warmth, caring and sensitivity. • Students do not take pride in their work. • The teacher does not seek out the interests or opinions of students. • The teacher does not reinforce or reward effort.

Domain of Learning Environment

Classroom Procedures

This Indicator and Domain are evaluated over time (multiple observations/lessons being observed).

Procedures are the railroad tracks…content is the train. — Rick Smith

Exemplary – 5 **Descriptors are met thoroughly and have significant impact on student learning.**	**Professional – 3** **Descriptors are met effectively and impact student learning.**	**Unsatisfactory – 1**
***Consistently*, classroom procedures and routines:** • Are explicitly taught, practiced, and understood by students. • Are clear at the beginning, during the middle, and at the end of class, and for special situations. • Are efficient. • Include non-instructional duties. • Require all students to contribute.	**Usually, classroom procedures and routines:** • Are explicitly taught, practiced, and understood by students. • Are clear at the beginning, during the middle, and at the end of class, and for special situations. • Are efficient. • Include non-instructional duties. • Require all students to contribute.	**Classroom procedures and routines:** • Are not explicitly taught, practiced, and or understood by students. • Are not clear at the beginning, during middle, and at the end of class, or for special situations. • Are not efficient. • Do not include non-instructional duties. • Do not require all students to contribute.

OCI

Directions: The following are statements about your school, Please indicate the extent to which each statement characterizes your school from **rarely occurs** to **very frequently occurs**.

	Rarely Occurs	Sometimes Occurs	Often Occurs	Very Frequently Occurs
1. The principal explores all sides of topics and admits that other opinions exist.	①	②	③	④
2. A few vocal parents can change school policy.	①	②	③	④
3. The principal treats all faculty members as his or her equal.	①	②	③	④
4. The learning environment is orderly and serious.	①	②	③	④
5. The principal is friendly and approachable.	①	②	③	④
6. Select citizens groups are influential with the board.	①	②	③	④
7. The school sets high standards for academic performance.	①	②	③	④
8. Teachers help and support each other.	①	②	③	④
9. The principal responds to pressure from parents.	①	②	③	④
10. The principal lets faculty know what is expected of them.	①	②	③	④
11. Students respect others who get good grades.	①	②	③	④
12. Teachers feel pressure from the community.	①	②	③	④
13. The principal maintains definite standards of performance.	①	②	③	④
14. Teachers in this school believe that their students have the ability to achieve academically.	①	②	③	④
15. Students seek extra work so they can get good grades.	①	②	③	④
16. Parents exert pressure to maintain high standards.	①	②	③	④
17. Students try hard to improve on previous work.	①	②	③	④
18. Teachers accomplish their jobs with enthusiasm.	①	②	③	④
19. Academic achievement is recognized and acknowledged by the school.	①	②	③	④
20. The principal puts suggestions made by the faculty into operation.	①	②	③	④
21. Teachers respect the professional competence of their colleagues.	①	②	③	④
22. Parents press for school improvement.	①	②	③	④
23. The interactions between faculty members are cooperative.	①	②	③	④
24. Students in this school can achieve the goals that have been set for them.	①	②	③	④
25. Teachers in this school exercise professional judgment.	①	②	③	④
26. The school is vulnerable to outside pressures.	①	②	③	④
27. The principal is willing to make changes.	①	②	③	④
28. Teachers “go the extra mile” with their students.	①	②	③	④
29. Teachers provide strong social support for colleagues.	①	②	③	④
30. Teachers are committed to their students.	①	②	③	④

Professional Development

High rigor, Placed-based, and Industry-based learning strategies however are not necessarily innate to teacher practice. Because the annual student-learning outcomes of AAHS students are in great part attributable to the quality of daily teacher practice at AAHS (Levine and Marcus, 2010), we prioritize teacher preparation by hosting a Summer Faculty Institute each year which provide all AAHS teachers with 90 learning hours before teaching their first AAHS student. AAHS understands that simply carving out time for teachers to work together is only the beginning of constructing meaningful communities of practice (Jackson & Cobb, 2013) so our teachers and leaders take full advantage of summer PD to jointly construct, transform, preserve, and deepen the meaning of our effective teaching practices (Wenger, 1998). Three weeks of practice-based summer PD in addition to 90 hours of weekly Friday PD across 30 academic weeks ensures the successful transition from pedagogy to effective teacher practice.

The person/position responsible for professional development will be the Director of Teaching and Learning. All professional development is led by the DTL. AAHS teachers spend over 180 hours in professional development annually and our leadership team ensures that each learning moment is maximized. Professional development focuses on student culture, student data, teacher content knowledge, and high-quality implementation of AAHS academic models.

Supporting and Developing Teachers through Professional Development

AAHS places a heavy emphasis on professional development for all adults. A significant portion of the adult schedule is allocated for PD resources. The figure below outlines 188 learning hours directly contributing to the growth and development of AAHS teachers. All PD opportunities focus on research based instructional practices used to most effectively reach all learners. Furthermore, each session is classified under the following 4 topics: 1) Building content knowledge, 2) Strengthening instructional strategies, 3) Culturally responsive teaching, and 4) Effective SEL Classroom Management.

Professional Development Breakdown (Days/Hours)

- Summer Institute (15 Days @ 7 hours) =105 Hours
- Additional Full Day (3 Days @ 7 hours)= 21 Hours
- Early Release- PD Days (31 days @ 2 hours)= 62 Hours
  10 days-External presenter PD
  21 days-Internal PD
- Total= 188 PD Hours

Additional PD Offerings

- **Individual coaching**/remediation= 60 minutes weekly
- Professional Conferences=Highly encouraged/possible AAHS funding
- Additional Courses/Advanced Degrees/Industry Certifications=Highly encouraged/possible AAHS funding

Building Content Knowledge/Strengthening instructional strategies

AAHS diligently work to become “experts” in their content area by steadily building content knowledge. Professional development at AAHS provides staff critical opportunities for deep dives in content specific groups into required standards. Teachers will together analyze difficult standards and practice breaking them down into smaller learning tasks for students. These learning opportunities affords teachers a safe space to grapple with content information and practice lesson delivery in a safe development space before standing in front of students. Teachers will continue improving their practice through grade level collaborative planning, grade level data analysis, and whole school at-bats for effective classroom management. Approximately 65% of Summer Institute PD is led by content specialists (which includes our curriculum providers-Carnegie Learning, American Reading Company, and Houghton Mifflin Harcourt and industry-based partners-Delta Airlines, Aircraft Owners and Pilots Association, Kaiser Industries) to prepare college and career track teachers at AAHS to deliver high quality lessons on day one of school. The Head of School and Director of teaching provide the remaining 35% of professional development (whole group) for teachers on common building instructional practices and classroom management strategies.

Making Culturally Response Decisions

In the Bessemer and surrounding areas, black students have a 39.54 proficiency rate and Hispanics are at 42.95 rate. These statistics are staggering, but far from impossible to overcome with the right teachers and resources. AAHS teachers will play a large role in aggressively improving the academic performance of its African American, Latinx, Special populations, and ELL students. AAHS understands that Effective teaching not only requires mastery of content knowledge and pedagogical skills but also requires an intimate knowledge of the student population. Culturally responsive decisions require attention to students' social, emotional, and academic growth. Modeling, dialog and attention, practice, and confirmation all support growth. AAHS teachers will be trained to use this framework as a means to support our diverse student population.

1. Our teachers will be trained to teach in cross-cultural settings and to identify and reconcile teacher bias. Alaquest Collaborative For Education will provide 2 full days of professional development in these areas during the Summer Institute. This includes train-the-trainer sessions for the Director of Teaching and Learning who will be responsible for monitoring and providing additional support throughout the school year.
2. Selected curriculum and supplemental resources were chosen with our students in mind. Culturally responsiveness calls for the inclusion of cultural characteristics and contributions of different ethnic groups. Students will see reading selections in ELA and social studies that show a broad representation of cultural diversity. Daily math stories, modeling, and hands-on activities will highlight real-world connections to situations familiar to our student population and our communities. Multi-cultural contributions to science will be celebrated. Carnegie Learning Solutions (math), American Reading Company (ELA), and Houghton Mifflin Harcourt (social studies and science) all provide these types of resources, training, and on-going support necessary to meet AAHS student needs. During AAHS’s Summer Institute, each curriculum provider will conduct 2 full days of subject-level PD demonstrating curriculum layouts and

features along with how to access, incorporate, and accommodate resources to meet special education, general education, and ELL student needs. They will also provide on-going individual instructional support in the use of their curriculum and special features during teachers' planning periods.

3. AAHS believes it is necessary to build a culture of parity, on-going internal evaluation, and accountability that fosters a culturally responsive environment to ensure all students' needs are being met. Schools who truly care for students through cultural responsiveness make sure best-practices are modeled and monitored. For this purpose, on early release days (21 early release days designated), PD sessions will focus on internal support. Led by the Director of Teaching and Learning, our teachers will demonstrate the inclusion of culturally responsive practices by sharing recorded lessons for the purpose of discussions, critiques, and adjustments. They will also share lesson plans and model instructional techniques. Our special education and ELL teachers will provide feedback on what is needed to support students with learning disabilities, gifted/talented and ELLs. They will also model supportive instructional techniques as needed. Our counselors and social workers will add a layer to address potential socio emotional learning topics.

AAHS faculty will be well-prepared for its students. Professional development will start with a 3-week Faculty Summer Institute. Teachers will learn about the student population and potential special needs based on feeder school data and individual student records. The Faculty Summer Institute will provide content, instructional, and industry-based training needed to meet the needs of AAHS's diverse student population. AAHS will also discuss the infrastructure and evaluation practices in place to make sure school, faculty, student, and parent needs are addressed.

Day	Activities

Day 1	• AAHS Orientation
	• Who are we?
	• Our Story-Why aerospace/aviation
	• Vision
	• Mission
	• Faculty introductions
	• Student population overview
	  ▪ Highlights
	  ▪ Challenges
	• Team building activities (Part 1)

Day 2	• Team building activities (Part 2)
Day 3	• School Culture/Climate Human resources • Faculty behavior expectations • Student behavior expectations/faculty accountability Safety
Day 4	• Tour of the Facility • Classrooms Simulation Rooms Multi-purpose rooms • School accessible equipment with overview • Interdisciplinary Think-tank (What can I do with this-Share out)

Day 5	Educational Framework (Part 1)
Day 6	Educational Framework (Part 2)
Day 7	Evaluation Process
Day 8	Curriculum Provider PD (Part 1)
Day 9	Curriculum Provider PD (Part 2)
Day 10	Technology PD
Day 11	Technology PD
Day 12	Technology PD
Day 13	Socio-Emotional Learning (Part 1)
Day 14	Socio-Emotional Learning (Part 2)
Day 15	Pulling it All Together: Addressing “Special” Needs

AAHS faculty will receive on-going professional development that is necessary to meet the academic, industry-based, and social-emotional needs of its students. Faculty will first participate in a 15-day Summer Institute. During the school year, there will be a designated student early release day. With the exception of 9-weeks Parent Conference Days (1 per 9-weeks), this will provide 2 hours weekly of intentional time for faculty professional development and/or collaborative planning. Faculty will also have 3 full-days of professional development during the second semester. They are encouraged to participate in state and national educational conferences that focus on content, instruction, and technology strengthening. Faculty are expected to integrate what they have learned during professional development training into their lesson plans and instructional practices; this will be evaluated through lesson plan reviews and routine classroom observations.

Professional Development Breakdown (Days/Hours)	
Summer Institute (15 Days @ 7 hours)	105 hours
Additional Full Day (3 Days @ 7 hours)	21 hours
Early Release- PD Days (31 days @ 2 hours)	62 hours
	Total PD Hours= 188 hours

Performance Management

Our goal is to become the leading high school in the state of Alabama and one of the tops in the nation for STEM education. We believe that we can leverage an aerospace and aviation focused curriculum to engage students and foster academic success.

The following goals are created using the Alabama Department of Education ESSA Plan non-proficient reduction rate goal setting format. Because AAHS students will largely come from geographical areas zoned for current Bessemer and surrounding area middle and high schools, we assume that starting student proficiency rates will resemble that of these districts.

Long-term Academic Goals

- Over a 5-year initial charter term, AAHS will achieve an ELA proficiency rate of 59%, 11 points above Bessemer High School and the surrounding targeted area districts' projected ELA performance as predicted by the Alabama ESSA Plan (as measured by State Assessment-ACT).
- AAHS will achieve a Math proficiency rate of 56% over the first 5-year charter term, 11 points above Bessemer High School and the surrounding targeted area districts' projected Math performance as predicted by the Alabama ESSA Plan (as measured by State Assessment-ACT).
- Over a 5-year initial charter term, AAHS will achieve a 5-year average graduation rate equal to or better than the state average of 92% out pacing the projected Alabama ESSA Plan goal for the year 2030.
- 100% of students will be admitted to a 4-year or 2-year college and/or military enlistment.
- 100% of students complete a 4-year Aviation/Aerospace STEM pathway leading to an industry recognized credential or college credit.
- African-American and low-socioeconomic students will outperform their peer group across the state by 15 percentage points in Math and ELA by year 5.
- As a gap closing measure, Black, and Latinx AAHS will narrow the state-wide achievement gap between white students within 10 proficiency points by year 5.

Annual Academic Goals

- AAHS students will grow at least 6% in student proficiency on the MAP assessment (9^{th}/10^{th}) and state test (Pre-ACT 10^{th}/ACT 11^{th}) in ELA and Math each year.
- AAHS will outperform the local school district in Math and ELA on the state assessment by at least 3% in student proficiency by the end of year 3 (State assessment administered in 11^{th} grade).
- AAHS students will rank in the top 25% of growth in the state annually and the top 5% by year 3.

AAHS's goal is to close district, ethnicity, socio-economic, and learning disability academic gaps. AAHS students will take the ALSDE state mandated ACT/Pre-ACT, ACT WorKeys, along with the NWEA MAP to measure progress and goal attainment.

AAHS will out-perform the local school district by at least 3% in student proficiency on the state test (ACT) in ELA by year one. AAHS will out-perform the state by at least 2 percentage points by year 8.

- Based on the Alabama Department of Education ESSA Plan non-proficient reduction rate goal setting format, Bessemer High School and the surrounding targeted area districts should target at least a 61.5% proficiency rate in ELA for the year 2030. These targets assume that both Bessemer and the surrounding area high schools will increase their proficiency rates each year by approximately 4 percentage points. Given that AAHS will only have 8 years to reach the same 10-year goal. We have set a target of at least 6 percentage points worth of growth each year. This goal will put us on pace to out-perform the state by 2030 with an 8 goal of 71% proficiency rate.

AAHS will out-perform the local school district by at least 3% in student proficiency on the state test (ACT) in Math by year one. AAHS will out-perform the District by at least 9 percentage points by year 8.

- Based on the Alabama Department of Education ESSA Plan non-proficient reduction rate goal setting format, Bessemer High School and surrounding targeted area districts should target at least a 60.5% proficiency rate in Math for the year 2030. These targets assume that both the districts and the top performing high schools will increase their proficiency rates each year by approximately 4 percentage points. Given that AAHS will only have 8 years to reach the same 10-year goal. We have set a target of at least 6 percentage points worth of growth each year. This goal will put us on pace to out-perform the state by 2030 with an 8-year goal of 69% proficiency rate.

AAHS will have closed the achievement gap in ELA on the state assessment (ACT) between black students and white student in the District by year 3 (State assessment administered in 11th grade).

- Based on the Alabama Department of Education ESSA Plan non-proficient reduction rate goal setting format, Bessemer High School and the surrounding targeted area districts should target at least a 63% proficiency rate in ELA for the year 2030 for white students. Asian students are the top performing subgroup in the districts with a proficiency rate of 26% on the state test. Black students in the district are scoring at a 24% proficiency rate on the same test indicating a goal of 62% proficiency by the year 2030. Given that AAHS will only have 8 years to reach the same 10-year goal. We have set a target of at least 6 percentage points worth of growth each year for our Black students. This goal will put us on pace to out-perform the highest performing sub group in the district by 2030 with an 8-year goal of 72% proficiency rate.

AAHS will have closed the achievement gap in ELA on the state assessment (ACT) between Latinx students and white in the District by year 3 (State assessment administered in 11th grade).

- Based on the Alabama Department of Education ESSA Plan non-proficient reduction rate goal setting format, Bessemer High School and the surrounding targeted area districts should target at least a 69% proficiency rate in ELA for the year 2030 for Asian students. Asian students are the top performing subgroup in the districts with a proficiency rate of 37.5% on the state test. Latinx students in the district are scoring at a 20% proficiency rate on the same test indicating a goal of 60% proficiency by the year 2030. Given that AAHS will only have 8 years to reach the same 10-year goal. We have set a target of at least 6.2 percentage points worth of growth each year for our Latinx students. This goal will put us on pace to out-perform the highest performing sub group in the district by 2030 with an 8-year goal of 70% proficiency rate.

AAHS will have closed the achievement gap in Math on the state assessment between black students and white students in the District by year 3 (State assessment administered in 11th grade).

- Based on the Alabama Department of Education ESSA Plan non-proficient reduction rate goal setting format, Bessemer High School and the surrounding targeted area districts should target at least a 64% proficiency rate in Math for the year 2030 for White students. White students are the top performing subgroup in the district with a proficiency rate of 28% on the state test. Black students in the district are scoring at a 21% proficiency rate on the same test indicating a goal of 60.5% proficiency by the year 2030. Given that AAHS will only have 8 years to reach the same 10-year goal. We have set a target of at least 5.5 percentage points worth of growth each year for our Black students. This goal will put us on pace to out-perform the highest performing sub group in the district by 2030 with an 8-year goal of 65% proficiency rate.

AAHS will have closed the achievement gap in Math on the state assessment between Latinx students and white students in the District by year 1.

- Based on the Alabama Department of Education ESSA Plan non-proficient reduction rate goal setting format, Bessemer High School and the surrounding targeted area districts should target at least a 64% proficiency rate in Math for the year 2030 for White students. White students are the top performing subgroup in the district with a proficiency rate of 28% on the state test. Latinx students in the district are scoring at a 24% proficiency rate on the same test indicating a goal of 62% proficiency by the year 2030. Given that AAHS will only have 8 years to reach the same 10-year goal. We have set a target of at least 5 percentage points worth of growth each year for our Latinx students. This goal will put us on pace to out-perform the highest performing sub group in the district by 2030 with an 8-year goal of 64% proficiency rate.

AAAHs will have closed the achievement gap in Math on the state assessment (ACT) between low-income students and the highest performing sub group by 2030

- Based on the Alabama Department of Education ESSA Plan non-proficient reduction rate goal setting format, Bessemer High School and the surrounding targeted area districts should target at least a 64% proficiency rate in Math for the year 2030 for White students. White students are the top performing subgroup in the district with a proficiency rate of 28% on the state test. Low-Income students in the district are scoring at a 17% proficiency rate on the same test indicating a goal of 58.5% proficiency by the year 2030. Given that AAHS will only have 8 years to reach the same 10-year goal. We have set a target of at least 6 percentage points worth of growth each year for our Low-Income students. This goal will put us on pace to out-perform the highest performing sub group in the district by 2030 with an 8-year goal of 65% proficiency rate.

AAHs will have closed the achievement gap in ELA on the state assessment (ACT or Alternative) between IEP students and an average of all students by 2030.

- Based on the Alabama Department of Education ESSA Plan non-proficient reduction rate goal setting format, Bessemer High School and the surrounding targeted area districts should target at least a 61.5% proficiency rate in ELA for the year 2030. Currently, Bessemer High School and the surrounding targeted area districts should also be working toward a proficiency rate of 53.5% for students with IEPs following the same formula. Our goal is to close that gap. We

believe that if students with IEPs at AAHS increase in proficiency by 7 percentage points each year we can reach a goal of 63% proficient by 2030.

AAHs will have closed the achievement gap in Math on the state assessment (ACT or Alternative) between IEP students and an average of all students by 2030.

- Based on the Alabama Department of Education ESSA Plan non-proficient reduction rate goal setting format, Bessemer High School and the surrounding targeted area districts should target at least a 60.5% proficiency rate in Math for the year 2030. Currently, Bessemer High School and the surrounding targeted area districts should also be working toward a proficiency rate of 53.5% on the state test in Math for students with IEPs following the same formula. Our goal is to close that gap. We believe that if students with IEPs at AAHS increase in proficiency by 7 percentage points each year we can reach a goal of 63% proficient by 2030.

Assessments

Assessment	Grades Administered	Origin of Assessment	Frequency of Administration	Standard Alignment
NWEA MAP	9-10	NWEA	Three Times A Year	NWEA Benchmarks
ACT	10-12	College Board	Twice A Year	CCRS
ACT WorKeys	12	College Board	Once A Year	CCRS
Pre-ACT	9-10	College Board	Twice A Year	CCRS
AP Exams	9-12	College Board	Once A Year	CCRS
Interim Assessments	9-12	Course Curriculum	Twice A Year	CCRS
End of Course Assessments	9-12	Course Curriculum	Once A Year	CCRS

NWEA MAP

NWEA is a research-based, not-for-profit organization that supports students and educators worldwide by creating assessment solutions that precisely measure growth and proficiency—and provide insights to help tailor instruction. NWEA MAP tools are trusted by educators in more than 9,500 schools, districts, and education agencies in 145 countries. The original NWEA assessments gave teachers data they could use to inform classroom instruction. The RIT scale because they required a consistent, precise tool that would provide accurate measurement of each student's academic growth. The strength of MAP assessments is that it supplies educators with the valid, reliable, and predictive data they need to make a positive difference in every student's learning and growth. In line with our mission to help close the college access gap that persists between well-resourced students with social capital and those who rarely have access to college access information. The MAP test will be our baseline assessment used to measure the academic performance of all students entering 9th or 10th grade. The MAP assessment will also provide us with data for student placement in ACT intervention groupings. This test will be given at the start of the year, in the middle of the year and the end of the year. As 9th and 10th grade students take this assessment three times a year, our goal is for 70% of students to achieve their MAP growth goals.

ACT/Pre-ACT

We use ACT because it provides an objective and standardized measurement of readiness used in college admissions decisions, the data provided by the ACT test can be used to inform states, districts, schools, teachers, parents, and students themselves about students' educational progress. Our intervention teachers hold weekly intervention periods for each ACT subject area—four periods per week in total—that are coordinated by their Lead Interventionist. All first-years, sophomores, and juniors are grouped by their scores on the MAP assessment, and teachers continuously model skills, beginning with foundational concepts in the content areas and continuing on to more focused ACT skills. The intervention teachers help students practice these transferable skills and assess students' progress. Students are given extensive feedback and the opportunity to work until they have mastered the concepts that are necessary for success both on the ACT and in their courses. They are also taught learning and testing strategies that are beneficial for their other courses. For juniors, an optional intensive group meets after school and on Saturdays for additional tutoring on the content of their courses and the ACT. 11th grade students will take the test once in the fall then again in the spring. 12th graders will take the test once in the fall. 10th grade students who scored a 17 or higher on the Pre-Act can take the regular ACT in the spring. The Pre-ACT provides our youngest students exposer to the assessment item structure and the rigor necessary for achieving high college readiness scores. The increased exposure to ACT aligned practice assessments will increase students' chances to achieve at high levels when they take the primary ACT.

ACT WorKeys

WorKeys is a system of assessments and curriculum that build and measure essential workplace skills that can affect your job performance and increase opportunities for career changes and advancement. By completing the assessments, students can earn the National Career Readiness Certificate. To ensure that workplace skill requirements are not outpacing AAHS's ability to prepare their students, we are offering this curriculum to students on a career readiness pathway as opposed to a college readiness pathway.

Advanced Placement Exams

Given our focus on aerospace, aviation, and computer science, our students will have access to Advanced Placement courses beginning their 10th grade year. Our goal is for 85% students to take at least one AP or Dual enrollment course before graduation. Students in AP courses will take their end of course exams at the end of each spring semester.

Interim Assessments

At AAHS we see data-driven instruction and interim assessments as key drivers to student success and academic achievement. Interim assessments will be offered 4-6 times a year and will be aligned to the ACT and the Alabama Course of Study Standards. Teachers will be able to see the assessments and align their instructional sequences with the interim assessment schedule. Teachers will re-teach standards that are not mastered and adjust instructional approaches based on interim assessment data analysis. Unit building block assessments will be constructed based on the rigor bar set by interim assessments.

End of Course Assessment

AAHS students will take finals at the end of each semester. Most courses will end at the end of the second semester but some electives may end at the end of the first semester. EOC exams serve as a final measurement for students to demonstrate mastery. These assessments serve as a percentage of a student's overall grade in a particular course.

Industry-Based Credentialing Exams

Assessment	Grades Administered	Origin of Assessment	Frequency of Administration	Standard Alignment
Private Pilots Exam	11-12	FAA	Once A Year	FAA Regulations
Drone Pilots Exam	11-12	FAA	Twice A Year	FAA Regulations
Aircraft Mechanic Oral Exam	12	FAA	Once A Year	FAA Regulations
Aircraft Mechanic Written Exam	12	FAA	Once A Year	FAA Regulations
Aircraft Mechanic Practical Exam	12	FAA	Once A Year	FAA Regulations
Dual Enrollment Midterm Exams	10-12	Higher Education Partner	Four Times A Year	Course Objectives
Dual Enrollment End of Course Finals	10-12	Higher Education Partner	Four Times A Year	Course Objectives

Private Pilots Exam

AAHS students who have successfully completed the required ground school coursework and subsequent elective courses related to our private pilot pathway will be eligible to sit for the private pilot exam. Students on this pathway could be ready to sit for the exam as early as second semester of their 11th grade year.

Drone Pilots Exam

AAHS students engaged in our pilot pathway can also opt to pursue a drone pilots license. The required exam can be taken at any time once a student has completed our required pathway course electives. Typically, this could be as early as the first semester of a student's 11th grade year.

Aircraft Mechanic Oral/Practical/Written Exam

AAHS students who have completed the required course work in our aircraft maintenance pathway can pursue their certificate by taking the required exams given by a Designated Mechanic Examiner. The oral and practical tests cover 43 technical subjects. Typically tests for one certificate--airframe or powerplant--takes about 8 hours.
Students must apply to take the written test, and present proof of experience to an FAA inspector at the local FAA office. Our students who complete all required pathway courses should be prepared to sit for these exams during the Spring of their 12th grade year.

Dual Enrollment Midterm/Final Exams

Students enrolled in our Aerospace and Computer Science pathways will be strongly encouraged to take dual enrollment courses with one of our higher education partners beginning their 11th grade year. Those courses will follow examination schedules set by those institutions. Students will be expected to follow those guidelines.

Along with the ACT and MAP assessments, the AAHS team will use comprehensive exams, standards-based interim assessments, bi-weekly classroom assessments, rigor-aligned exit tickets, and daily independent assignments to inform and adjust curriculum, instruction, and student interventions.

Teachers will also prepare students for additional college admission requirements by embedding SAT and ACT-type questions in classroom assessments. Students will exit not only with a high school diploma, but with the assurance of being prepared to enter college or immediate employment.

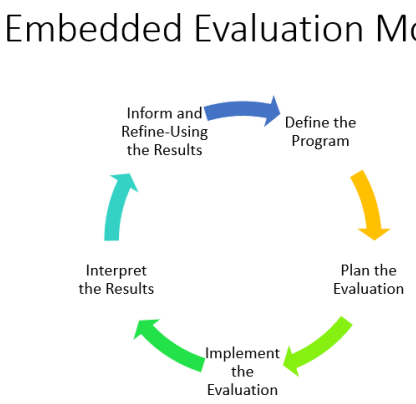
AAHS proposed learning standards will be based on the Alabama Courses of Study and industry-based standards. AAHS's goal is for its students to graduate not only with a diploma, but with an industry credential.

AAHS students will go beyond state academic standards. They will also be motivated to meet aerospace and/or aviation industry standards, leading to obtaining an industry credential. AAHS students will start by completing an introduction course where they will learn about aerospace and aviation track options. Track options will include:

- Aviation Drone Pilot
- Aviation Pilot
- Aviation Mechanic
- Aerospace/Aviation Engineer
- Aerospace/Aviation Computer Science (Cyber Security)

Students will meet with their "flight crew" near the end of their 9th grade year to determine their best track fit and to finalize their "flight plan" for the 10th-12th grade. Flight plans will meet both AHSG and industry credential requirements. Students will meet with their flight crew weekly for progress checks and flight plan adjustments, as needed.

AAHS will use U.S Department of Education research-based guidelines to build its evaluation plan framework. The figure below illustrates the USDE embedded evaluation process. A description of the process follows.



The evaluation process will include the following steps:

Step 1-Define the program (i.e. AAHS): The first step to conducting your evaluation is to understand what you want to evaluate. AAHS will take what we know about the faculty, students, parents/guardians, partners, and community and build upon it with information from multiple sources. By doing this, we will have a full understanding of the program including multiple perspectives and expectations, as well as basic underpinnings and complex inner workings.

To gain a better understanding and clearly define our program, AAHS will review existing documentation. Documents such as technology plans, curriculum materials, strategic plans, district report cards, user manuals, and national, state, or district standards may have useful information for understanding our program and the context in which it will be implemented. Further, AAHS will talk with people who are most familiar with the program, such as partners and people from other aerospace/aviation schools that have implemented the program.

Using this information, AAHS will develop goals and objectives that reflect a shared understanding among program stakeholders as to what the program should achieve. Our primary goal will be to improve student learning. We will also seek to affect teacher content knowledge and teacher practice. We will seek to answer the following:

- What is the program intended to accomplish?
- How would you know if it worked?
- If the program were a success, what would have happened?
- What would have changed?

- **Step 2- Plan the evaluation**: AAHS will plan the evaluation by developing open-ended questions based on the program's understandings. The evaluation questions will address three categories. These categories include measuring the implementation of strategies and activities, identifying the progress toward short-term and intermediate objectives, and recognizing the achievement of long-term program goals.

- AAHS will seek to justify why we believe the program strategies resulted in the measured outcomes by measuring the implementation of strategies and activities. We will look at our operations and how our strategies and activities were applied. We will check for the fidelity with which program our activities are being implemented.

- AAHS will measure progress towards short-term and intermediate objective; this plays a significant role in determining how our program is working. By examining progress, we will be able to catch early problems with the program and remediate them before they become critical impediments to our program's success. AAHS will use interim evaluation findings to plan, shape, and improve the program prior to the evaluation of final outcomes. It will be much easier and more cost-effective to uncover problems or issues early in our program's implementation. We will strive to provide our faculty with the necessary information for them to be able to understand the degree to which our school's program is on course so they can make midcourse adjustments and refinements as needed.

- AAHS will assess its progress towards long term goals for summative decision-making use. These decisions include whether program funding should be extended and if a program should be continued, expanded, scaled down, or discontinued.

- AAHS will create indicators for our evaluation questions that relate to program strategies and activities, short-term objectives, intermediate objectives, and long-term goals. Our indicators will dictate what data we should collect to answer our evaluation questions. These indicators

will serve as a guide that lets us know if we are moving in the right direction; they are metrics that will be tied to targets or benchmarks, against which to measure the performance of our program. Our indicators and targets will be specific, measurable, agreed upon, realistic, and time-bound (SMART).

- AAHS's information will be organized using an Evaluation Matrix Template. The evaluation matrix will represent our logic model components, evaluation questions, indicators, and targets by our logic model strategies and activities, early and intermediate objectives, and long-term goals.

Evaluation Matrix Template

	Logic Model Components	Evaluation Questions	Indicators	Targets	Data Sources	Data Collection	Data Analysis
Strategies and Activities/ Initial Implementation							
Early/Short term and Intermediate Objectives							
Long-term Goals							

Step 3- Implement the evaluation: AAHS will act responsibly when in handling all levels of data. Proper consents, when necessary, will be in place; this will set the stage for a more robust evaluation. Data will be collected from multiple sources. The following includes AAHS's data points and procedures.

Evaluation Methods and Tools: Procedures	
Methods/Tools	Procedures
Assessments and Tests	• Review the test to be sure that what it measures is consistent with the outcomes you hope to affect. • Review the test manual to be sure the test has adequate reliability and validity. • Be sure that test proctors are well trained in test administration.
Surveys and Questionnaires	• Develop the survey questions or choose an existing survey that addresses your evaluation needs. • Pilot test the survey to uncover and correct problems with survey items and questions as well as to plan data analyses. • Decide in advance on a target response rate as well as the maximum number of times you will administer the survey or send the questionnaire. • Examine reliability and validity.
Interviews	• Develop an interview protocol, highlighting key questions. • Include question probes to gather more in-depth information.

	• Limit how long the interview takes so that participants will be more willing to participate (and make sure to tell participants how much time will be needed for the interview). • Obtain permission to digitally record so that you can concentrate on listening and asking questions. (The recording can be transcribed and analyzed after the interviews.)
Focus Groups	• As with an interview, develop a focus group protocol that includes key questions. • Limit group size. (Using six to eight participants tends to work well, though a skilled facilitator may be able to increase the size.) • Purposefully organize focus groups that include participants who can build upon and benefit from each other's ideas, providing for a richer discourse. • Purposefully organize focus groups that include participants who will feel comfortable speaking their opinion in the group. • Obtain permission to digitally record so that you can concentrate on listening and asking questions. (The recording can be transcribed and analyzed after the focus groups.)
Observations	• Design the observation protocol and rubrics (if you will be analyzing data with rubrics). • Remember to consider the environment and atmosphere, dispositions, pedagogy, curriculum, etc. when designing your protocol and rubrics. • Observers should try to be as unobtrusive as possible so as to not influence the environment they are observing.
Existing Data	• Review existing data for applicability and accuracy.
Student Electronic Portfolios	• Choose artifacts to be included in the portfolio. • Design the scoring rubric in advance.
Case Studies	• Case studies might involve a combination of the above methods.
Rubrics	• Design the scoring rubrics before examining the qualitative data. Describe the best response or variation in detail. • Decide on the number of variations or categories. (It works well to use four or five.) • For each variation, describe in detail what the response or variation would look like. Typically, the best response is at the top of the scale. For example, on a scale of 1 to 4, the best response would be a 4. A variation with many but not all components of the best might be a 3. A variation with a few components of the best response might be a 2, while a variation with little to no components of the best response would be a 1. • Train raters or observers how to score using the rubric. Use several raters to score the same responses, observations, or student work using the rubric. Compare scores to examine inter-rater reliability. Discuss scoring among raters to improve consistency.

Step 4- Interpret the results: At AAHS, the examination of data and interpretation of findings will be ongoing; we will not wait until the end of the evaluation! We will communicate our findings regularly, continuously, and timely in order to use the evaluation process for improvement. Scheduled faculty and team meetings will provide opportunities to review progress at the school, department, and student levels. The interpretation of findings will address the relationship between implementation and long-term goals. The results will be examined in relation to AAHS's vision and mission. AAHS will communicate its summative evaluation findings regarding the extent of our program's success to stakeholders, including board members, parents, and partners.

Step 5- Using the results, inform and refine: AAHS's evaluation communication will focus on improvement. We will be transparent by sharing positive and negative findings. This will help facilitate stakeholder meetings where we discuss whether our findings were what we expected and if the school accomplished what was intended. AAHS also knows that designing and implementing programs take valuable resources. Our evaluation findings will help us determine whether expenditures were worth the results. AAHS decisions regarding accountability will be made carefully and be based on evidence from multiple sources derived from a rigorous evaluation. We will use evaluation findings to refine our logic model. Our up-to-date logic model will facilitate future evaluations and serve as the cornerstone of our program. It will be used to train new faculty, as well as to explain school programming to parents, administrative staff, potential partners, and other stakeholders.

The Director of Operations serves as the Building Test Coordinator. This person is fully prepared to lead the school through a successful testing window that complies fully with all regulations and requirements. The Director of Teaching and Learning is available to provide direct support to the Director of Operations as needed. AAHS requires a detailed testing plan to be submitted to the Head of School by the Building Test Coordinator and Director of Teaching and Learning approximately one month prior to the beginning of the testing window.

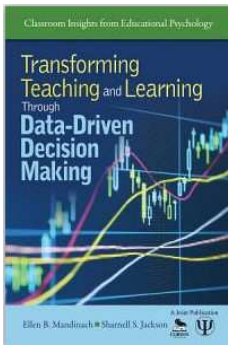
The Director of Teaching and Learning will be responsible for managing all collected school, teacher, and student level data for the purpose of analyzing, interpreting, evaluating, and reporting. Professional development, program adjustments and/or additions will be based on these actions; all are tied to improved student achievement. The Head of Schools and Director of Teaching and Learning will be responsible for providing quarterly status presentations to the Board of Directors and parents. The Director of Teaching and Learning will also provide an annual Executive Summary for public viewing accessed through the school's website.

At AAHS, we use performance data to make informed decisions leading to measurable improvements. Using our evaluation plan as the driver, we will focus on our logic model (how AAHS works) and evaluation questions; our indicators and targets will be aligned to both. Faculty will participate in intense evaluation training during the summer professional development session. Facilitated by the *Director of Teaching and Learning*, faculty will review qualitative and quantitative data types that provided valuable information connected to student performance. They will use feeder district historical data and hypothetical data to practice analyzing, interpreting, and making decisions. Faculty will take evaluation questions one at a time, examine data that pertains to identified indicators, and compare the data collected to the targets.

Curriculum providers will also provide professional development on using their online resources that include data reports and student dashboards. Teachers will learn how to use this information to support their students using differentiated instructional methods, personalized instruction, remediation,

enrichment, and/or re-teaching. Faculty will also receive socio-emotional learning training from a partnering agency so they may learn more about non-academic factors that impact student learning.

The Director of Teaching and Learning will provide a thorough overview of the proposed evaluation plan, including the types of data being collected, how they will be collected, who is responsible for providing it, and how success will be determined. AAHS will participate in a book study using *Transforming Teaching and Learning Through Data-Driven Decision Making* (E. Mandinach and S. Jackson, 2012) as a training resource.



Faculty will report how they are using data to drive instruction during their weekly whole-faculty/team meetings. Furthermore, faculty flight crew members will discuss performance data with their assigned students and parents during routine meetings. They will discuss with their students how to improve their performance through changed behaviors, assign additional supports, and recommend flight plan changes as needed. School administrators will complete classroom observations, participate in flight crew meetings, and conduct teacher evaluations at least twice per 9-weeks. Post-meetings will provide opportunities for feedback, reflection, and the development of action items and goals to improve practice aligned with student performance.

At AAHS, our evaluation plan is key to taking corrective actions for any short-comings of student academic achievement. We will collect various types of data, including formal and informal assessments, to determine whether we are on track for goal attainment. The AAHS leadership team will make sure the evaluation plan timeline for data collection, analysis, and interpretation is honored and that necessary adjustments are made along the way. This timeline will help AAHS address issues sooner than later. Also, routine meetings at the faculty and student level will provide additional feedback needed to identify additional professional development and student supports.

Major evaluation plan checkpoints will be at the end of each semester. Faculty will review summative reports and collaboratively produce action plans to address school, classroom, and student level concerns. AAHS will also use semester checkpoints to meet with stakeholders to provide the school's status and seek input. Time has been built into the AAHS school calendar to facilitate this intentional process. An annual executive report will also be provided.

AAHS intends to lease a 52,000 square foot former public school at 1414 2nd Ave, North, Bessemer, AL 35020 (known as the Fountain of Life building). The facility is currently owned by Fountain of Life Ministries and a completed Letter of Intent is included in the charter application. This letter of intent discusses a multi-year lease with a capped rent amount of 7% of operating revenues and could provide adequate space for the entire five-year charter term. Rent will range from $99,000 - $291,000 depending on enrollment and revenues.

After a thorough walkthrough and evaluation by AAHS's architect, Scott Burnett of CCR Architecture & Interiors, it has been determined that the facility is handicap accessible, has a working elevator, proper zoning, plenty of parking, space for 20 classrooms, various offices, and a cafeteria. The facility is currently in use on nights and weekends for an active congregation. Therefore, it is well maintained and will undergo minor to moderate improvements of up to $300,000 to ready the space for the appropriate furniture and technology.

While this location could provide an effective home for the entire five-year charter term, the school will continue its evaluation and development of a longer term facility at the Bessemer airport that is contemplated in the other Letter of Intent covering a 40 year ground lease at a nominal rate. These two LOIs ensure the school will have both current (five-year charter term) and long-term (renewal term) facilities solutions for the 300-600 students in grades 9-12 that are planned. Partnerships for offsite learning and internship opportunities at the Bessemer Airport, Delta and other major airline partners, and other corporate partners are still planned as important place-based learning elements. Athletic and recreation facilities are available less than a half mile away at a local rec center as well through other partnerships.

HIGH SCHOOL

ATTACHMENT 25

Security of Facility

ALABAMA
AEROSPACE & AVIATION
HIGH SCHOOL

June 30, 2021

Fountain of Life Ministries, Inc.
Attn: Pastor Noah Rocker
1414 2nd Ave N.
Bessemer, AL 35020

Re: Letter of Intent for Building Lease

Dear Pastor Rocker:

This Letter of Intent (this "LOI") sets out the general terms under which Alabama Aerospace and Aviation Schools, Inc. ("AAASI") intends to enter into a building lease of certain real estate owned by the Fountain of Life Ministries, Inc. ("FOL," and, collectively with AAASI, the "Parties," and each, a "Party"). This LOI also expresses the present intention of AAASI to partner with FOL to implement industry-based learning in its charter school.

1. Non-Binding. Except for the provisions of Section 6, Section 7, Section 8, and Section 9 and the requirement of this paragraph regarding entry into negotiations, this LOI is not binding on the Parties; it is only an expression of general terms and conditions that the Parties presently intend to incorporate into a formal written agreement that will govern future interactions between the Parties (hereinafter, the "Memorandum of Understanding" or "MOU"). No binding agreement shall exist with respect to the Parties unless and until the MOU has been duly executed and delivered by both Parties. As soon as practicable following the acceptance and approval of this LOI by FOL, the Parties will enter into negotiations with the objective of executing the MOU within thirty business days thereafter. AAASI's counsel will prepare the initial draft of the MOU.

2. Building Lease. It is the present intention of the Parties to negotiate and execute a multi-year building lease for certain real property located on the campus of Fountain of Life Ministries and owned by FOL (the "Property"). It is also the present intention of the Parties that, upon the execution of such building lease **not to exceed 7% of AAASI's annual operating budget**, the receipt of financing commitments, the acquisition of all necessary permits, and other contingencies, AAASI would begin construction of a school building on the Property and improving the land surrounding such building to build a charter school in accordance with terms set out in the MOU. It is presently intended that the building lease and MOU may contain such covenants, conditions, indemnities, representations, warranties, and other terms upon which the Parties may mutually agree.

It is the present intention of the Parties that the building lease would commence on or about August 1, 2021, at which time AAASI would begin the architectural design, permitting, and financing processes for needed repairs on the building. It is also the present intention of the Parties

that AAASI would begin moving into the building no later than May of 2022 and begin operating its charter school in August of 2022.

3. Partnership. It is the present intention of the Parties that, upon execution of the MOU, the Parties would partner with each other to implement industry-based workforce development in AAASI's charter school located on the leased premises. The partnership would involve high school students enrolled in AAASI's charter school participating in internships, apprenticeships, and other learning experiences with FOL or possibly other FOL partners. AAASI believes and hopes that the contemplated partnership would grow into a valuable, long-term source of workforce talent for Bessemer and the general aviation community that recognizes the unique attributes and values of FOL. The MOU may set out general and initial terms that would govern such partnership and may contain such covenants, conditions, indemnities, representations, and warranties upon which the Parties may mutually agree.

4. Indemnification. It is the present intention of the Parties that the MOU will include appropriate provisions requiring AAASI to carry certain forms and amounts of insurance acceptable to FOL, and that AAASI would indemnify FOL against certain specified claims and losses arising out of or related to the activities of AAASI.

5. Term and Termination. This LOI will automatically terminate and be of no further force and effect upon the earlier of (i) execution of the MOU by the Parties, or (ii) termination by either Party by sending written notice of termination to the other Party. Notwithstanding anything in the previous sentence, Section 6, Section 7, and Section 8 shall survive the termination of this LOI and the termination of this LOI shall not affect any rights a Party has with respect to the breach of this LOI by the other Party prior to such termination.

6. Governing Law. This LOI shall be governed by and construed in accordance with the internal laws of the state of Alabama, without giving effect to any choice or conflict of law provision or rule (whether of the state of Alabama or any other jurisdiction) that would cause the application of laws of any jurisdiction other than those of the state of Alabama.

7. Confidentiality. The Parties may provide each other with information as a result of their negotiations under this LOI. Such information shall be deemed confidential if specifically identified as such in writing by the Party giving the information (the "Confidential Information"). Confidential Information shall not be disclosed by the receiving party without the written consent of the disclosing party, except to the extent that disclosure is required by law. When disclosure is required, the Party making the disclosure shall provide notice of the intended disclosure to the other Party and shall take all reasonable steps to limit the extent of the disclosure to the minimum required to comply with its legal obligations. Neither Party shall have any obligation with respect to any Confidential Information that is or becomes publicly available without fault of the Party receiving the Confidential Information.

8. No Third-Party Beneficiaries. Nothing herein is intended or shall be construed to confer upon any person or entity other than the Parties and their successors or assigns, any rights or remedies under or by reason of this LOI.

9. Expenses. Each of the Parties shall bear its own respective costs, charges, and expenses for the business review, preparation, and negotiation of the MOU or incurred in connection with the activities contemplated by this LOI, including, but not limited to, fees of their respective counsel, architects, engineers, accountants, and other advisors or consultants.

10. Miscellaneous. Neither this LOI nor any rights or obligations hereunder may be assigned, delegated, or conveyed by either Party without the prior written consent of the other Party. This LOI may be executed in counterparts, each of which shall be deemed to be an original, but all of which together shall constitute one and the same document. The section headings of this LOI have been inserted for reference only and shall not be deemed to be a part of this LOI.

If FOL is in agreement with the terms set forth above and wish to proceed with negotiating the MOU for the proposed activities on that basis, please sign this LOI in the space provided below and return an executed copy to the attention of Ruben Morris.

Very truly yours,

Alabama Aerospace and Aviation Schools, Inc.

DocuSigned by:
By: Ruben Morris
89E5DDC5D82D438...
Ruben C. Morris
Founder/CEO

Agreed to and accepted:

Fountain of Life Ministries, Inc.

DocuSigned by:
By:
60F17670GE834D6...
Pastor Noah Rocker

cc: Charles Knight

ALABAMA
AEROSPACE & AVIATION
HIGH SCHOOL

June 14, 2021

Bessemer Airport Authority
Attn: Mr. Tim Wasyluka
Executive Director
900 Mitchell Field Road
Bessemer, AL 35023

Re: Letter of Intent for Ground Lease for Industry-Based Learning Facility

Dear Mr. Wasyluka:

This Letter of Intent (this "LOI") sets out the general terms under which Alabama Aerospace and Aviation Schools, Inc. ("AAASI") intends to enter into a ground lease of certain real estate owned by the Bessemer Airport Authority/City of Bessemer, Alabama ("BAA & Sponsor," and, collectively with AAASI, the "Parties," and each, a "Party"). This LOI also expresses the present intention of AAASI to enter into a Ground Lease with BAA/Sponsor to implement industry-based learning in its charter school.

1. Non-Binding. Except for the provisions of Section 6, Section 7, Section 8, and Section 9 and the requirement of this paragraph regarding entry into negotiations, this LOI is not binding on the Parties; it is only an expression of general terms and conditions that the Parties presently intend to incorporate into a formal written agreement that will govern future interactions between the Parties (hereinafter, the "Memorandum of Understanding" or "MOU"). No binding agreement shall exist with respect to the Parties unless and until the MOU has been duly executed and delivered by both Parties and a Ground Lease signed. As soon as practicable following the acceptance and approval of this LOI by BAA, the Parties will enter into negotiations with the objective of executing the MOU within thirty business days thereafter. AAASI's counsel will prepare the initial draft of the MOU.

2. Ground Lease. It is the present intention of the Parties to negotiate and execute a ground lease for certain real property located at Bessemer Municipal Airport and owned by BAA and/or the City of Bessemer, Alabama (the "Property") contingent upon BAA's the receipt of AAASI's financing commitments, the acquisition of all necessary permits, and other contingencies for BAA/Sponsor review and approval and the execution of such ground lease. AAASI would begin construction of a school building on the Property and improving the land surrounding such building to build a charter school in accordance with terms set out in the MOU. It is presently intended that the ground lease and MOU may contain such covenants, conditions, indemnities, representations, warranties, and other terms upon which the Parties may mutually agree.

It is the present intention of the Parties that the ground lease would commence on or about August 1, 2021, at which time AAASI would begin the architectural design, permitting, and

financing processes for constructing a school building and improving the surrounding land. It is also the present intention of the Parties that AAASI would begin moving into the building no later than May of 2022 and begin operating its charter school in August of 2022.

3. Cooperation. It is the present intention of the Parties that, upon execution of the MOU, the Parties would cooperate with each other to implement industry-based learning in AAASI's charter school located on the leased premises. The endeavor would involve high school students enrolled in AAASI's charter school participating in internships, apprenticeships, and other learning experiences with BAA or possibly other BAA tenants. AAASI believes and hopes that the contemplated relationship would grow into a valuable, long-term source of workforce talent for BAA and the general aviation community that recognizes the unique attributes and values of KEKY. The MOU may set out general and initial terms that would govern such relationship and may contain such covenants, conditions, indemnities, representations, and warranties upon which the Parties may mutually agree.

4. Indemnification. It is the present intention of the Parties that the MOU will include appropriate provisions requiring AAASI to carry certain forms and amounts of insurance acceptable to BAA, and that AAASI would indemnify BAA against certain specified claims and losses arising out of or related to the activities of AAASI.

5. Term and Termination. This LOI will automatically terminate and be of no further force and effect upon the earlier of (i) execution of the MOU by the Parties, or (ii) termination by either Party by sending written notice of termination to the other Party. Notwithstanding anything in the previous sentence, Section 6, Section 7, and Section 8 shall survive the termination of this LOI and the termination of this LOI shall not affect any rights a Party has with respect to the breach of this LOI by the other Party prior to such termination.

6. Governing Law. This LOI shall be governed by and construed in accordance with the internal laws of the state of Alabama, without giving effect to any choice or conflict of law provision or rule (whether of the state of Alabama or any other jurisdiction) that would cause the application of laws of any jurisdiction other than those of the state of Alabama.

7. Confidentiality. The Parties may provide each other with information as a result of their negotiations under this LOI. Such information shall be deemed confidential if specifically identified as such in writing by the Party giving the information (the "Confidential Information"). Confidential Information shall not be disclosed by the receiving party without the written consent of the disclosing party, except to the extent that disclosure is required by law. When disclosure is required, the Party making the disclosure shall provide notice of the intended disclosure to the other Party and shall take all reasonable steps to limit the extent of the disclosure to the minimum required to comply with its legal obligations. Neither Party shall have any obligation with respect to any Confidential Information that is or becomes publicly available without fault of the Party receiving the Confidential Information.

8. No Third-Party Beneficiaries. Nothing herein is intended or shall be construed to confer upon any person or entity other than the Parties and their successors or assigns, any rights or remedies under or by reason of this LOI.

9. Expenses. Each of the Parties shall bear its own respective costs, charges, and expenses for the business review, preparation, and negotiation of the MOU or incurred in connection with the activities contemplated by this LOI, including, but not limited to, fees of their respective counsel, architects, engineers, accountants, and other advisors or consultants.

10. Miscellaneous. Neither this LOI nor any rights or obligations hereunder may be assigned, delegated, or conveyed by either Party without the prior written consent of the other Party. This LOI may be executed in counterparts, each of which shall be deemed to be an original, but all of which together shall constitute one and the same document. The section headings of this LOI have been inserted for reference only and shall not be deemed to be a part of this LOI.

If BAA is in agreement with the terms set forth above and wish to proceed with negotiating the MOU for the proposed activities on that basis, please sign this LOI in the space provided below and return an executed copy to the attention of Ruben Morris.

Very truly yours,

Alabama Aerospace and Aviation Schools, Inc.

By: _____
Ruben C. Morris
Founder/CEO

Agreed to and accepted:

Bessemer Airport Authority

By: _____
Tim Wasyluka
its Executive Director

cc: Charles Knight

ALABAMA
AEROSPACE & AVIATION
HIGH SCHOOL

June 14, 2021

Bessemer Airport Authority
Attn: Mr. Tim Wasyluka
Executive Director
900 Mitchell Field Road
Bessemer, AL 35023

Re: Letter of Intent for Ground Lease for Industry-Based Learning Facility

Dear Mr. Wasyluka:

This Letter of Intent (this "LOI") sets out the general terms under which Alabama Aerospace and Aviation Schools, Inc. ("AAASI") intends to enter into a ground lease of certain real estate owned by the Bessemer Airport Authority/City of Bessemer, Alabama ("BAA & Sponsor," and, collectively with AAASI, the "Parties," and each, a "Party"). This LOI also expresses the present intention of AAASI to enter into a Ground Lease with BAA/Sponsor to implement industry-based learning in its charter school.

1. Non-Binding. Except for the provisions of Section 6, Section 7, Section 8, and Section 9 and the requirement of this paragraph regarding entry into negotiations, this LOI is not binding on the Parties; it is only an expression of general terms and conditions that the Parties presently intend to incorporate into a formal written agreement that will govern future interactions between the Parties (hereinafter, the "Memorandum of Understanding" or "MOU"). No binding agreement shall exist with respect to the Parties unless and until the MOU has been duly executed and delivered by both Parties and a Ground Lease signed. As soon as practicable following the acceptance and approval of this LOI by BAA, the Parties will enter into negotiations with the objective of executing the MOU within thirty business days thereafter. AAASI's counsel will prepare the initial draft of the MOU.

2. Ground Lease. It is the present intention of the Parties to negotiate and execute a ground lease for certain real property located at Bessemer Municipal Airport and owned by BAA and/or the City of Bessemer, Alabama (the "Property") contingent upon BAA's the receipt of AAASI's financing commitments, the acquisition of all necessary permits, and other contingencies for BAA/Sponsor review and approval and the execution of such ground lease. AAASI would begin construction of a school building on the Property and improving the land surrounding such building to build a charter school in accordance with terms set out in the MOU. It is presently intended that the ground lease and MOU may contain such covenants, conditions, indemnities, representations, warranties, and other terms upon which the Parties may mutually agree.

It is the present intention of the Parties that the ground lease would commence on or about August 1, 2021, at which time AAASI would begin the architectural design, permitting, and

financing processes for constructing a school building and improving the surrounding land. It is also the present intention of the Parties that AAASI would begin moving into the building no later than May of 2022 and begin operating its charter school in August of 2022.

3. Cooperation. It is the present intention of the Parties that, upon execution of the MOU, the Parties would cooperate with each other to implement industry-based learning in AAASI's charter school located on the leased premises. The endeavor would involve high school students enrolled in AAASI's charter school participating in internships, apprenticeships, and other learning experiences with BAA or possibly other BAA tenants. AAASI believes and hopes that the contemplated relationship would grow into a valuable, long-term source of workforce talent for BAA and the general aviation community that recognizes the unique attributes and values of KEKY. The MOU may set out general and initial terms that would govern such relationship and may contain such covenants, conditions, indemnities, representations, and warranties upon which the Parties may mutually agree.

4. Indemnification. It is the present intention of the Parties that the MOU will include appropriate provisions requiring AAASI to carry certain forms and amounts of insurance acceptable to BAA, and that AAASI would indemnify BAA against certain specified claims and losses arising out of or related to the activities of AAASI.

5. Term and Termination. This LOI will automatically terminate and be of no further force and effect upon the earlier of (i) execution of the MOU by the Parties, or (ii) termination by either Party by sending written notice of termination to the other Party. Notwithstanding anything in the previous sentence, Section 6, Section 7, and Section 8 shall survive the termination of this LOI and the termination of this LOI shall not affect any rights a Party has with respect to the breach of this LOI by the other Party prior to such termination.

6. Governing Law. This LOI shall be governed by and construed in accordance with the internal laws of the state of Alabama, without giving effect to any choice or conflict of law provision or rule (whether of the state of Alabama or any other jurisdiction) that would cause the application of laws of any jurisdiction other than those of the state of Alabama.

7. Confidentiality. The Parties may provide each other with information as a result of their negotiations under this LOI. Such information shall be deemed confidential if specifically identified as such in writing by the Party giving the information (the "Confidential Information"). Confidential Information shall not be disclosed by the receiving party without the written consent of the disclosing party, except to the extent that disclosure is required by law. When disclosure is required, the Party making the disclosure shall provide notice of the intended disclosure to the other Party and shall take all reasonable steps to limit the extent of the disclosure to the minimum required to comply with its legal obligations. Neither Party shall have any obligation with respect to any Confidential Information that is or becomes publicly available without fault of the Party receiving the Confidential Information.

8. No Third-Party Beneficiaries. Nothing herein is intended or shall be construed to confer upon any person or entity other than the Parties and their successors or assigns, any rights or remedies under or by reason of this LOI.

9. Expenses. Each of the Parties shall bear its own respective costs, charges, and expenses for the business review, preparation, and negotiation of the MOU or incurred in connection with the activities contemplated by this LOI, including, but not limited to, fees of their respective counsel, architects, engineers, accountants, and other advisors or consultants.

10. Miscellaneous. Neither this LOI nor any rights or obligations hereunder may be assigned, delegated, or conveyed by either Party without the prior written consent of the other Party. This LOI may be executed in counterparts, each of which shall be deemed to be an original, but all of which together shall constitute one and the same document. The section headings of this LOI have been inserted for reference only and shall not be deemed to be a part of this LOI.

If BAA is in agreement with the terms set forth above and wish to proceed with negotiating the MOU for the proposed activities on that basis, please sign this LOI in the space provided below and return an executed copy to the attention of Ruben Morris.

Very truly yours,

Alabama Aerospace and Aviation Schools, Inc.

By: _____
Ruben C. Morris
Founder/CEO

Agreed to and accepted:

Bessemer Airport Authority

By: _____
Tim Wasyluka
its Executive Director

cc: Charles Knight

HANGAR GROUND LEASE AGREEMENT

BESSEMER AIRPORT AUTHORITY
BESSEMER, ALABAMA
Ground Lessor AND

_____

Ground Lessee

LEASE AGREEMENT

THIS HANGAR GROUND LEASE ("Agreement") is effective this _____ day of _____, 20____, by and between BESSEMER AIRPORT AUTHORITY, an Alabama Municipal Corporation ("Authority" or "Lessor") and _____ ("Lessee").

Preliminary Statements

A. The Authority operates an airport known as the Bessemer Municipal Airport located in Jefferson County, Alabama at 900 Mitchell Field Road Bessemer, Alabama.

B. The Authority and Lessee desire to enter into a Lease Agreement ("Agreement") for the use and occupancy of certain areas at the Airport; and

C. The Authority desires to accommodate, promote and enhance general aviation at the Airport. Lessee desires assurance of the Airport's continued availability as a base for aircraft; and

D. The Authority and Lessee have agreed that Lessee will construct a hangar building or buildings, without cost to the Authority.

E. In consideration of the premises and of the rents, covenants and conditions herein contained, the Authority does hereby lease to Lessee the area(s) of the Airport described in Article 2 hereof (the "Leased Premises"), as follows:

ARTICLE 1: TERM AND OPTIONS

1.1 The initial term of this Agreement shall commence at 12:01 a.m. on _____, 20_____, and expire at 11:59 p.m. on _____, 20_____, a duration of 30 years, (the "Initial Term") unless sooner terminated in accordance with this Agreement.

1.2 Subject to the conditions herein, Lessee shall have the option to extend the term of this Agreement for two additional periods of five years each, hereinafter the "Extended Term(s)," provided that at the time of such exercise and at all times before any Extended Term, Lessee is not in default in the payment of any rent or in default in any other provisions of this Agreement. Lessee may exercise each option by giving written notice of such extension to the Authority not more than six months, nor less than three months, prior to the expiration of the Initial Term or the then-current Extended Term. The terms of this Agreement shall remain applicable during any Extended Term, and rent shall escalate throughout the Initial Term and any Extended Term as provided in Article 4.

ARTICLE 2: LEASED PREMISES

2.1 The Leased Premises consist of the parcel of land described in Exhibit "A." The Lessee acknowledges that: (1) the Lessor makes no representations or warranty regarding the suitability of the Leased Premises for the Lessee's intended purposes, or the presence or absence of environmental, geologic, or other site conditions that may affect the Lessee's use of the Leased Premises; (2) Lessee accepts full responsibility for determining the suitability of the Leased Premises for its intended purposes; (3) Lessee has inspected and performed all tests and investigations of the Leased Premises for its intended purposes; and (4) Lessee is accepting the Leased Premises "as is," in their present condition, and Lessee agrees to perform all preparation, repairs, remediation, and alteration activities necessary to use the Leased Premises for Lessee's intended purposes. Lessee expressly disclaims reliance upon any statement, oral or written, made by any agent of the Authority concerning the condition, suitability, or business prospects of the Leased Premises.

ARTICLE 3: USE OF LEASED PREMISES

3.1 Lessee shall use and occupy the Leased Premises for the following purposes and for no other purpose whatsoever unless approved in writing by the Authority:

3.1.1 For the construction, installation, maintenance and operation of a hangar building or buildings (the "Hangars") to be used for the parking, storage, servicing, repair, maintenance, modification, and construction of aircraft. No sublease shall be valid unless each such sublease is approved in writing by the Authority and conforms to all applicable laws and the Airport Rules and Minimum Standards then in effect (the "Rules" and "Minimum Standards"). Lessee warrants that all such aircraft based at the Leased Premises shall comply with noise standards established under Part 36 of Title 14 of the Code of Federal Regulations, ("FAR 36") as amended from time to time. Lessee shall comply with all Grant Assurances in favor of the State of Alabama or the United States. All of Lessee's rights shall be subordinate to such Grant Assurances and other obligations to the United States or State of Alabama.

3.1.2 The Authority makes no representations, guarantees, or warranties that the Leased Premises may be lawfully used for the purposes set forth in this Article 3.1. Lessee shall have the sole responsibility of obtaining all applicable permits or other governmental approvals necessary to use the Leased Premises. This Agreement is expressly conditioned upon Lessee obtaining all

such permits and approvals, and the failure of Lessee to obtain any such permits or approvals within six months following the commencement date set forth in Article 1.1. The failure of Lessee to maintain any such permits or approvals during the term of this Agreement shall result in termination of this Agreement pursuant to Article 16.

ARTICLE 4: RENT

4.1 Lessee agrees to pay to the Authority during the Initial Term hereof an annual base rent of $1.00 per square foot for the _____ square feet of the Leased Premises (including the building footprint, ramp, and permanent vehicle parking area surrounding the building footprint, as set forth in Exhibit A), for a total of ($)_____ per year, subject to adjustment pursuant to **Section 4.2**, below. If Lessee exercises any option to extend the term of this Agreement under Section 1.2, above, annual rental per square foot for the first year of such Extended Term shall be the greater of (a) the rental determined under Section 4.2 below, as if the Initial Term had continued throughout such Extended Term, or (b) the then current market rates for hangar ground leases at the Airport The Authority and Lessee agree to use their best efforts to agree on then current market rates, and execute a Lease Extension Agreement, within thirty (30) days after Lessee's written notice of election is received by the Authority. If the Authority and Lessee cannot agree upon the rental rates, the parties agree to submit the question to binding arbitration before a single arbitrator appointed by the presiding circuit judge of Jefferson County Bessemer Division. Lessee and the Authority shall each pay fifty percent (50%) of the arbitrator cost. All sums due to the Authority under this Agreement shall comprise "Additional Rent."

4.2 The monthly initial Base Rent will be increased annually on January 1st according to the U.S. Dept. of Labor Consumer Price Index (CPI) for All Urban Consumers, or the Index which most nearly approximates that Index in the event the Department of Labor changes the Index name. In years where the CPI declines, the rent shall remain the same as the previous year.

4.3 The annual rent payable hereunder may be paid in advance in annual installments, or shall be paid in equal monthly installments on the first day of each month in advance at such office as may be directed in writing by the Authority. Payments due to the Authority under this Agreement shall be paid without offset of any kind, and Lessee waives all common law and statutory rights of offset. In addition to any other remedies provided in this Agreement, if any rental, fee, charge, or other item of Additional Rent set forth in this Agreement is not paid to the Authority within 15 days of the date due, Lessee agrees to pay a late charge of 10% for each such late payment, and default interest shall accrue on such payment from 30 days after the date the payment was due, at a rate of 12% per annum.

4.4 Lessee, as additional rent, shall complete construction of Hangar (s) and related Improvements on the Leased Premises, in accordance with plans and specifications approved by the Authority. The Hangars shall, collectively, comprise a total of _____ square feet in size and shall have a concrete floor, with each Hangar to have at least one aircraft access door sized to accommodate a hangar appropriate aircraft. Lessee shall use commercially reasonable and diligent efforts to complete construction of the Hangars and other such Improvements within the earlier of 12 months of the Authority's approval thereof.

4.5 If required, Lessee shall construct and maintain a paved aircraft ramp area on the Leased Premises (the "Ramp") as additional rent. Lessee grants to users of the Airport the right to use aircraft Ramp areas on the Leased Premises from time to time for passage of aircraft on and near the adjacent taxiway. The construction time and default provisions of subsection 4.4 shall be applicable to the Ramp described in this subsection.

4.6 Subject to the provisions of Article 10, below, Lessee shall keep the Leased Premises, and the Hangar, Ramp and any and all structures constructed by Lessee on the Leased Premises (collectively, the "Improvements"), free and clear of any liens and encumbrances, except as contemplated by Article 10, below, or unless expressly approved in writing by the Authority, and shall indemnify, hold harmless and defend the Authority from any liens and encumbrances arising out of any work performed or materials furnished by or at the direction of Lessee. If any lien is filed, Lessee shall do all acts necessary to discharge such lien within ten days of filing, or if Lessee desires to contest any lien, then Lessee shall deposit with the Authority such security as the Authority shall reasonably demand to insure the payment of the lien claim. If Lessee shall fail to pay any lien claim when due or shall fail to deposit the security with the Authority, then the Authority shall have the right to expend all sums necessary to discharge the lien claim, and Lessee shall pay the Authority, as additional rental when the next rental payment is due, all sums expended by the Authority in discharging any lien, including reasonable attorneys' fees and costs, and interest at 12% on the sums expended by the Authority from the date of expenditure to the date of payment by Lessee.

4.7 Lessee agrees to comply with FAA Order 5190.6, Airport Compliance Handbook, and the Airport Rules and Minimum Standards adopted by the Authority for the Airport, as they now exist or as they may hereafter be adopted or amended.

4.8 The Authority agrees to waive the Security Deposit as additional security for Lessee's obligations to Lessor ("Security Deposit") on condition that Lessee timely pays the monthly rent and the Lessee is not in default of this Agreement. Such Security Deposit shall be equal to one monthly installment of rent. If during this Agreement Lessee fails to pay rent when due or is in default of any term or condition of this agreement, then Lessee must immediately post a Security Deposit with Lessor so that the Security Deposit being held by Lessor is equal to one monthly installment of rent.

4.9 Holdover rent shall be due at the rate of 200%.

ARTICLE 5: ACCEPTANCE, CARE, MAINTENANCE, IMPROVEMENTS AND REPAIR

5.1 Lessee acknowledges that it has inspected the Leased Premises, conducted such studies and tests thereof (including environmental tests) as it deems necessary, and accepts possession of the Leased Premises "as is" in its present condition, and, subject to all limitations imposed upon the use thereof by the rules and regulations of the Federal Aviation Administration, the rules and regulations of the Airport, and by ordinances of the City of Bessemer, Alabama, and admits its suitability and sufficiency. Except as may otherwise be provided for herein, the Authority shall not

be required to maintain nor to make any improvements, repairs or restoration upon or to the Leased Premises or to any of the improvements presently located thereon or placed thereon by Lessee.

5.2 Lessee shall, throughout the term of this Agreement, assume the entire responsibility, cost, and expense for all repair and maintenance whatsoever on the Leased Premises and all Improvements thereon, and shall perform in a good workmanlike manner all necessary repairs, maintenance, whether ordinary or extraordinary, structural or otherwise. Additionally, Lessee, without limiting the generality hereof, shall:

5.2.1 Keep at all times, in a clean and orderly condition and appearance, the Leased Premises, all Improvements thereon and all of Lessee's fixtures, equipment and personal property which are located on any part of the Leased Premises. Lessee shall not park or leave, or allow to be parked, aircraft on the taxiways, ramps or pavement adjacent to any Hangar in a manner which unduly interferes with or obstructs access to other hangars or movement on adjacent taxiways.

5.2.2 Provide and maintain on the Leased Premises all obstruction lights and similar devices, and safety equipment required by law.

5.2.3 Be responsible for the maintenance and repair of all utility services lines placed on the Leased Premises and used by Lessee exclusively, including without limitation water lines, gas lines, electrical power and telephone conduits and lines, sanitary sewers and storm sewers.

5.2.4 If extraordinary repairs or maintenance to the Improvements are required during the last five years of the Initial Term or any Extended Term of this Agreement, Lessee may elect not to repair and/or maintain the Improvements, by giving the Authority written notice of its election. In such case, Authority shall have the option of requiring Lessee to either (a) clear the site, remove all debris and paving, stub up all utilities, and restore the site to its original cleared condition prior to commencement of construction; or (b) transfer title to the Improvements to the Authority, as is. Upon Lessee's election and compliance with this section, the Authority shall terminate this Agreement and relieve Lessee of all future rental obligations hereunder.

5.2.5 During the last five years of the Initial Term, and during the last 30 months of any Extended Term, the Authority shall have the right to conduct periodic detailed inspections of the Leased Premises not more often than twice per year. If any maintenance deficiencies are discovered, the Authority may require Lessee to correct such deficiencies, whether ordinary or capital in nature.

5.3 Plans and specifications for each of the Improvements and all repairs (other than emergency repairs), construction, alterations, modifications, additions or replacements to the Improvements, including those made to any paving upon the Leased Premises, excluding non-structural repairs, construction, alterations, modifications, additions or replacements costing more than ten thousand dollars ($10,000.00), shall be submitted to the Authority for approval, which approval shall not be unreasonably denied, providing the plans and specifications comply with the provisions of this Agreement, the Airport’s design standards, if any, as well as all applicable

building, use and zoning regulations. Within ninety (90) days of the certificate of occupancy being received, Lessee shall submit to the Authority a full set of as-built record drawings of the Improvements, sealed by a licensed architect or engineer, which among other things, depicts exact locations of all Improvements, including utilities, made on and/or off of the Leased Premises. Failure to submit such sealed plans shall constitute grounds for denial of access to the Leased Premises.

ARTICLE 6: ADDITIONAL OBLIGATIONS OF LESSEE

6.1 Lessee shall conduct its operations in an orderly and proper manner, considering the nature of such operations, so as not to unreasonably annoy, disturb, endanger or offend others.

6.2 Further, Lessee shall take all reasonable measures:

6.2.1 Not to produce or allow to be produced on the Airport, through the operation of machinery or equipment, any electrical, electronic or other disturbances that interfere with the operation by the Authority or the Federal Aviation Administration of air navigational, communication or flight equipment on the Airport or on aircraft using the Airport, or with ground transportation communications.

6.3 Lessee shall comply with all federal, state and municipal laws, ordinances, rules, regulations and requirements, the Airport's Minimum Standards, Airport security rules and regulations, and other Airport Rules and regulations, as they now exist or may hereafter be amended or promulgated.

6.4 Except for uses permitted under Article 3 hereof to be performed by Lessee, Lessee shall not provide or allow to be provided aircraft maintenance work, flight instruction of any sort, air taxi, aircraft charter or aircraft leasing of any sort on the Leased Premises, for commercial purposes, without the approval of the Authority.

6.5 Following the completion of construction of the Hangars, Lessee shall not store nor permit the storage of disabled aircraft or any equipment or materials outside of the Hangars constructed on the Leased Premises, without the written approval of the Authority. No aircraft that is non-airworthy may remain outside of a hangar for more than 20 days. Concerning any aircraft that has remained outside the hangars on the Leased Premises for more than 20 days, upon request Lessee shall provide written certification from an FAA licensee holding Inspection Authorization stating such aircraft is airworthy. If Lessee fails to comply with this requirement after a written request by Lessee to comply, Lessor may (but is not required to) cause the removal of any such aircraft at Lessee's expense by any means that Lessor determines, in its sole discretion, to be in Lessor's best interests.

6.6 On forms and at the frequency prescribed by the Airport Executive Director, and with respect to each aircraft stored on the Leased Premises, Lessee shall provide the Authority with the (a) make and model, (b) N-number, and (c) identity and address of the registered owner. This

requirement shall apply to aircraft whether owned by Lessee or another party, and regardless of whether its storage is subject to the Minimum Standards or Rules.

6.7 Taxes and Liens. Lessee shall pay (before their respective due dates) all taxes, fees, assessments, and levies that relate to Lessee's use, occupancy, or operations at the Leased Premises or the Airport, and all other obligations for which a lien may be created thereto (including, but not limited to, utility charges and work for any improvements).

6.8 Security. Lessee shall comply with all security measures that Lessor, the United States Transportation Security Administration, or any other governmental entity having jurisdiction may require in connection with the Airport, including any access credential requirements, any decision to remove Lessee's access credentials, and any civil penalty obligations and other costs arising from a breach of security requirements caused or permitted by Lessee or Lessee's Associates. Lessee agrees that Airport access credentials are the property of Lessor and may be suspended or revoked by Lessor in its sole discretion at any time. Lessee shall pay all fees associated with such credentials, and Lessee shall immediately report to the Airport Executive Director any lost credentials or credentials that Lessee removes from any employee or any of Lessee's Associates. Lessee shall protect and preserve security at the Airport.

6.9 Removal of Disabled Aircraft. When consistent with Laws and Regulations, Lessee shall promptly remove or cause to be removed from any portion of the Airport not leased by Lessee the Aircraft or any other aircraft that Lessee owns or controls if it becomes non-airworthy. Lessee may store such aircraft within Lessee's enclosed improvements.

ARTICLE 7: INGRESS AND EGRESS

7.1 Lessee shall have the right of ingress and egress between the Leased Premises and the public landing areas at the Airport by means of connecting taxiways; and between the Leased Premises and the entrance(s) to the Airport by means of connecting paved roads. Lessee shall have the right to use the public runways and public aviation aids at all times during which they are open to the public. Such rights of ingress, egress and use shall be in common with others having rights of use and passage thereon.

7.2 The use of any such roadways or taxiways shall be subject to the Rules and Minimum Standards of the Airport, which are now in effect or which may hereafter be promulgated, and subject to temporary closure; provided, however, that any closure shall be only for reasonably necessary or unique circumstances, and provided that 7 days prior written notice will be given to Lessee relevant to any closure, unless such closure is necessary due to emergency. Lessee, for itself and its authorized subtenants, hereby releases and discharges the Authority, their officers, employees and agents, and all their respective successors and assigns, of and from any and all claims, demands, or causes of action which Lessee or its authorized subtenants may now or at any time hereafter have against any of the foregoing, arising or alleged to arise out of the closing of any street, roadway or other area, provided that other reasonable means of access to the Leased Premises remain available to Lessee without cost to Lessee, unless otherwise mandated by emergency safety considerations or lawful exercise of the police power.

ARTICLE 8: CASUALTY INSURANCE AND DAMAGE TO THE LEASED PREMISES

8.1 Lessee, at its sole cost and expense, shall procure and maintain throughout the term of this Agreement insurance protection for all risk coverage on the Improvements, which are part of the Leased Premises, to the extent of one hundred percent (100%) of the actual replacement cost thereof. Such insurance shall be written by insurers acceptable to the Authority. The insurance shall provide for 30 days' notice of cancellation or material change, by certified mail, return receipt requested, to the Authority, Attention: Airport Executive Director.

8.1.1 The above-stated property insurance shall be for the benefit and to safeguard the interests of the Lessee and Authority, which shall at all times be named a co-insured.

8.1.2 Lessee shall provide certificates of insurance, in a form acceptable to the Authority and marked "premium paid," evidencing existence of all insurance required to be maintained prior to occupancy of the Improvements. Upon the failure of Lessee to maintain such insurance as above provided, the Authority, at its option, may obtain such insurance (which may be single-interest) and charge the cost to Lessee as Additional Rent, which shall be payable on demand, or may give notice of default hereunder pursuant to **Article 18** hereof.

ARTICLE 9: LIABILITIES AND INDEMNITIES

9.1 The Authority shall not in any way be liable for any cost, liability, damage or injury, including cost of suit and expenses of legal services, claimed or recovered by any person or entity, or occurring on the Leased Premises, or the Airport, or as a result of any operations, works, acts or omissions performed on the Leased Premises, or the Airport, by Lessee, its agents, servants, employees or authorized tenants, or their guests or invitees. Lessee shall not in any way be liable for any cost, liability, damage or injury, including cost of suit and expenses of legal services, claimed or recovered by any person or entity, or occurring on the Leased Premises, or the Airport, or as a result of any operations, works, acts, or commission performed on the Leased Premises, or the Airport, solely by the Authority, their agents, servants, employees or authorized tenants, or their guests or invitees. In this regard, LESSEE expressly releases the Authority and each of its agents from their own negligence, gross negligence, or other liability.

9.2 Lessee agrees to indemnify, save and hold harmless, the Authority, their officers, agents, servants and employees, of and from any and all costs, liability, damage and expense, including costs of suit and reasonable expenses of legal services, claimed or recovered, justly or unjustly, falsely, fraudulently or frivolously, by any person, firm or corporation by reason of injury to, or death of, any person or persons, including Authority personnel, and damage to, destruction or loss of use of any property, including Authority property, directly or indirectly arising from, or resulting from, any operations, works, acts or omissions of Lessee, its agents, servants, employees, contractors, or authorized tenants. Upon the filing with the Authority by anyone of a claim for damages arising out of incidents for which Lessee herein agrees to indemnify and hold the Authority harmless, the Authority shall notify Lessee of such claim and in the event that Lessee

does not settle or compromise such claim, then Lessee shall undertake the legal defense of such claim on behalf of Lessee and the Authority. It is specifically agreed, however, that the Authority at its own cost and expense, may participate in the legal defense of any such claim. Any final judgment rendered against the Authority for any cause for which Lessee is liable hereunder shall be conclusive against Lessee as to liability and amount upon the expiration of the time for appeal.

9.3 Lessee shall procure and keep in force during the term of this Agreement policies of Comprehensive General Liability insurance insuring Lessee and the Authority, as co-insureds, against any liability for personal injury, bodily injury, death, or property damage arising out of the subject of this Agreement with a combined single limit of at least One Million Dollars ($1,000,000). No such policies shall be cancelable or subject to reduction in coverage limits or other modification except after 30 days prior written notice to the Authority.

ARTICLE 10: LEASEHOLD MORTGAGES

10.1 If Lessee shall execute a Leasehold Mortgage of its leasehold estate to an entity which is not directly or indirectly owned or controlled by, or is not under common ownership or control with Lessee (collectively, an "Unaffiliated Entity" hereafter), Lessee shall obtain the prior written consent of the Landlord, which shall not be unreasonably withheld, and if the holder of such Leasehold Mortgage shall provide the Authority with notice of such Leasehold Mortgage together with a true copy of such Leasehold Mortgage and the name and address of the Mortgagee, then following receipt of such notice by the Authority, the provisions of this Article 10 shall apply in respect to such Leasehold Mortgage.

10.2 The term "Leasehold Mortgage" as used in this Agreement shall include, but not be limited to, a mortgage, a deed of trust, a deed to secure debt, or other security instrument by which Lessee's leasehold estate is mortgaged, conveyed, assigned, or otherwise transferred, to secure a debt or other obligation, in connection with the construction contemplated by **Article 4 above.**

10.3 The Authority, upon providing Lessee any notice of default under this Agreement or termination of this Agreement, shall at the same time provide a copy of such notice to the Leasehold Mortgagee by first class U.S. mail at the address specified in the notice given pursuant to Section 10.1, above. Such Leasehold Mortgagee shall have the additional periods of time specified in Sections 10.4 hereof to remedy, commence remedying, or cause to be remedied the default or acts or omissions which are specified in any such notice. The Authority shall accept such performance by or at the instigation of such Leasehold Mortgagee as if the same had been done by Lessee.

10.4 Anything contained in this Agreement to the contrary notwithstanding, if any default shall occur which entitles the Authority to terminate this Agreement, the Authority shall have no right to terminate this Agreement unless, following the expiration of the period of time given Lessee to cure such default or the act or omission which gave rise to such default, the Leasehold Mortgagee is given an additional period of thirty (30) days to:

10.4.1 Notify the Authority of such Leasehold Mortgagee's desire to defeat such Termination Notice; and

10.4.2 Pay or cause to be paid all rent, additional rent, and other payments then due and in arrears as specified in the Termination Notice to such Leasehold Mortgagee and which may become due during such thirty (30) day period; and

10.4.3 Promptly commence and diligently cure all non-monetary defaults, but in no event shall the time for such cure exceed 90 days.

10.5 The making of a Leasehold Mortgage shall not be deemed to constitute an assignment or transfer of this Agreement or of the leasehold estate hereby created, nor shall the Leasehold Mortgagee, as such, be deemed to be an assignee or transferee of this Agreement or of the leasehold estate hereby created so as to require such Leasehold Mortgagee, as such, to assume the performance of any of the terms, covenants or conditions of this Agreement. Any Leasehold Mortgagee who takes an instrument of assignment or transfer in lieu of the foreclosure of the Leasehold Mortgagee shall be deemed to be a permitted assignee or transferee, and shall be deemed to have agreed to perform all of the terms, covenants and conditions on the part of Lessee to be performed hereunder from and after the date of such purchase and assignment, but only for so long as such purchaser or assignee is the owner of the leasehold estate.

10.6 Landlord Liens. Lessee hereby gives and grants to the Authority a lien upon, and pledges as collateral to the Authority in case of default, all, chattels and personal property of every kind and description now or hereafter to be placed, installed or stored by Lessee at the Airport. Any Leasehold Mortgage shall be subordinate to this contractual Landlord Lien and any statutory lien arising under the laws of the State of Alabama, but shall be superior to the extent of such liens of any structures and fixtures on the Leased Premises.

ARTICLE 11: SIGNS

Lessee shall have the right to install and maintain one or more signs on the Leased Premises identifying it and its operations. The subject matter, type, design, number, location and elevation of such signs, and whether lighted or unlighted, shall be subject to the Airport Design Standards, if any. No sign will be allowed that may be confusing to aircraft pilots or automobile drivers or other traffic.

ARTICLE 12: ASSIGNMENT AND SUBLEASE

The prior written consent of the Authority shall be required for any sale, transfer, assignment or sublease of this Agreement and of the leasehold estate hereby created. All transfers and assignments of any interest, including mortgages thereon, require payment of an Approval Fee of One Thousand Dollars ($1,000). Consent may be withheld by the authority if (a) Lessee is in default of any of the terms or conditions of this Agreement, (b) the transferee or assignee does not deliver to the Authority its written agreement to be bound by all of the provisions of this Agreement

in a form satisfactory to the Authority, or (c) the transferee or assignee does not submit proof of insurance as required at Articles 8 and 9. Lessee shall not subdivide or fractionalize either its ownership of the Improvements or leasehold interest in the Leased Premises. Any management agreement or other contract that purports to transfer the substantive economic or legal risks and benefits to a third party shall be deemed a de facto assignment, and shall be subject to the restrictions set forth in this Article 12.

ARTICLE 13: NON-DISCRIMINATION

13.1 Lessee, for itself, its heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree as a covenant running with the land that in the event facilities are constructed, maintained, or otherwise operated on the Leased Premises, for a purpose for which a United States government program or activity is extended, Lessee shall maintain and operate such facilities and services in compliance with all other requirements imposed pursuant to Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in federally-assisted programs of the Department of Transportation- Effectuation of Title VI of the Civil Rights Act of 1964, and as said regulations may be amended.

13.2 Lessee, for itself, its personal representatives, successors in interest and assigns, as a part of the consideration hereof, does hereby covenant and agree as a covenant running with the land that:

13.2.1 No person on the grounds of race, color, disability or national origin shall be excluded from participating in, denied the benefits of, or be otherwise subjected to discrimination in the use of the Leased Premises.

ARTICLE 14: GOVERNMENTAL REQUIREMENTS

14.1 Lessee shall procure all licenses, certificates, permits or other authorization from all governmental authorities, if any, having jurisdiction over Lessee's operations at the Leased Premises, which may be necessary for Lessee's operations on the Airport.

14.2 Lessee shall pay all taxes, license, certification, permits and examination fees and excise taxes which may be assessed, levied, exacted or imposed on the Leased Premises or operation hereunder or on the gross receipts or gross income to Lessee there from, and shall make all applications, reports and returns required in connection therewith.

14.3 Lessee shall pay all water, sewer, utility and other applicable use taxes and fees, arising from its occupancy and use of the Leased Premises and/or the Improvements thereon.

14.4 If the Authority is ever required to pay any of the foregoing, or is not paid any of the foregoing, then the Authority may collect such sums as additional rent.

ARTICLE 15: RIGHTS OF ENTRY RESERVED

15.1 The Authority, by its officers, employees, agents, representatives and contractors, shall have the right at all reasonable times to enter upon the Leased Premises and enter the Improvements for all purposes not inconsistent with this Agreement, including without limitation inspection and environmental testing, provided such action by the Authority does not unreasonably interfere with Lessee's use, occupancy or security requirements. Except when necessary for reasons of public safety or law enforcement, or for the protection of property, the Authority shall provide 72 hours written notice of its intent to inspect.

ARTICLE 16: TERMINATION

16.1 Upon default by Lessee in the payment of rent, additional rent, or other sums due under this Agreement, the Authority shall give written notice to Lessee and each holder of a Leasehold Mortgage for which the Authority has been given notice under Section 10.1, of such default. If such default has not been cured by the 30th day following notice of default, the Authority may terminate this Agreement.

16.2 This Agreement shall terminate, at the option of the Authority with prompt written notice to Lessee and holder of a Leasehold Mortgage, upon the appointment of a receiver or trustee of all, or substantially all, of Lessee's assets by a court of competent jurisdiction. The term “trustee” shall not include a trustee appointed under Title 11 of the United States Code.

16.3 Subject to Article 10 above, upon termination of this Agreement for any reason, all rights of Lessee, authorized tenants, and any other person in possession shall terminate, including all rights or alleged rights of creditors, trustees, assigns, and all others similarly so situated as to the Leased Premises. Except as may be expressly provided to the contrary elsewhere herein, upon termination of this Agreement for any reason, the Leased Premises and all Improvements located thereon, and all equipment, fixtures and other personal property therein, shall be and become the property of the Authority, free and clear of all encumbrances and all claims of Lessee, its subtenants, creditors, trustees, assigns and all others, and the Authority shall have immediate right of possession of the Leased Premises and such Improvements.

16.4 Failure by the Authority or Lessee to take any authorized action upon default by Lessee of any of the terms, covenants or conditions required to be performed, kept and observed by Lessee shall not constitute a waiver of said default nor of any subsequent breach or default of any of the terms, covenants and conditions in this Agreement. Acceptance of rentals by the Authority from Lessee, or performance by the Authority under the terms hereof, for any period or periods after a default by Lessee of any of the terms, covenants and conditions herein shall not be deemed a waiver or create an estoppel of any right of the Authority to terminate this Agreement for any subsequent failure by Lessee to so perform this Agreement.

16.5 If this Agreement shall have been terminated due to default by Lessee in accordance with notice of termination as provided in Article 18, all of the obligations of Lessee under this Agreement shall survive such termination, re-entry, regaining or resumption of possession and

shall remain in full force and effect for the full term of this Agreement, and the amount or amounts of damages or deficiency shall become due and payable to the Authority to the same extent, at the same time or times, and in the same manner as if no termination, re-entry, regaining or resumption of possession had taken place.

ARTICLE 17: USE SUBSEQUENT TO CANCELLATION OR TERMINATION

The Authority shall, upon termination or cancellation, or upon re-entry, regaining or resumption of possession, have the right to repair and to make structural or other changes in the Leased Premises, including changes which alter its character and the suitability thereof for the purposes of Lessee under this Agreement, without affecting, altering or diminishing the obligations of Lessee hereunder, provided that any structural changes shall not be at Lessee's expense.

ARTICLE 18: NOTICES

Any notice, consent, approval or other communication given by either party to the other relating to this Agreement shall be in writing, and shall be delivered in person, sent by certified mail, return receipt requested, sent by reputable overnight courier, or sent by facsimile transmission (with evidence of such transmission received) to such other party at the respective addresses set forth below (or at such other address as may be designated from time to time by written notice given in the manner provided herein). Such notice shall, if hand delivered or personally served, be effective immediately upon receipt. If sent by certified mail, return receipt requested, such notice shall be deemed given on the third business day following deposit in the United States mail, postage prepaid and properly addressed; if delivered by overnight courier, notice shall be deemed effective on the first business day following deposit with such courier; and if delivered by facsimile, notice shall be deemed effective when received. Notice to the Authority is not effective unless sent concurrently to BOTH the Authority’s Attorney and the Airport Executive Director.

ARTICLE 19: INVALID PROVISIONS

The invalidity of any provisions, articles, paragraphs, portions or clauses of this Agreement shall have no effect upon the validity of any other part or portion hereof, so long as the remainder shall constitute an enforceable agreement. Furthermore, in lieu of such invalid provisions, articles, paragraphs, portions or clauses, there shall be added automatically as a part of this Agreement, a provision as similar in terms to such invalid provision as may be possible and be legal, valid and enforceable.

ARTICLE 20: ENTIRE AGREEMENT

This Agreement constitutes the entire agreement of the parties hereto and may be changed, modified, discharged or extended by written instrument duly executed by the Authority and Lessee. The parties agree that no representations or warranties shall be binding upon the Authority or Lessee unless expressed in writing.

ARTICLE 21: RETURN CONDITION OF THE LEASED PREMISES

At the expiration or termination of the Lease or any renewal term, Lessee shall surrender promptly the leased premises and all structures in the same condition as when received or constructed, ordinary wear and tear excepted, except to the extent caused by fire or Act of God for which the Lessor has been previously compensated.

IN WITNESS WHEREOF, the parties have executed this Lease Agreement as of the date first written above.

Bessemer Airport Authority

By _____

Its _____

Tenant

_____
(Signature)

_____
(Typed or printed name)

BESSEMER AIRPORT AUTHORITY
900 MITCHELL FIELD ROAD
BESSEMER, ALABAMA 35022

Telephone: 205- 424-7234
Email: baa.board@bessemerairportauthority.com

July 8, 2021

Alabama Public Charter School Commission
Alabama State Department of Education
ATTN: Dr. David Marshall

Dear Dr. Marshall,

This letter is written on behalf of Bessemer Airport Authority Board (the Authority). The Authority is the governing board of Bessemer Municipal Airport, Bessemer, Alabama. By this letter, it is the Authority's desire to express its full support of **Alabama Aerospace & Aviation High Schools, Inc., (AAASI)** application to Alabama Public Charter Schools Commission. It is the Authority's belief that AAASI will offer a high quality of education to students in the Bessemer Community, thereby providing the academic foundation to enable area children to excel in college or their chosen careers.

The Authority has been in extensive discussion with AAASI and has signed a "Letter of Intent" to enter into a long-term ground lease of certain real estate owned by the Bessemer Airport Authority, for the development of a school. The Authority is excited at the prospect of a High School that offers courses in Avionics and Aerospace and encourages the Commission's approval of AAASI's application.

Sincerely,

James Johnson, Vice Chairman
Bessemer Airport Authority

Goodwyn Mills Cawood

2400 5th Avenue South
Suite 200
Birmingham, AL 35233

T (205) 879-4462

www.gmcnetwork.com

Bessemer Airport Authority
Tim Wasyluka, Executive Director
900 Mitchell Field Road
Bessemer, AL 35022

June 21, 2021

RE: Charter School Opportunity Support Letter – Bessemer Municipal Airport

At the request of the Bessemer Airport Authority, GMC has reviewed the concept of a charter school being located on airport property. While schools are generally considered incompatible land use by the FAA, we believe that the aviation education and training nature of the proposed charter school, as well as existing similar precedence at other airports, would make this development a compatible land use with the Bessemer Municipal Airport.

We recommend the school proper be positioned away from directly connecting with the airfield. To ensure long term compatibility, we recommend the lease agreement with the school contain very specific legal verbiage, similar to an easement, which guarantees the school's activity will not interfere with the Airport. The school should also acknowledge and agree to any impacts the Airport may have on the school such as noise, risk, light emissions, pollution, etc. Any through-the-fence (TTF) agreements between the Airport and the school should be avoided.

For FAA processing, the school development will require an ALP update and a FAA form 7460. We recommend the Bessemer Airport Authority discuss this proposed development with both the ALDOT Aeronautics department and the FAA Jackson Airport's District Office. We will be happy to participate in these meetings if you desire. In keeping with practice and FAA recommendations, we also advise the Bessemer Airport Authority engage a certified real-estate appraiser and review appraiser to evaluate the proposed site for the lease of the property. Please also note FAA does not approve of leases greater than a total of 50 years.

GMC commends the City of Bessemer, the Bessemer Airport Authority, and yourself for promoting and advancing aviation development that will not only enhance the Bessemer Municipal Airport but the region and the lives of so many future young professionals.

Should you need any additional information or would like to discuss further, please let us know.

Sincerely,

Matt Thomason, AICP, CM, PE
GMC Aviation Planning Leader

July 7, 2021

Alabama Public Charter School Commission
Alabama Department of Education
Attn: Dr. David T. Marshall

Dear Dr. Marshall,

It is with great enthusiasm that I write this letter in full support of the Alabama Aerospace and Aviation High School. This charter school will serve students in the City of Bessemer and surrounding areas. The first of its kind in our State, this charter school will introduce to our students a discipline that is not prevalent in our community. The multifaceted educational track gives each student the opportunity to find success in academia or through workforce training.

Because this charter school is so different from all other charter schools across the state, strong leadership matters which sets the trajectory for success in years to come. Ruben Morris has demonstrated his ability to lead this endeavor. His varied experiences in education, both classroom and administration, have developed the professional acumen and necessary preparation to create a solid vision for this unique charter school. He can relate to our children in every way. It is this structure and firm foundation that will help to shape the future of our talented and bright young people.

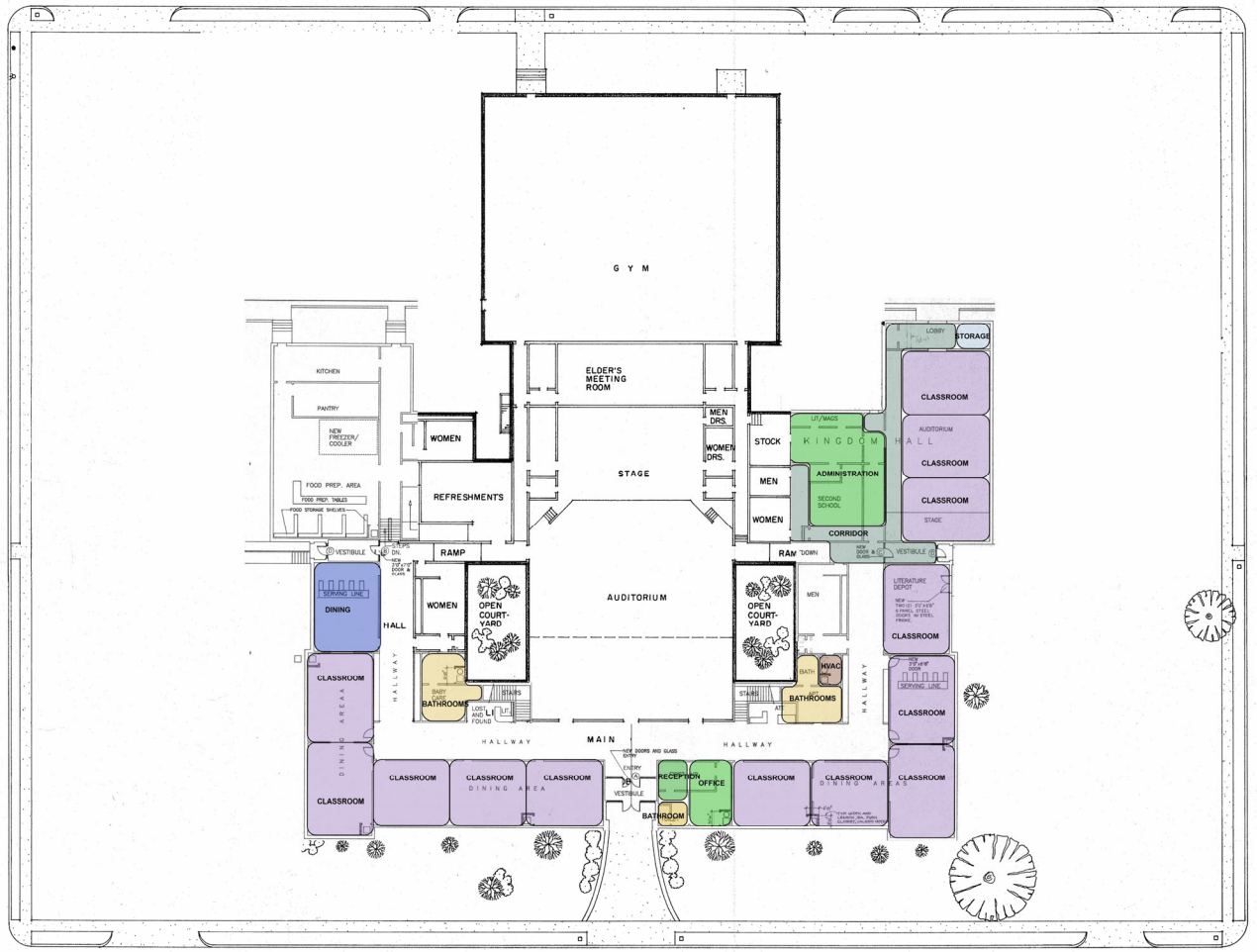
Seeing the vision of this charter school become a reality is of significant importance to me. Not only does it align with the vision impact for our local ministry, but it also supports the rapid economic growth of Bessemer, AL by creating a trained workforce. At the Abundant Fountain of Life Ministries, Inc., we support Ruben Morris and the vision of the Alabama Aerospace and Aviation High School. Our collaboration in this endeavor includes, but is not limited to, housing the charter school in our facilities.

For generations, Bessemer has been identified as the “The Cut-Off” signifying its severing from various opportunities in Birmingham-proper and greater Jefferson County areas. Today, Bessemer stands at the threshold of significant economic opportunity and revitalization. The Alabama Aerospace and Aviation High School is one more pillar supporting sustainability for the future of “The Marvel City.” I pledge my full support of this endeavor, and I humbly request your authorization of the charter application.

Sincerely,

Noah W. Rocker, Jr.
Founder/Sr. Pastor

1414 2nd Ave N.
Bessemer, AL 35020
www.afountainoflife.com
205-434-2374



SITE and FLOOR PLAN 1" = 20'-0"

ALABAMA ASSEMBLY HALL OF JEHOVAH'S WITNESSES – BESSEMER, ALABAMA

BARTLETT DRAFTING & DESIGN SERVICES
RT. 8 BOX 44
CELIA ST.
DOAG, AL 35907

SCALE 1"=20'
DRAWN BY Bartlett
REVISED

SITE and FLOOR PLAN

DATE
APPROVED BY
DRAWING NUMBER A-1

MADE IN U.S.A.

K+E CRYSTALENE 11 24x36 ARCHITECTS STANDARD FORM

Start-Up & Ongoing Operations

The safety and security of the students, faculty, staff, and visitors at AAHS is of the utmost importance. At the beginning of each year and upon the return each January, AAHS will have mandatory safety-training meetings for all employees and these will be constantly updated and revised. Given the possibility of opening in what could still be a COVID-19 environment very specific planning has already been done to ensure that proper screens occur either daily or weekly (temperature checks, questionnaires, and staff observation of students) and additional distancing is arranged at events like breakfast and lunch, plans for how to temporarily quarantine students who exhibit symptoms, and an extensive daily cleaning routine will be part of the common staff training.

In a COVID-19 environment all staff and students will be trained on social distancing, handwashing, how to limit face touching, and how to sanitize hands (staff and students) and various surfaces (staff), etc. AAHS anticipates expanding its annual safety and security meeting to include extensive training on how students and staff will arrive, learn, depart, and interact in ways that limit potential exposure. At this meeting, AAHS administration will discuss crisis and emergency plans and go in depth with different situations that may arise. In addition to the meeting and ongoing discussions, AAHS substitutes will be required to have access to the school safety information and specific procedures upon arrival.

All non-students or non-staff members who visit the school will be screened by a school security system known as Raptor Ware. The Raptor school security system is in place in thousands of schools, both district and charter, and helps to quickly screen individuals who are not allowed in the school (sex offenders, for ex.) and will help to manage custody issues, organize volunteers, and respond to emergencies. The Raptor system will have faculty's numbers and information stored. In the case of an emergency, the system sends each member of AAHS staff an email, text, and phone call notifying them of the situation. In addition to Raptor Ware, cameras can be located throughout the school in various areas and on buses. School officials will have access to monitor the cameras, if needed.

Throughout the year, AAHS will make certain all exit doors remain locked and the front door has controlled access. AAHS will require that all guests use the main entrance of the building. Upon arrival, guests must sign in, AAHS will utilize the Raptor Ware school security system before approving entry by a guest. After a completed scan by Raptor ware, the guest will receive a visitor pass to be worn for the duration of their visit. To exit, the guest must sign out at the front office and return their visitor pass.

AAHS plans to use a fully executed crisis and emergency plan to handle situations that may arise. AAHS will work with the local emergency responders to revise crisis and emergency plans and procedures on a recurring basis throughout the school year. AAHS will work closely with the fire chief throughout the year to develop a plan for an active shooter situation, conduct bi-annual tests of the fire hydrants near the school, schedule walk-throughs of our campus and participate in drills. Drills and emergency plans are kept up to date for emergency responders

to access. In addition to the crisis and emergency plan, monthly fire and weather safety drills will be performed. After completion of the drills, employees at AAHS will reflect on the drills and discuss solutions to any issues that may arise. A map of the school and the drills will be posted in every classroom. AAHS is committed to working with the local emergency response agencies to keep our school safe.

Student safety begins with the location of the student. Teachers will have an electronic attendance count that must be submitted with each class and revised throughout the day – as required by Alabama law. Morning drop-off and afternoon pick-up procedures will be developed and implemented by the Director of Operations with consultation with local law enforcement officials. AAHS plans to implement a student safety seminar at the beginning of each semester. During this time, AAHS will teach students the importance of safety when using the worldwide web or social media platforms. The issue of cyber bullying will also be discussed. Bullying forms will be posted on our website, the counselor's office and the main office for any student that may need it.

Please see attachments 27-30

HIGH SCHOOL

ATTACHMENT 27

Start-up Plan

HIGH SCHOOL

A. School Start Up

Task Name	Timeline (Must Be Completed By)	Status	Person(s) Responsible	Additional Resources	Notes
School Startup Checklist 2020-2022					
Key Milestones					
Critical Path Items					** Reference **Critical Path** document. Note specific deadlines below.
Charter/Legal					
All charter/contract requirements met	July 2022	**Delayed**	Board Chair		
First Board meeting		**Complete**	Board Chair		
Teacher Hiring					
All advertising in place	November 2021	**Delayed**	CEO		
Lead list (short list)	January 2022	**Delayed**	DTL		
Conduct interviews	February 2022	**Delayed**	DTL/CEO		
Hiring	March 2022	**Delayed**	CEO		
Student Recruitment					
Community outreach (including enrollment forms, home visit materials)	February 2022	**Delayed**	DOO/CEO		
Application forms	March 2022	**Delayed**	DOO/CEO		
Commitment to Excellence Forms	April 2022	**Delayed**	DOO		
Financial Planning & Management					
Startup and Y1 budgets	November 2020	**Complete**	CEO/Board Chair		
Set up temporary, electronic tracking system (Excel)	January 2021	**Complete**	CEO		
Y1 cashflow	January 2021	**Complete**	CEO		
Permanent accounting system in place	January 2022	**Delayed**	CEO/Board Chair		
Curriculum					
Working draft of founding grade level (9th) curriculum	August 2020	**Complete**	DTL		
Insurance					
Directors & Officers (D&O) insurance	November 2020	**Complete**	CEO/Board Chair		
All other necessary coverages	May 2021	**Complete**	CEO/Board Chair		
Payroll & Benefits					
Payroll and benefits set up	September 2020	**Complete**	Board Chair		
Facility					
Begin facility search	November 2019	**Complete**	Consultant		
Certificate of Occupancy	January 2022	**In Progress**	Consultant		
OPENING DAY	**AUGUST 8TH, 2022**				
INSTRUCTIONAL LEADERSHIP					
Strategic Plan for Instructional Program					
Research federal, state and local policies regarding instructional program design	November 2020	**In Progress**	DTL		
Research best practices	December 2020	**Complete**	DTL		
Develop instructional program	January 2021	**In Progress**	CEO/DTL		
Align instructional program with school's mission, vision, core values	February 2021	**In Progress**	CEO/DTL		
Develop plan to train teachers	March 2021	**In Progress**	DTL		
Develop plan to monitor attainment of special needs students	March 2021	**In Progress**	DTL		
Standards and Curriculum					
Research state standards	October 2020	**Complete**	DTL		
Research best practices	November 2020	**Complete**	DTL		
Develop standards	January 2021	**Complete**	DTL		
Develop process and timeline for writing curriculum	February 2021	**Complete**	DTL		
Develop plan for involving teachers in curriculum development	March 2021	**In Progress**	DTL		
Draft curriculum	May 2021	**Complete**	DTL		
Develop plan for implementing curriculum	May 2021	**In Progress**	DTL		
Develop plan for evaluating and refining curriculum	May 2021	**Complete**	DTL		
Create promotion policies and procedures	June 2021	**In Progress**	DTL		
Methods and Materials			DTL		
Review various instructional methods	May 2021	**In Progress**	DTL		
Select instructional methods and materials	May 2021	**In Progress**	DTL		
Special Education and ELL					
Special Education					
Research legal issues	January 2021	**Complete**	DTL		
Research funding	February 2021	**Complete**	CEO/DTL		
Develop process for identifying special needs students	March 2021	**Complete**	DTL		
Develop instructional strategies for special needs students	May 2021	**Complete**	DTL		
Develop discipline procedure for students with IEPs	May 2021	**Complete**	DTL		
Identify local resources for assistance	June 2021	**Complete**	DTL		
ELL					

HIGH SCHOOL

A. School Start Up

Task Name	Timeline (Must Be Completed By)	Status	Person(s) Responsible	Additional Resources	Notes
Research legal issues	April 2021	**Complete**	DTL		
Research funding	April 2021	**Complete**	DTL		
Develop procedure for language assessment and placement	May 2021	**Complete**	DTL		
Develop exit procedure for ELL students	May 2021	**Complete**	DTL		
Identify local resources for assistance	June 2021	**Complete**	DTL		
Instructional Supervision					
Develop process for teacher observation (including criteria for classroom visits and dedicated monitoring time)	June 2021	**Complete**	DTL		
Develop process for teacher feedback	June 2021	**In Progress**	DTL		
Develop process for teacher coaching	June 2021	**Complete**	DTL		
Develop process for teacher evaluation	June 2021	**Complete**	DTL		
Student Assessment/ Data Driven Instruction			DTL		
Reseach accountability requirements	July 2021	**Complete**	DTL		
Identify standardized testing materials and resources	July 2021	**In Progress**	DTL		
Identify any additional assessment materials	July 2021	**In Progress**	DTL		
Develop assessment schedule	July 2021	**In Progress**	DTL		
ORGANIZATIONAL LEADERSHIP					
School Philosophy					
Articulate school vision	April 2020	**Complete**	CEO		
Articulate school mission	April 2020	**Complete**	CEO		
Identify school goals	April 2020	**Complete**	CEO		
Identify school values	May 2019	**Complete**	CEO		
Develop school design/strategy to accomplish school's vision, mission and goals	January 2021	**Complete**	CEO		
Develop plan to implement School Design Plan	February 2021	**Complete**	CEO		
Develop plan for annual evaluation and re-alignment of school's vision, mission, goals and values	March 2021	**In Progress**	CEO		
Leadership Roles					
Ethical Leadership					
Obtain copy of administrative ethics from the state ethics board	August 2021	**In Progress**	Board Chair		
Obtain copy of teacher ethics from state ethics board	August 2021	**In Progress**	Board Chair		
Develop ethical standards for school and staff	August 2021	**In Progress**	Board Chair		
Research Open Meetings Act	August 2021	**In Progress**	Board Chair		
Determine plan for making information available to public	August 2021	**In Progress**	Board Chair		
Develop process for teacher input in decision-making	August 2021	**In Progress**	Board Chair		
Develop process for annual review of school programs	August 2021	**In Progress**	Board Chair		
Identify professional development opportunities (for you as school leader)	August 2021	**In Progress**	CEO		
Cultural Development					
Develop staff culture plan	May 2021	**Complete**	CEO		
Develop student culture plan	June 2021	**Complete**	CEO		
Develop parent engagement plan	June 2021	**Complete**	CEO		
Determine physical design of school that reflects culture	June 2021	**In Progress**	CEO		
Develop school logo/mascot	July 2021	**In Progress**	CEO		
Legal Issues					
Research applicable federal and state laws	January 2021	**Complete**	Board Chair		
Document policies to address legal potentialities	March 2021	**In Progress**	Board Chair		
Review policies with a lawyer	April 2021	**In Progress**	Board Chair		
Present policies to Board for adoption	May 2021	**Pending**	Board Chair		
Compliance and Accountabity			Board Chair		
Research federal, state and local compliance and accountabity requirements	January 2021	**Complete**	Board Chair		
Identify required federal, state and local reporting requirements and timelines	March 2021	**In Progress**	Board Chair		
Student Management					
Develop and implement strategic recruitment plan					
Research demographics	January 2020	**Complete**	CEO		
Research legal requirements/restrictions	May 2020	**Complete**	CEO		
Identify primary parent contacts in community	August 2020	**Complete**	CEO		
Develop recruiting materials	October 2020	**Complete**	CEO		
Develop student application	January 2021	**In Progress**	CEO		
Set recruitment targets and timelines	December 2021	**In Progress**	CEO		
Organize recruiting events	November 2021	**In Progress**	CEO		
Commitment to Excellence Form	February 2022	**In Progress**	DOO		

HIGH SCHOOL

A. School Start Up

Task Name	Timeline (Must Be Completed By)	Status	Person(s) Responsible	Additional Resources	Notes
Conduct home visits	February 2022	Pending	CEO/DTL/DOO		
Behavior Management					
Develop student behavioral standards	February 2021	Complete	DTL		
Develop policies, roles and responsibilities for student management	March 2021	Complete	DTL		
Determine process for monitoring student management	April 2021	In Progress	DTL		
Identify process for communicating student behavioral standards to students, staff and parents	May 2021	Complete	DTL		
Document student management plan	April 2021	In Progress	DTL		
Develop plan for training staff	April 2021	In Progress	DTL		
Parent Engagement					
Organize parent meetings	May 2022	In Progress	DOO/CEO		
Plan and conduct Parent Orientation	June 2022	Delayed	DOO/CEO		
Develop Parent/Student Handbook	January 2022	In Progress	DOO/CEO		
Develop policy for parent meetings with staff	April 2022	In Progress	DOO/CEO		
Develop methods and process for communication with parents	April 2022	In Progress	DOO/CEO		
Develop plan for parent organization	August 2022	In Progress	DOO/CEO		
Staff Management					
Determine staffing plan	May 2021	Complete	CEO		
Develop annual strategic staff recruitment program	May 2021	In Progress	CEO		
Develop hiring process			CEO		
Write job descriptions	June 2021	In Progress	CEO		
Develop legal application	June 2021	In Progress	CEO		
Advertise positions	November 2021	Pending	CEO		
Review resumes	January 2022	In Progress	CEO		
Conduct interviews	February 2022	Pending	CEO		
Classroom observations	March 2022	Pending	CEO		
Conduct reference/background checks	March 2022	Pending	CEO		
Make offers of employment	March 2022	Pending	CEO		
Collect employee documentation	April 2022	Pending	DOO		
Research federal and state employment information requirements	January 2022	Delayed	DOO/CEO		
Develop Staff Handbook	April 2022	In Progress	DOO		
Plan and conduct Staff Orientation	May 2022	Pending	DOO		
Develop plan for teacher observation, feedback, coaching and evaluation	April 2022	In Progress	DTL		
Develop process for recognizing staff	April 2022	In Progress	DOO/DTL		
Develop staff support plan	April 2022	In Progress	DTL		
Identify professional development opportunities for staff	May 2022	In Progress	DTL		
Community Relations					
Research local non-profits and businesses	November 2019	Complete	CEO		
Develop relationships with community members and organizations	January 2020	Complete	CEO		
Create opportunities to educate community about the school	July 2020	Complete	CEO		
Develop method of regular outreach to community	August 2020	Complete	CEO		
Identify family and social service organizations as resources	August 2020	In Progress	CEO		
Develop visitor protocol	May 2022	In Progress	DOO		
Develop marketing materials for visitors/interested parties	January 2022	Complete	CEO		
Develop process for training staff/students to conduct school tours	June 2022	Pending	DTL		
Media Relations					
Develop proactive media relations strategy	May 2020	Complete	CEO		
Determine roles and responsibilities for representing the school to the media	May 2020	Complete	CEO		
Determine process for distributing information to the media	June 2020	Complete	CEO		
Create media consent form/waiver for students	May 2022	Pending	DOO		
Governance					
Identify constituents/stakeholders	October 2019	Complete	Board Chair		
Develop plan for gathering constituent/stakeholder input	December 2019	Complete	Board Chair		
Develop process for communicating decisions to constituents/stakeholders	January 2022	Pending	Board Chair		
Board Management					
Train Board	January 2021	Complete	Board Chair		
Establish Board meeting schedule	May 2020	Complete	Board Chair		
Develop Board meeting agenda(s)	May 2020	Complete	Board Chair		
Develop process for notifying Board and public of meetings	June 2020	Complete	Board Chair		

HIGH SCHOOL

A. School Start Up

Task Name	Timeline (Must Be Completed By)	Status	Person(s) Responsible	Additional Resources	Notes
Develop process for making Board minutes available to public as required by law	May 2021	In Progress	Board Chair		
Present strategic plan for Board approval	January 2022	Pending	Board Chair		
Time Management					
Create school schedule	April 2021	Complete	CEO		
Create weekly, monthly and annual calendars	May 2021	Complete	CEO		
OPERATIONAL LEADERSHIP					
Financial Planning & Management					
Develop budget					
Identify fiscal cycle for your school	September 2020	Complete	CEO		
Research revenue sources	October 2020	In Progress	CEO/Board Chair		
Project expenditures	December 2020	In Progress	CEO/Board Chair		
Create startup budget	January 2021	In Progress	CEO/Board Chair		
Create Year 1 budget	January 2021	In Progress	CEO/Board Chair		
Create cash flow					
Research how to secure per pupil funding	December 2020	In Progress	CEO/Board Chair		
Identify inflows and outflows	December 2020	In Progress	CEO/Board Chair		
Create startup cash flow statement	January 2021	In Progress	CEO/Board Chair		
Create Year 1 cash flow statement	January 2021	In Progress	CEO/Board Chair		
Identify timeline and process for applying for title/categorical funding	March 2021	In Progress	CEO/Board Chair		
Identify and research options to address cash flow shortage	March 2020	In Progress	CEO/Board Chair		
Create budget to actuals	February 2021	In Progress	CEO/Board Chair		
Financial Reporting			Consultant		
Create budget views for different audiences	March 2021	In Progress	Consultant		
Create Board financial report template	April 2021	In Progress	Consultant		
Create balance sheet	April 2021	In Progress	Consultant		
Develop process for reporting to Board	March 2021	In Progress	Consultant		
Fund Accounting			Consultant		
Identify restricted sources and uses of funds	January 2022	In Progress	Consultant		
Develop system for tracking restricted funds	January 2022	In Progress	Consultant		
Incorporate restricted funds into budget	January 2022	In Progress	Consultant		
Develop restricted fund report template	April 2022	In Progress	Consultant		
Hire accountant					
Transition to permanent accounting system	May 2022	Pending	Consultant		
Prepare and understand how to analyze a Balance Sheet	December 2021	Pending	Consultant		
Prepare and understand how to analyze an Income (Profit & Loss) statement	December 2021	Pending	Consultant		
Prepare and understand how to analyze a Statement of Cash Flow	December 2021	Pending	Consultant		
Prepare and understand how to analyze a Budget to Actuals comparison	December 2021	Pending	Consultant		
Identify tax compliance requirements and timelines	March 2022	Pending	Consultant		
Develop growth plan					
Set enrollment, demographic, attendance targets	December 2020	Complete	CEO/Board Chair		
Research required reserve/replacement fund	December 2020	In Progress	CEO/Board Chair		
Develop five-year budget	January 2021	Complete	CEO/Board Chair		
Develop long-term staffing plan	January 2021	Complete	CEO/Board Chair		
Develop long-term facility plan	June 2021	In Progress	CEO/Board Chair		
Develop Internal Controls			CEO/Board Chair		
System for tracking receipts	January 2020	In Progress	CEO/Board Chair		
Open bank account	January 2020	In Progress	CEO/Board Chair		
Checking account policy	March 2020	In Progress	CEO/Board Chair		
Credit card use policy	March 2020	In Progress	CEO/Board Chair		
Petty cash policy	March 2020	In Progress	CEO/Board Chair		
Teacher reimbursement policy	May 2021	Pending	CEO/Board Chair		
Define and segregate financial roles and responsibilities	March 2020	In Progress	CEO/Board Chair		
Document policies in school handbooks	May 2020	In Progress	CEO/Board Chair		
Establish system to track assets	May 2021	In Progress	CEO/Board Chair		
Compensation					
Establish payroll schedule	May 2021	Complete	CEO/Board		
Obtain benefits for employees	May 2020	In Progress	CEO/Board		
Research local retirement system	March 2020	Complete	CEO/Board		
Develop bonus criteria	May 2020	In Progress	CEO/Board		
Establish salary scale	December 2020	Complete	CEO/Board		
Define promotion process	February 2021	In Progress	CEO/Board		
Determine compensation for more time	January 2021	In Progress	CEO/Board		

HIGH SCHOOL

A. School Start Up

Task Name	Timeline (Must Be Completed By)	Status	Person(s) Responsible	Additional Resources	Notes
Procurement					
Identify procurement needs, quantities and timelines for school, staff and students					
Supplies					
Purchase office supplies	June 2022	Delayed	DOO		
Purchase office furniture	May 2022	Delayed	DOO		
Purchase office equipment (copier, fax)	May 2022	Delayed	DOO		
Purchase classroom supplies	June 2022	Delayed	DOO		
Purchase classroom furniture	May 2022	Delayed	DOO		
Purchase classroom equipment (overhead projectors, computers)	June 2022	Delayed	DOO		
Purchase programs, textbooks, materials	June 2022	Delayed	DOO		
Purchase common area furniture (cafeteria, library)	June 2022	Delayed	DOO		
Purchase uniforms	June 2022	Delayed	DOO		
Services					
Obtain insurance					
D&O Insurance	March 2021	Complete	CEO/Board		
Property Insurance	May 2021	Pending	CEO/Board		
Business Package Insurance (liability, auto, umbrella, student accident, workers compensation)	May 2021	In Progress	CEO/DOO		
Obtain transportation services	May 2021	Pending	CEO/DOO		
Obtain food service	September 2021	Pending	CEO/DOO		
Develop payroll system/choose vendor	September 2020	In Progress	CEO/DOO		
Obtain health services	June 2021	In Progress	CEO/DOO		
Identify legal services provider	June 2021	Complete	CEO/DOO		
Retain auditing services	June 2021	In Progress	CEO/DOO		
Technology					
Obtain telecommunication & technology services	May 2022	Delayed	CEO/DOO		
Obtain technology support systems	May 2022	Delayed	CEO/DOO		
Procure hardware	June 2022	Delayed	CEO/DOO		
Procure software	June 2022	Delayed	CEO/DOO		
Purchase internet domain name	January 2020	Complete	CEO/DOO		
Select vendors					
Research competitive bidding requirements	January 2022	In Progress	CEO/DOO		
Research and select vendors	May 2022	Delayed	CEO/DOO		
Negotiate contracts with vendors	May 2022	Delayed	CEO/DOO		
Manage vendors					
Identify who will manage the school's vendors	April 2022	Delayed	CEO/DOO		
Establish purchase order process	May 2022	Delayed	CEO/DOO		
Create system for monitoring contract renewal dates	May 2022	Delayed	CEO/DOO		
Determine process for evaluating vendors	April 2022	Delayed	CEO/DOO		
Develop plan for establishing credit history					
Apply for DUNS number	January 2022	Delayed	CEO/DOO		
Systems and Procedures					
Develop identifiable, repeatable, effective, efficient systems and procedures					
Define and segregate roles and responsibilities	March 2022	Delayed	CEO/DOO		
Filing system	April 2022	Delayed	CEO/DOO		
Student records					
Research document storage rules/requirements	April 2022	Delayed	CEO/DOO		
Process for obtaining student files from sending schools	June 2022	Delayed	CEO/DOO		
Implement student information system					
Obtain compliance requirements from state	February 2022	Pending	CEO/DOO		
Research student information systems	September 2022	Pending	CEO/DOO		
Procure necessary system/materials	May 2022	Pending	CEO/DOO		
Train staff on procedures and systems	June 2022	Pending	CEO/DOO		
Attendance	May 2022	Pending	CEO/DOO		
Food Service (National School Lunch Program)	September 2022	Pending	CEO/DOO		
Special Ed	May 2022	Pending	CEO/DOO		
Student discipline	May 2022	Pending	CEO/DOO		
Health policies	May 2022	Pending	CEO/DOO		
Bookkeeping (Accounts Payable and Receivable)	May 2022	Pending	CEO/DOO		
Check request/reimbursement system	May 2022	Pending	CEO/DOO		
Internal Controls	May 2022	Pending	CEO/DOO		

HIGH SCHOOL

A. School Start Up

Task Name	Timeline (Must Be Completed By)	Status	Person(s) Responsible	Additional Resources	Notes
Create calendar of reporting to all accountable parties	May 2022	Pending	CEO/DOO		
Office procedures and responsibilities	May 2022	Pending	CEO/DOO		
Communications systems	May 2022	Pending	CEO/DOO		
Security of school data	May 2022	Pending	CEO/DOO		
Resource Development					
Identify fundraising needs	January 2021	In Progress	CEO		
Develop contingency/reduction plans	February 2021	Complete	CEO		
Develop prospect list					
Foundations	January 2021	Complete	CEO/Board Chair		
Corporations	March 2021	Complete	CEO/Board Chair		
Individuals	April 2021	Complete	CEO/Board Chair		
Cultivate relationships with prospective donors	Ongoing	In Progress	CEO/Board Chair		
Apply for grants					
Identify timelines	Ongoing	In Progress	CEO		
Letter of Inquiry	Ongoing	In Progress	CEO		
Write grant proposal	Ongoing	In Progress	CEO		
Follow up	Ongoing	In Progress	CEO		
Thank you note	Ongoing	In Progress	CEO		
Research, select and implement a donor management system	January 2021	Pending	CEO		
Develop process for sending school information/updates to prospective donors	February 2021	Complete	CEO		
Assign fundraising responsibilities to Board					
Identify Board requirements for contributions	February 2021	Pending	Board Chair		
Set fundraising goals for Board	February 2021	Pending	Board Chair		
Create Fundraising Committee	May 2021	Pending	Board Chair		
Assign roles and responsibilities to Board members based upon strategic fundraising plan	May 2021	In Progress	Board Chair		
Establish system of gift recognition	February 2022	Delayed	Board Chair		
Identify and partner with local resources	Ongoing	In Progress	Board Chair		
Facities Management					
Obtain applicable insurance	June 2022	Delayed	CEO/Board Chair		
Identify infrastructure needs (utities, networking, e.g.)	April 2022	Delayed	CEO/Board Chair		
Research local code requirements for compliance	April 2022	Delayed	CEO/Board Chair		
Post required signage	June 2022	Delayed	CEO/Board Chair		
Create security plan	June 2022	Delayed	CEO/Board Chair		
Develop emergency planning/preparedness policies	June 2022	Delayed	CEO/Board Chair		
Procure services					
Janitorial services	June 2022	Delayed	DOO		
Maintenance services	June 2022	Delayed	DOO		
Landscaping services	June 2022	Delayed	DOO		
Plumbing services	June 2022	Delayed	DOO		
Trash/Recycling	June 2022	Delayed	DOO		
Develop plan for keeping school clean	June 2022	Delayed	DOO		
Develop plan for use of physical space					
Traffic flow	June 2022	Delayed	DOO		
Storage	June 2022	Delayed	DOO		
Shared space	June 2022	Delayed	DOO		
Obtain Certificate of Occupancy	May 2022	Delayed	CEO		
Develop short-term growth plan	April 2022	Delayed	CEO		
Develop long-term growth plan	June 2022	Delayed	CEO		
SCHOOL DEVELOPMENT					
Friends - Build strong network of Friends					
State Charter Commission Intelligence					
Understand charter commission politics	September 2019	Complete	CEO		
Understand state department of education politics	October 2019	Complete	CEO		
Research contract law/school code	October 2019	Complete	CEO		
District Relations			CEO		
Pitch to Charter Authorizing/Innovation Department, Small Schools Staff	December 2020	Complete	CEO		
Pitch to Superintendent	December 2020	Complete	CEO		
Pitch to Board	January 2021	Complete	CEO		
Build founding Board			CEO		
Identify local representatives	November 2019	Complete	CEO		
Identify existing supporters	November 2019	Complete	CEO		
Create high profile supporters	October 2020	Complete	CEO		
Collect Letters of Support/other evidence	November 2020	Complete	CEO		
Funding - Create clear financial picture					
Develop Revenue Picture					

HIGH SCHOOL

A. School Start Up

Task Name	Timeline (Must Be Completed By)	Status	Person(s) Responsible	Additional Resources	Notes
Per Pupil Estimates	November 2019	**Complete**	CEO		
Entitlement Estimates	November 2019	**Complete**	CEO		
Fundraising Estimates	November 2019	**Complete**	CEO		
Cash Flow and Schedule from Authorizer	June 2020	**Complete**	CEO		
Develop Expense Picture					
Direct Student Costs	August 2020	**Complete**	CEO		
Facility costs	August 2020	**Complete**	CEO		
Salaries	August 2020	**Complete**	CEO		
Other major costs (transport, food, Spec Ed)	September 2020	**Complete**	CEO		
Fundraising	September 2020	**Complete**	CEO		
First Budget Estimate balances	October 2020	**Complete**	CEO		
Revise budget and include in charter	October 2020	**Complete**	CEO		
Form - Create Legal Structure					
Research federal legislation	November 2019	**Complete**	CEO		
Research state legislation	November 2019	**Complete**	CEO		
Write Board By laws	May 2020	**Complete**	CEO		
Develop and file Articles of Incorporation	December 2019	**Complete**	CEO		
Apply for federal 501c3 exemption	November 2019	**Complete**	CEO		
Receive federal 501c3 exemption	March 2020	**Complete**	CEO		
Apply for state tax exemption	November 2019	**Complete**	CEO		
Apply for Employer Identification Number (EIN)	December 2019	**Complete**	CEO		
Trademark Name	December 2019	**Complete**	CEO		
Charter					
Research charter law/requirements	September 2019	**Complete**	CEO		
Draft charter application	August 2020	**Complete**	CEO		
Identify neighborhood targets	September 2020	**Complete**	CEO		
Document parent support	October 2020	**Complete**	CEO		
Finalize and submit charter	November 2020	**Complete**	CEO		
Attend board meetings	January 2021	**Complete**	CEO		
Authorizer Decision delivered	January 2021	**Complete**	CEO		
Accept or File Appeal	January 2021	**Complete**	CEO		
Confirm Start of Appeal Process	February 2021	**Complete**	CEO		
Appeal Decision	February 2021	**Complete**	CEO		
Authorizer Action on Positive Appeal	February 2021	**Complete**	CEO		
Obtain Charter Approval	March 2021	**Pending**	CEO		
Contract					
Draft Contract	May 2021	**Pending**	CEO/Board Chair		
Negotiate and sign Contract	May 2021	**Pending**	CEO/Board Chair		
Sign side letters					
Facility agreement	November 2020	**Delayed**	CEO/Board Chair		
Shared Space agreement	January 2021	**Pending**	CEO/Board Chair		
Other Support services agreement	June 2021	**Pending**	CEO/Board Chair		
Contract or Charter signed, understood by authorizer	June 2022	**Pending**	CEO/Board Chair		
Facility Procurement					
Location Identification	November 2019	**Complete**	CEO/Consultant		
Site Identification			CEO/Consultant		
Site search	September 2019	**Complete**	CEO/Consultant		
Find leads from Friends in Community	September 2019	**Complete**	CEO/Consultant		
Identify/hire site consultant (Arch/Code consult)	December 2020	**Complete**	CEO/Consultant		
Study feasibility	January 2021	**In Progress**	CEO/Consultant		
Negotiate lease/purchase	January 2020	**In Progress**	CEO/Consultant		
Arrange financing	March 2021	**In Progress**	CEO/Consultant		
Zoning/Use/Regulatory approvals	April 2021	**In Progress**	CEO/Consultant		
Sign lease/ close sale	March 2022	**In Progress**	CEO/Consultant		
Site Improvements					
Design process	January 2021	**Pending**	CEO/Consultant		
Construction documents	April 2021	**Pending**	CEO/Consultant		
Construction bidding	June 2021	**Pending**	CEO/Consultant		
Permitting process	August 2021	**Pending**	CEO/Consultant		
Construction	September 2021	**Pending**	CEO/Consultant		
Obtain Certificate of Occupancy	January 2022	**Pending**	CEO/Consultant		
Move into site	April 2022	**Pending**	CEO/Consultant		

HIGH SCHOOL

ATTACHMENT 28

Financial Plan Workbook

-School Insurance Coverage Including Description and Levels of Coverage

AAHS will maintain insurance to protect the school from claims that may arise. AAHS will secure and maintain insurance coverage limits that either meet or exceed the minimum insurance limit requirements for charter schools in Alabama. These coverages are expected to be similar in type and coverage level to those of other public and independent schools in Alabama, and in accordance with national best practices for charter schools.

AAHS understands the importance of monitoring its vendors, contractors, partners or sponsors for compliance with the insurance requirements. Additionally, AAHS will ensure proper indemnities in its contracts with external vendors. Alabama is a National Council on Compensation Insurance state, so workers compensation insurance policies follow NCCI manual rules. The School's insurance shall cover the School (and its subcontractors, to the extent that it is not otherwise insured) for those sources of liability which would be covered by the latest edition of the standard Workers' Compensation Policy, as filed for use in Alabama by the NCCI, without restrictive endorsements as stated in the Alabama Workers' Compensation Act. Coverages will be reviewed annually by management and insurance providers are subject to approval by vote of the AAHS Board of Directors.

Minimum expected limits include:

Coverages	Amounts
Building and Personal Property Bonding of Senior Executives	$1,0000,000, $100,000 each
Commercial and General Liability	$1,000,000 per occurrence $3,000,000 umbrella
Automotive	$1,000,000
Directors and Officers Liability	$1,000,000
Workers Compensation and Educators Legal Liability, Student Accident	$1,000,000

Aerospace and Aviation High School		
Start Up Budget		
		Planning
		Year Zero
	PK	
	K	
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	Total Enrollment	
	Total Enrollment Less Pre K	
	Total FTEs	
Revenue		
	PreK Funding	
	State Foundation Funding	
	Other State Funds	
	State Transportation Funding	
	Local Revenue - Other	

	Release from Fund Balance	
	Total Federal Funding	
	Subotal Recurring Revenues	
	CSP Funding	700,000
	New Schools Venture Fund	210,000
	Walton Family Foundation	325,000
	New Schools For Alabama	180,000
	Other Grants	100,000
	Corporate Grants	
	Annual Fundraising Goal	
	Subtotal Philanthropy	1,515,000
	Total Revenue	**1,515,000**
Expenses		
Compensation		
	Total Wages	95,000
	Benefits and Payroll Taxes	33,041
	Total Compensation	**128,041**
	Facilility Acquisition/Upgrade Costs (	300,000
	Rent or Debt Service	
	Utilities/Janitorial/Grounds/Other	35,000
	Maint./Repair	
	Total Facilities	**335,000**
Classroom and Instructional Expenses		

	Professional Dev. & Instructional coa	10,000
	Copier lease	
	Instructional Materials (equip, books	18,000
	Classroom Supplies and Consumable	6,000
	Special Education Supplies	4,000
	Testing, Data, Analytics	6,000
	Student Chromebooks (1:1)/Carts	-
	Digital Content	
	Elective Supplies	
	College & Field Study Trips	
	Staff Laptops	-
	Substitutes/Supplemental Instructors	
	Other Instructional Costs	
	Total Classroom and Instructional Ex	**44,000**
General and Administrative Expenses		
	Admin/Office Supplies	10,000
	Admin Printers, WAPS, and Other Tec	5,000
	Postage, Direct Mail, Shipping	5,000
	Meeting supplies and food	2,500
	Bank charges	600
	Travel (Relo/PD/Recruiting)	18,000
	Community outreach/parent/studen	15,000
	Accounting/Audit/Payroll (Contracte	20,000
	Food Service Admin (Contracted)	8,000
	Federal Programs Admin (Contracted	14,000
	Technology Support (Contracted)	30,000
	Advisory Services (Contracted)	12,000

	Talent Recruiting	10,000
	Insurance (liab, umbrella, D&O, EPL,	8,000
	Transportation Services	
	Food Service expenses over revenues	
	Nursing/Clinical Support	
	Legal	12,000
	Audit	
	Contingency	40,000
	Total Contracted Professional Servic	**210,100**
	Total Expenses	**717,141**
	Per Student	
	Operating Surplus/(Deficit)	**797,859**
	Cumulative Cash Surplus/(Deficit)	**797,859**
	DCOH	
	DSCR	

HIGH SCHOOL

ATTACHMENT 29

Insurance

-School Insurance Coverage Including Description and Levels of Coverage

AAHS will maintain insurance to protect the school from claims that may arise. AAHS will secure and maintain insurance coverage limits that either meet or exceed the minimum insurance limit requirements for charter schools in Alabama. These coverages are expected to be similar in type and coverage level to those of other public and independent schools in Alabama, and in accordance with national best practices for charter schools.

AAHS understands the importance of monitoring its vendors, contractors, partners or sponsors for compliance with the insurance requirements. Additionally, AAHS will ensure proper indemnities in its contracts with external vendors. Alabama is a National Council on Compensation Insurance state, so workers compensation insurance policies follow NCCI manual rules. The School's insurance shall cover the School (and its subcontractors, to the extent that it is not otherwise insured) for those sources of liability which would be covered by the latest edition of the standard Workers' Compensation Policy, as filed for use in Alabama by the NCCI, without restrictive endorsements as stated in the Alabama Workers' Compensation Act. Coverages will be reviewed annually by management and insurance providers are subject to approval by vote of the AAHS Board of Directors.

Minimum expected limits include:

Coverages	Amounts
Building and Personal Property Bonding of Senior Executives	$1,0000,000, $100,000 each
Commercial and General Liability	$1,000,000 per occurrence $3,000,000 umbrella
Automotive	$1,000,000
Directors and Officers Liability	$1,000,000
Workers Compensation and Educators Legal Liability, Student Accident	$1,000,000

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 10/30/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Edgewood Partners Insurance Center EPIC Brokers 2700 Post Oak Boulevard, 25th Floor Houston, TX 77056	**CONTACT NAME:** Holly Banyard		
	PHONE (A/C, No, Ext): 469-217-7669	**FAX (A/C, No):**	
	E-MAIL ADDRESS: Holly.Banyard@epicbrokers.com		
	INSURER(S) AFFORDING COVERAGE		**NAIC #**
	INSURER A : Markel Insurance Company		38970
INSURED Alabama Aerospace and Aviation High School 4343 73rd Street N. Birmingham AL 35206	**INSURER B :**		
	INSURER C :		
	INSURER D :		
	INSURER E :		
	INSURER F :		

COVERAGES **CERTIFICATE NUMBER:** 58374975 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$
	☐ OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	☐ **UMBRELLA LIAB** ☐ OCCUR						EACH OCCURRENCE	$
	☐ **EXCESS LIAB** ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						☐ PER STATUTE ☐ OTH-ER	
	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ **(Mandatory in NH)**	N / A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
A	Educators Legal Liability			3602WSI00840	10/29/2020	10/29/2021	1,000,000 OCC/AGG	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

For Insurance Verification

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

KJ Wagner

HIGH SCHOOL
ATTACHMENT 30

Transportation and Meal Delivery

School Transportation Plan and Auxiliary Services

Transportation Plan

Alabama Aerospace and Aviation High School will ensure that transportation is not a barrier to equal access within a reasonable distance of the school, as provided in the Alabama Charter School Legislation. In the case that transportation is needed, and if the parent advises AAHS that there is a hardship and he/she is unable to provide the transportation, AAHS will provide transportation within a defined reasonable distance. In such cases, AAHS shall be responsible for transporting all students who reside within a reasonable distance of the School or who are otherwise entitled to transportation by law, to and from the school in a non-discriminatory manner. In these situations, AAHS may provide transportation by contracting with an independent private transportation provider or via carpools approved by the Sponsor. AAHS will also provide transportation for students with disabilities as determined by their IEP and/or 504 plans. The Director of Operations will oversee all aspects of transportation including coordination and parent communication.

The AAHS will consider options for student transportation, including engaging outside sources to provide those services. At the time a student enrolls, AAHS will provide the parents with information regarding transportation options. A parent may be reimbursed by AAHS for the costs of transportation from the student's residence to the location of the nearest car pool location or to the school if the student(s) is from a family whose income is at or below the poverty level, as determined by the federal government. The reimbursement may not exceed the student's actual cost of transportation. AAHS may utilize contracts with parents of students for transportation. AAHS, in its discretion, may provide school transportation for extracurricular activities including, but not limited to, transporting student participants to and from extracurricular events via school bus. AAHS may also utilize contracted charter buses for field trips and extracurricular activities. Students who are provided transportation with school district transportation vehicles for extracurricular events, shall ride both to and from the event in the school vehicle, unless arrangements have been made with the school director or designee (operations director, activities director or coach/sponsor), requesting to transport the student home from a school-sponsored event to which the student traveled on a school vehicle. Upon approval, AAHS will determine the best option for our students based on their needs.

Food Services Plan

AAHS will sponsor a food service program under the National School Lunch Act, Regulation 7 CFR Part 210. The National School Lunch Program is a federally-assisted meal program operating in public and nonprofit private schools and residential childcare institutions. It provides nutritionally balanced, low-cost or free lunches to children each school day. AAHS will send school meal applications home at the beginning of each school year. However, parents may apply for school meals at any time throughout the school year by submitting a household application directly to the school. The school will provide parents with an application upon request. If a family is earning at or below current Income Eligibility Guidelines, they should fill

out a school meal application. The school will process the application and issue an eligibility determination. If a family is receiving Supplemental Nutrition Assistance Program (SNAP) benefits, the student automatically qualifies for free school meals. AAHS will apply for reimbursements for each meal served for qualified students. Options available will include: free lunches, reduced-price lunches; paid lunches; free breakfast; reduced-price breakfast; and paid breakfast. Students who do not qualify will be able to bring their meal to school or purchase meals from the school. The responsibility for the development and implementation of the National School Lunch Program will be the responsibility of AAHS. Currently, AAHS is considering having lunches prepared and delivered to the school. Therefore food safety and required equipment will meet the specifications of state and federal guidelines for a warming kitchen. We will have a dedicated staff person responsible for ensuring all guidelines are met.

Operations Capacity

The AAHS Board of Directors will be ultimately responsible for the successful operations and activities of Alabama Aerospace and Aviation High School, their capacity to serve such a role is demonstrated below.

Charles Knight BOARD PRESIDENT
In his years of experience working in government and the private sector, Charles Knight is known as a respected security professional and business leader. He has held responsible leadership positions in government and senior executive positions in business. Today, he provides security consulting services to public and private corporations, schools, and nonprofits. Mr. Knight also works with professional associations, educational and community organizations in supporting leadership development, family services, and school/church safety. In addition to his professional contributions, he is dedicated to the improvement of Birmingham communities and the education of the area's young people. He is a veteran of the U.S. Air Force and 117th Air National Guard and holds degrees in Law Enforcement, Criminal Justice/Business and a master's degree in Public Administration.

Auri Brown SECRETARY
Auri Brown is a passionate real estate professional with a deep knowledge of the Birmingham market. As a Birmingham native, he has spent the last nearly 20 years working in both the healthcare and real estate sectors. He is passionate about education and sees high quality school options as a critical piece to overall community development. Currently, he is a licensed realtor with eXp Realty.

Tramayne Russell VICE PRESIDENT
Tramayne Russell is an industry leader in professional sports sales and corporate relations. He has over 15 years in the industry across several major sports. He is an expert in high profile customer management and corporate partnership acquisition. Currently, he works as the Director of Ticket Sales for the Nashville Soccer Club.

Courtney French
G. Courtney French is a top-rated attorney selected to Super Lawyers for 2014 – 2020. He works at Fuston, Petway & French, LLP, located in Birmingham, Alabama, and provides legal services for issues involving Personal Injury – General: Plaintiff to the surrounding community. Courtney French completed legal studies at Samford University Cumberland School of Law and graduated with the class of 1998. Courtney French passed the bar in 1998.

Megan Jones
Megan Jones is an experienced educator with a love for learning and children. She began her career in education as a 4th grade teacher in Birmingham City Schools. She has taught on several different grade levels and also been a private tutor. She brings a strong grasp of foundational learning needs and remedial education.

Tiffany Storey
Tiffany Storey is a AAAHS parent and a licensed professional counselor with 17+ years' experience working with families and adolescents in community service and outreach programs.

Merrick Sims

Merrick is a career educator and STEM professional. Merrick brings experience and expertise as both a math coach and engineer. As a Birmingham native, he also is deeply committed to improving educational options for all students in the city of Birmingham.

R.J. Smith TREASURER
Lieutenant Colonel (Ret) R. J. Smith graduated from Wenonah High School in Birmingham, Alabama and attended Alabama A&M University, Huntsville, Alabama. While attending Alabama A&M University, he enlisted in the United States Marine Corps Reserves. Colonel Smith served nine and a half years in the active Army before joining the Alabama Air National Guard to continue flying. Upon joining the Alabama Air National Guard, Colonel Smith earned his Air Force pilot wings.

Tierra Wright
Tierra Wright is a career educator with experience in both K-12 education and higher education. She currently serves as the Adult Education Director at Jefferson State Community College.

To navigate and oversee AAHS Capital Improvement Projects and Financing, as well as facilities acquisition and management, including managing build-out and/or renovations AAHS has engaged Building Wealth & Communities Consulting Firm (BWC). BWC has served as co-developer and Financial Advisor to transform multiple education campuses including Miles College, Claflin University, Texas College, and Cathedral High School. BWC Consulting (BWC) is minority-owned and led boutique economic development financing and consulting firm. As a socially conscious firm, BWC takes a holistic, objective and entrepreneurial approach to advising units of local government, higher education clients, operating companies, and emerging business enterprises. Started in 2005 by Bridget Chisholm, Founder and Managing Partner, BWC has proven itself and established a strong track record structuring public-private financing for capital projects targeted to strengthen urban communities.

Unique/Innovative Operational Aspects

Given AAHS's Place-Based educational model, "doing school" near the airport is an innovative operational feature that most schools cannot offer. AAHS will be able to provide hands-on learning experiences utilizing facility-based learning elements that are not available to students in the target districts. Students will have access to the following:

- Aviation Labs
- Access to Decommissioned Planes and Engines
- Training From Industry Professionals
- Access to Internships and Apprenticeships On Site

AAHS will also be to provide pre-apprentice programs as well as internships at the Bessemer Airport. The Bessemer Airport Authority along with the Birmingham Flight Center will offer aviation focused workforce training programs open to the entire city with preferential access given to AAHS students. Delta Airlines will also be providing their TechOps team to assist in training students on site on the most up to date aircraft maintenance technologies. AAHS will also be able to take advantage of funding streams most schools do not have access to like Department of Defense aviation education funding, Federal Aviation Administration funding, and major aerospace, aviation, and defense company funding and investment.

AAHS students will be able to benefit from our industry-based education partners translating directly into real-world work-based learning experience, hands-on training in lucrative fields, access to state-of-the-art technology, and fast tracks into post-secondary careers or education options including military aviation.

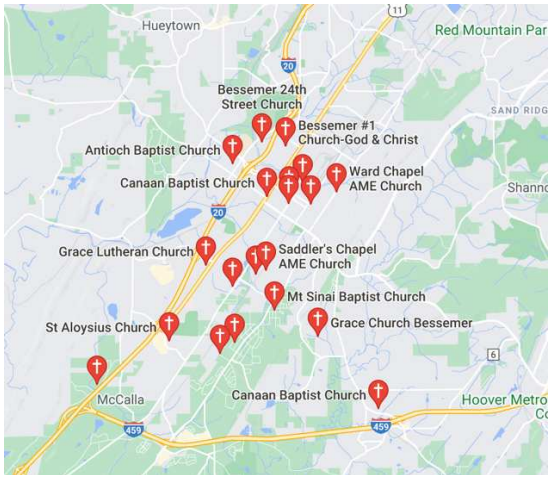
Recruitment and Enrollment

Recruitment Strategies

Alabama Aerospace and Aviation High School will employ an aggressive researching, recruitment, and marketing campaign based on proven strategies geared toward equal access for all students, including those with economic or academic disadvantages, students with special needs, and students who have limited English language proficiency. The goal is not only to attract a sufficient pool of applicants to meet AAHS enrollment projections but to equally ensure that Alabama Aerospace and Aviation High School accurately assesses the needs of the community and provides a high-quality educational option deserving of students in the Bessemer City area. In compliance with state and federal law, the school will target all middle school students in Bessemer and the surrounding area prioritizing students in the Bessemer community, regardless of race, disability, ethnicity, or gender. Socioeconomically and racially diverse schools are beneficial to all students who attend them because it builds both a cognitive capacity to value difference and process different perspectives as well the ability to recognize their own perspectives and to weigh others. Given the global nature of the world of aviation and aerospace, an appreciation for diversity, equity and inclusion will be critical to student success.

Engaging parents, students, community leaders, faith-based leaders, business owners, and non-profit leaders is the cornerstone of our comprehensive recruitment plan, thus AAHS has already begun actively engaging families and community members by:

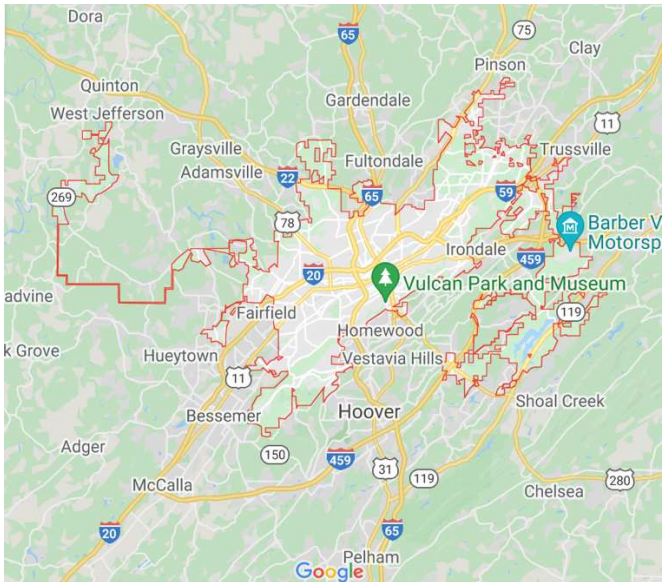
Visiting Community Churches. Bessemer and the surrounding area have a thriving faith-based community. Given that, AAHS supporters and volunteers will regularly attend church services to support local ministries, meet community members, and discuss the academic program and benefits of our proposed school.



Build Nonprofit Relationships. AAHS is excited about the opportunity to engage and partner with local Bessemer nonprofits with a proven track record of serving families in Bessemer and surrounding areas.

Neighborhood Canvassing. AAHS team members and volunteers will canvas the various apartment complexes and residential areas within a 5-mile radius of our proposed school to engage with potential

students and parents in their homes. Our goal is to explain how Alabama Aerospace and Aviation High School's mission and school design will have a positive impact on their child's future.



In the second phase of our researching, recruitment, and marketing campaign from school approval to opening, AAHS will conduct multiple informational meetings within the larger Bessemer community, at such locations as the Bessemer, Birmingham, Trussville, Hueytown, and Shelby County YMCAs, Bessemer/Hueytown and Trussville Boys & Girls Club, Bessemer apartment complex community rooms, Tarrant City Hall, and local churches. AAHS will host families at local parks, community centers, and neighborhoods, providing information sessions on a monthly basis.

Recruitment Objective:
Present Alabama Aerospace and Aviation High School Charter Schools to parents and students, positioning them as the best choice for college preparatory education in the Bessemer and surrounding area community, and to compel them to choose Alabama Aerospace and Aviation High School.

Target Audience:
All families in the 35022, 35023, 35111, 35226, and 35244 zip codes. Mothers/Grandmothers: primary – ages 25-34, secondary – ages 35-64. We are specifically focusing on 7th graders.

Student Recruitment Targets:

Grade	**Current Enrollment**	**Target**	**School**	**Number Goal**
7th	238	Yes	Bessemer	25
7th	124	Yes	Fairfield	10
7th	92	Yes	Midfield	10
7th	89	Yes	Tarrant HS	10
7th	1630	Yes	Birmingham City Schools	35
7th	3033	Yes	Jefferson County Schools	50

7th	1722	No	Shelby County Schools	35
Sub-total		Targeted		140
	Grand Total (Including Additional Non-Target Enrollees)			***175**

***This number reflects the target recruitment goal that includes a 50-student waitlist.**

Lottery
The lottery will be governed by a few basic rules:

- The number of applications will be counted, and if that number exceeds the number of spaces available within capacity, those applicants will be assigned a number, and a random drawing will be held to enroll the number of students who can be accommodated within the capacity limits.
- All students who applied but were not selected in the lottery will be automatically added to the waitlist.

Alabama Aerospace and Aviation High School has an interest in making sure that any prospective students and their families understand the particular mission and focus of the school they are interested in being a part of. Toward that end, Alabama Aerospace and Aviation High School may: Require students to complete the grade preceding the grade the student plans to enter, and strongly encourage parents/guardians to attend all informational sessions.

Admission
Alabama Aerospace and Aviation High School, as described above, will admit students via a regular enrollment process up until all seats are filled or the end of March 2022. If there are more applicants than seats available, an admissions lottery in April of 2022 will ensure that a random selection process is used to place students into the school. After all seats have been assigned, a waiting list will be established for the remaining students who have registered in the event that a seat should open up. Any additional students applying for enrollment will be placed at the end of the waitlist on a first-come, first-serve basis.

Enrollment Plan

Overview

Alabama Aerospace and Aviation High School is an open enrollment public charter school with Bessemer, Alabama, identified as the primary catchment area. In August 2022, Alabama Aerospace and Aviation High School will open its doors to grade 9 for year one and expand through grade 10 in year two, becoming a 9 through 12th grade public charter school by 2025. In accordance with Act 2015-3 Section 5(a)(3), Alabama Aerospace and Aviation High School will not limit admission based on ethnicity, national origin, religion, gender, income, disability, English language proficiency, or academic or athletic ability. Instead, the school will be open to all students whose grade level is served (according to the development phase) and will enroll all students who wish to attend as long as enrollment does not exceed facility capacity.

Rationale

Alabama Aerospace and Aviation High School has established an enrollment plan based on the perceived needs of the service area. As a reflection of the school's mission and vision, the rationale for starting with grade 9 for the first year is based on the theory that the first year of high school is the most critical year of high school. By beginning with 9th grade and building a strong foundation, students will be able to close any gaps from previous years preparing them for the more rigorous curriculum that will come in later years. Furthermore, having been prepared to excel in the high-school curriculum, students will have a strong advantage that will lead to success in college and our aerospace and aviation pathways. Community focus groups have been used to help gauge the estimated enrollment. In addition, extensive research by the founding team has shown the significant needs of the area, from workforce and economic development to college and career readiness.

See Figure 1: Projected Enrollment

Lottery

Ultimately, admission and enrollment will be dependent upon capacity. In the initial enrollment period, all students who meet residency requirements will be admitted as long as the school is under capacity. If more students apply than capacity will allow, a random public lottery will be held to determine admission. This lottery will not apply to currently-enrolled students, as those students will automatically have admission for the following school year. Following the initial enrollment period for Bessemer City residents, a subsequent enrollment period will open to all students who meet Alabama residency requirements. As with the previous enrollment period, if the number of students who apply exceeds the school's capacity, a random lottery will be held. If such a lottery is deemed necessary, applicants will be notified of such need, and instructions will be provided to them.

Alabama Aerospace and Aviation High School's Student Records Maintenance and Release Guidelines

Student records at Alabama Aerospace and Aviation High School will be maintained in accordance with all applicable reporting requirements. These records will be maintained in the state-adopted Alabama Student Information System (ASIM). Alabama Aerospace and Aviation High School will report the required data to the appropriate systems and the Alabama State Department of Education at the prescribed times and in the prescribed format. Alabama Aerospace and Aviation High School will comply with all applicable laws pertaining to data privacy and security, including the Family Educational Rights and Privacy Act (FERPA), the Children's Internet Protection Act (CIPA), Health Insurance Portability and Accountability Act (HIPPA), and Children's Online Privacy Protection Act (COPPA). School personnel will be expected to understand and follow these guidelines. Parents and guardians have the right to review their child's record, and divorced or separated parents of students will have equal access to their child's records, unless legal orders prevent access. In such a case, it is the parent's responsibility to provide Alabama Aerospace and Aviation High School with legal documents pertaining to records access. All requests for a student's records will be maintained in an access log. Student records may be released without parental or guardian consent if permitted by law. These organizations might include law enforcement and child and family services agencies. Aside from these permitted by law, only those specific persons authorized in writing by the parent(s) will be granted access to student records, and that written consent will be retained in the student's record.

Figure 1: Projected Enrollment for Alabama Aerospace and Aviation High School

Grade Level	Number of Students				
	Year 1	Year 2	Year 3	Year 4	At Capacity
9th	125	125	125	125	125
10th	0	125	125	125	125
11th	0	0	115	119	125
12th	0	0	0	113	125
Total	**125**	**250**	**365**	**482**	**500**

AAHS Budget Model Assumptions

Enrollment & Staffing Assumptions

20-30 students per class, budget at 25 per class and 125 per grade
Min/Max enrollment 80-150 per grade or 320 - 600 at full enrollment
6 core content teachers per grade plus Sp. Ed., plus 1-3 additional teachers
9th and 10th grade may have more than 125 per grade to reach planned enrollment of 500

Revenue Assumptions

Revenues are confirmed via ALSDE
0% revenue increases year over year (very conservative)
100-200k TBD fundraising year over year (reasonable)
CSP funding not confirmed but in the model

Expense Assumptions

Staffing costs increase 2% annually
Benefits @ 34% of wages (assume state benefits)
Total facilities costs at 9% -12% of revenues, LOI is 7%
Contracted services deliver economies from 5.8% - 3% of revenues over time
Additional 1% expense contingency included

Key Risks/Mitigants

Enrollment is the primary risk/advantage
Corporate partnerships may reduce staffing requirements/costs but such benefits are not included in the m
There is room for 3-5 additional students per grade with no additional staffing, faciltiies, or G&A costs
Reductions in enrollment would be addressed by fewer sections or larger class sizes.
CSP funding can support lower enrollment years 1 and 2
Facility costs are reasonably budgeted and match the signed LOI
A combination of high facilities costs and lower enrollment would produce significant pressure in years 3-5

Facilities Note:

Fountain of Life facility - former Bessemer City School
20 classrooms, office, cafeteria, etc.
Cash surpluses evidence capacity to deploy funds to future facilities needs (equity for borrowing).

ıodel (conservative)

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Aerospace and Aviation High School - Birmingham, Alabama
Budget

	Planning	Year 1	Year 2	Year 3	Year 4	Year 5
	Year Zero	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**
PK		0	0	0	0	0
K		0	0	0	0	0
1		0	0	0	0	0
2		0	0	0	0	0
3		0	0	0	0	0
4		0	0	0	0	0
5		0	0	0	0	0
6		0	0	0	0	0
7		0	0	0	0	0
8		0	0	0	0	0
9		125	125	125	125	125
10		0	125	125	125	125
11		0	0	125	125	125
12		0	0	0	125	125
Total Enrollment		**125**	**250**	**375**	**500**	**500**
Total Enrollment Less Pre K		**216**	**240**	**264**	**288**	**312**
Total FTEs		**13.5**	**24.5**	**34**	**41**	**41**
Revenue						
PreK Funding						
State Foundation Funding		917,473	1,505,867	2,136,458	2,913,861	2,913,861
Other State Funds		161,948	199,925	234,662	269,399	269,399
State Transportation Funding		65,625	65,625	131,250	133,875	136,553
Local Revenue - Other						
Release from Fund Balance				150,000		
Total Federal Funding		273,375	465,885	652,928	839,970	839,970
Subotal Recurring Revenues		1,418,421	2,237,302	3,305,298	4,157,105	4,159,782
CSP Funding	700,000	400,000	400,000			
New Schools Venture Fund	210,000					
Walton Family Foundation	325,000					
New Schools For Alabama	180,000					
Other Grants	100,000					
Corporate Grants		50,000	50,000	100,000	100,000	100,000
Annual Fundraising Goal		50,000	50,000	100,000	100,000	100,000
Subtotal Philanthropy	1,515,000	500,000	500,000	200,000	200,000	200,000
Total Revenue	**1,515,000**	**1,918,421**	**2,737,302**	**3,505,298**	**4,357,105**	**4,359,782**
Total Per Student		$ 15,347	$ 10,949	$ 9,347	$ 8,714	$ 8,720
Expenses						
Compensation						
Total Wages	250,600	712,450	1,243,023	1,761,813	2,144,595	2,187,487
Benefits and Payroll Taxes	87,159	247,790	432,323	612,759	745,890	760,808
Total Compensation	**337,759**	**960,240**	**1,675,346**	**2,374,572**	**2,890,485**	**2,948,295**
% of Revenues		50%	61%	68%	66%	68%
Per Student		$4,446	$6,981	$8,995	$10,036	$9,450
Facilility Acquisition/Upgrade Costs (paid by school)	300,000					
Rent or Debt Service	16,548	99,289	156,611	231,371	290,997	291,185
Utilities/Janitorial/Grounds/Other	35,000	42,553	67,119	99,159	124,713	124,793
Maint./Repair		28,368	44,746	66,106	83,142	83,196
Total Facilities	**351,548**	**170,211**	**268,476**	**396,636**	**498,853**	**499,174**
% of Total Revenues		9%	10%	11%	11%	11%
Per Student		$1,362	$1,074	$1,058	$998	$998
Classroom and Instructional Expenses						
Professional Dev. & Instructional coaching	10,000	5,100	9,900	14,400	18,600	18,600
Copier lease		12,000	12,000	12,000	12,000	12,000
Instructional Materials (equip, books, blended learning, etc	18,000	11,961	12,140	13,270	14,615	15,998
Classroom Supplies and Consumables (includes paper)	6,000	5,625	11,250	16,875	22,500	22,500
Special Education Supplies	4,000	2,500	5,000	7,500	10,000	10,000
Testing, Data, Analytics	6,000	5,000	10,000	15,000	20,000	20,000
Student Chromebooks (1:1)/Carts	48,125	48,125	48,125	48,125	57,750	57,750
Digital Content		7,974	8,094	8,846	9,743	10,665
Elective Supplies		5,316	5,396	5,898	6,496	7,110
College & Field Study Trips		5,316	5,396	5,898	6,496	7,110
Staff Laptops	13,500	11,000	9,500	8,500	10,250	10,250
Substitutes/Supplemental Instructors		4,250	6,600	9,600	12,400	12,400
Other Instructional Costs		40,000	60,000	80,000	100,000	100,000
Total Classroom and Instructional Expenses	**105,625**	**164,167**	**203,400**	**245,911**	**300,849**	**304,383**
% of Revenues		12%	9%	7%	7%	7%
Per Student		$760	$848	$931	$1,045	$976
General and Administrative Expenses						
Admin/Office Supplies	10,000	1,875	3,750	5,625	7,500	7,500
Admin Printers, WAPS, and Other Tech	5,000	5,000	5,100	5,202	5,306	5,412
Postage, Direct Mail, Shipping	5,000	1,205	1,329	1,474	1,624	1,778
Meeting supplies and food	2,500	3,000	3,060	3,121	3,184	3,247
Bank charges	600	1,200	1,200	1,200	1,200	1,200
Travel (Relo/PD/Recruiting)	18,000	8,000	8,000	8,000	8,000	8,000
Community outreach/parent/student activities	15,000	1,250	2,500	3,750	5,000	5,000
Accounting/Audit/Payroll (Contracted)	20,000	52,500	52,500	52,500	52,500	65,400
Food Service Admin (Contracted)	8,000	15,000	15,300	15,606	15,918	16,236
Federal Programs Admin (Contracted)	14,000	14,000	12,000	10,000	10,000	10,000
Technology Support (Contracted)	30,000	17,213	19,838	22,350	24,675	26,475
Advisory Services (Contracted)	12,000	12,000	12,000	12,000	12,000	12,000
Talent Recruiting	10,000	10,000	10,000	10,000	10,000	10,000
Insurance (liab, umbrella, D&O, EPL, auto, etc.)	8,000	20,000	20,400	20,808	21,224	21,649
Transportation Services		65,625	65,625	131,250	133,875	136,553
Food Service expenses over revenues		6,250	12,500	18,750	25,000	25,000
Nursing/Clinical Support		70,148	74,205	78,261	82,317	82,317
Legal	12,000	12,000	12,240	12,485	12,734	12,989
Audit		10,000	10,200	10,404	10,612	10,824
Contingency	40,000	14,184	22,373	33,053	41,571	41,598
Total Contracted Professional Services	**210,100**	**340,450**	**364,119**	**455,839**	**484,240**	**503,178**
% of Revenues		18%	13%	13%	11%	12%
Per Student		$2,724	$1,456	$1,216	$968	$1,006
Total Expenses	**1,005,032**	**1,635,068**	**2,511,342**	**3,472,958**	**4,174,428**	**4,255,030**
Per Student		$ 8,820	$ 9,326	$ 9,501	$ 9,640	$ 9,589
Operating Surplus/(Deficit)	**509,968**	**283,353**	**225,960**	**32,340**	**182,677**	**104,753**

Aerospace and Aviation High School - Birmingham, Alabama
Enrollment and Staffing Model

Elementary School		Forecast Enrollment Assumptions				
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
PK						
K						
1						
2						
3						
4						
5						
6						
7						
8						
9		125	125	125	125	125
10			125	125	125	125
11				125	125	125
12					125	125
Total K-12 enrollment		**125**	**250**	**375**	**500**	**500**

			Forecast Staffing Assumptions				
		Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Administrative Staff							
CEO/Head of School		1.0	1.0	1.0	1.0	1.0	1.0
		0.0	0.0	0.0	0.0	0.0	0.0
Director of Teaching and Learning		1.0	1.0	1.0	1.0	1.0	1.0
Director of Student Success		0.0	0.0	0.0	1.0	1.0	1.0
Director of Finance and Operations		1.0	1.0	1.0	1.0	1.0	1.0
Director of Community Engagement		0.0	0.0	1.0	1.0	1.0	1.0
Director of Work-Based Learning		0.0	0.0	0.0	1.0	1.0	1.0
School Operations Support Staff		0.5	1.0	2.0	2.0	2.0	2.0
Social Workers		0.0	0.0	1.0	1.0	1.0	1.0
Nurse		0.0	1.0	1.0	1.0	1.0	1.0
Other			0.0	0.0	0.0	0.0	0.0
Other			0.0	0.0	0.0	0.0	0.0
Other Compensation							
Total Administrative FTE	**1.5**	**3.5**	**5.0**	**8.0**	**10.0**	**10.0**	**10.0**
Student/Admin FTE			25.0	31.3	37.5	50.0	50.0
Instructional Staff							
Teachers 9-12			4.0	8.0	12.0	16.0	16.0
Sp. Ed./ELL Teachers			1.5	3.0	4.0	4.0	4.0
Elective Teachers			2.0	4.0	6.0	8.0	8.0
Interventionists/ELL Support			1.0	1.5	2.0	3.0	3.0
Math Chair Stipends							
Reading Chair Stipends							
High School Chair Stipends							
Coaching/Other Stipends							
Other			0.0	0.0	0.0	0.0	0.0
Other			0.0	0.0	0.0	0.0	0.0
Total Instructional FTE	**0.0**		**8.5**	**16.5**	**24.0**	**31.0**	**31.0**
Student/Instructional FTE			14.7	15.2	15.6	16.1	16.1
Operations Staff							
Nurse			See admin				
Food Service Staff			Contracted				
Transportation Staff			Contracted				
Custodial Staff			Contracted				
Security			Contracted				
Other			Contracted				
Total Operations FTE	**0.0**		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total FTE	**1.5**		**13.5**	**24.5**	**34.0**	**41.0**	**41.0**
Students/Total FTE			9.3	10.2	11.0	12.2	12.2

Aerospace and Aviation High School - Birmingham, Alabama
No annual increases modeled

	2021-2022	
PK		
K		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
k-12 ADM (Enrollment)		
Earned Units		
Teachers		
Principals		
Assistant Principals		
Counselors		
Librarians		
Total Units		
	Per Unit	
Salaries	$53,964	per unit
Fringe Benefits	$20,975	per unit
Other Current Expense	$19,808	per unit
Classroom Instructional Support		
Teacher Material and Supplies(600)	$600	per unit
Technology(350)	$350	per unit
Library Enhancement(158)	$158	per unit
Professional Development(100)	$100	per unit
Textbooks(75)	$75	per student
Total Foundation Program	**$96,030**	
Per Unit		
Per Student		
Other State Funds		
Nurse	$66,092	per school plus $32/ADM
Tech Coordinator	$61,800	per school

At Risk	$40	per student
Capital Purchase	$200	per student
Total Other State Funds		
Total State Funds		
Per student		
Federal Funds		
Title I-A	$1,031	per student (varies by FRL)
Title II-B	$112	per student
Title IV-A	$10,000	total
IDEA B	$324	per student (varies by no of IEPs)
ARI Reading Specialist	$80,000	per LEA
Total Federal		
Per student		
Total Funding		
Per Student		

Year 1	Year 2	Year 3	Year 4	Year 5
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
125	125	125	125	125
0	125	125	125	125
0	0	125	125	125
0	0	0	125	125
125	250	375	500	500
6.96	12.69	19.04	25.38	25.38
1.00	1.00	1.00	1.00	1.00
0.00	0.00	0.00	1.00	1.00
0.50	0.50	0.50	1.00	1.00
1.00	1.00	1.00	1.00	1.00
9.46	**15.19**	**21.54**	**29.38**	**29.38**
510,704	819,732	1,162,144	1,585,501	1,585,501
198,503	318,618	451,708	616,260	616,260
187,459	300,891	426,576	581,973	581,973
5,678	9,114	12,921	17,628	17,628
3,312	5,317	7,537	10,283	10,283
1,495	2,400	3,403	4,642	4,642
946	1,519	2,154	2,938	2,938
9,375	18,750	28,125	37,500	37,500
917,473	**1,505,867**	**2,136,458**	**2,913,861**	**2,913,861**
96,946	99,133	99,206	99,176	99,176
7,340	6,023	5,697	5,828	5,828
70,148	74,205	78,261	82,317	82,317
61,800	61,800	61,800	61,800	61,800

5,000	10,000	15,000	20,000	20,000
25,000	50,000	75,000	100,000	100,000
161,948	**199,925**	**234,662**	**269,399**	**269,399**
1,079,421	**1,705,792**	**2,371,120**	**3,183,260**	**3,183,260**
8,635	6,823	6,323	6,367	6,367
128,875	257,750	386,625	515,500	515,500
14,000	28,000	42,000	56,000	56,000
10,000	10,000	10,000	10,000	10,000
40,500	81,000	121,500	162,000	162,000
80,000	80,000	80,000	80,000	80,000
273,375	**465,885**	**652,928**	**839,970**	**839,970**
2,187	1,864	1,741	1,680	1,680
1,352,796	**2,171,677**	**3,024,048**	**4,023,230**	**4,023,230**
10,822	8,687	8,064	8,046	8,046

Alabama Foundation Allowance
Unit Calculations

Grade	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Enrollment							
Divisor	14.25	14.25	14.25	14.25	20.43	20.43	20.43
Units Yr. 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Divisor	14.25	14.25	14.25	14.25	20.43	20.43	20.43
Units Yr. 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Divisor	14.25	14.25	14.25	14.25	20.43	20.43	20.43
Units Yr. 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Divisor	14.25	14.25	14.25	14.25	20.43	20.43	20.43
Units Yr. 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Divisor	14.25	14.25	14.25	14.25	20.43	20.43	20.43
Units Yr. 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes
Alabama funds units, not students.
Alabama determines divisors each year. Higher divisor produces less units. Lower divisor gives

7	8	9	10	11	12	Total
		125				**0**
19.7	19.7	17.95	17.95	17.95	17.95	
0.000	0.000	6.964	0.000	0.000	0.000	**6.964**
		125	125			**0**
19.7	19.7	19.7	19.7	19.7	19.7	
0.000	0.000	6.345	6.345	0.000	0.000	**12.690**
		125	125	125		**0**
19.7	19.7	19.7	19.7	19.7	19.7	
0.000	0.000	6.345	6.345	6.345	0.000	**19.036**
		125	125	125	125	**0**
19.7	19.7	19.7	19.7	19.7	19.7	
0.000	0.000	6.345	6.345	6.345	6.345	**25.381**
		125	125	125	125	**0**
19.7	19.7	19.7	19.7	19.7	19.7	
0.000	0.000	6.345	6.345	6.345	6.345	**25.381**

more units.

HIGH SCHOOL

ATTACHMENT 31

Budget Narrative

AAHS has worked with New Schools for Alabama and key leaders at the ALSDE in developing the revenue assumptions found in the financial model. Please see the Excel financial model for additional details. The funding levels are based directly off the unit allocation format approved annually by the ALSDE and matched to actual line items in the State Allocation Breakdown. Actual funding levels in future years are conservatively projected with no annual increases and there are no COVID related or ESSER funds included in the model (conservative).

Earned units and recurring revenues (state and local) are based on budgeted enrollment are as follows:

- Earned units based on high school enrollment range from 9 units in year one to 29 units in year 5.
- The school's year one total recurring revenues are budgeted at $1,418,000 and grow to $4,159,000 by year five. The school expects to enroll grades 9-12 beginning with grade 9 and growing one grade per year.
- Startup funding and initial philanthropy are budgeted at $2.5 million of which over $2 million is already raised and will flow once the charter is approved. Years 2 – 5 include reasonable ongoing philanthropy of $200k annually.
- Significant surpluses occur in the startup year and also in years 1 and 2 due to philanthropy and startup funding that allows the school to generate a strong cash balance. After startup funding (CSP Grant) sunsets the school budget evidences 1-4% operating surpluses on recurring revenues going forward.
- Transportation revenues match transportation expenses, but if state funding for transportation is limited the school will supplement with philanthropy or in a worst case limit the scope of provided transportation.
- Budgeted cash balances grow from $509,000 in the planning period to $1.3 million after year five (greater than 90 days cash) and allow for additional facilities renovations, borrowing or expansion if necessary.

Per student funding sources for FY22 (and as reviewed by the ALSDE) are as follows:

	2021-2022	Year 1	Year 2	Year 3	Year 4	Year 5
k-12 ADM (Enrollment)		125	250	375	500	500
Total Units		**9.46**	**15.19**	**21.54**	**29.38**	**29.38**
	Per Unit					
Total Foundation Program	**$96,030**	**917,473**	**1,505,867**	**2,136,458**	**2,913,861**	**2,913,861**
Per Unit		96,946	99,133	99,206	99,176	99,176
Per Student		7,340	6,023	5,697	5,828	5,828
Total Other State Funds		**161,948**	**199,925**	**234,662**	**269,399**	**269,399**
Total State Funds		**1,079,421**	**1,705,792**	**2,371,120**	**3,183,260**	**3,183,260**
Per student		8,635	6,823	6,323	6,367	6,367
Total Federal		**273,375**	**465,885**	**652,928**	**839,970**	**839,970**
Per student		2,187	1,864	1,741	1,680	1,680
Total Funding		**1,352,796**	**2,171,677**	**3,024,048**	**4,023,230**	**4,023,230**
Per Student		10,822	8,687	8,064	8,046	8,046

Federal Sources are composed of IDEA and Title I,II,III,IV funding and are taken directly from funding levels for the current ALSDE data and broken out on a per student basis. Title I is conservative as it does not include ESSER funds, which if it becomes available to new charters would increase the federal support to the school. Federal funds are based on an estimated 60% direct certification population.

Specific grants are described below.

- **$50k (25k RECEIVED) from the Goodrich Foundation** to support startup and leadership development. An additional $25k is pledged upon receiving a charter approval.
- **$50k (APPROVED BUT NOT RECEIVED)** from the Daniel Foundation to support the startup period.
- **$215k (APPROVED) from New Schools Venture Fund**
- $**180k (APPROVED) from New Schools for Alabama** for leadership development and startup support.
- **$250k (APPLIED FOR)** also from **Charter School Growth Fund**
- **$1.5 million (PENDING CHARTER APPROVAL) from New Schools for Alabama** over three years is noted in the budget as the school is planning to apply for these funds. To date, all NSFA Fellows have received CSP funding and with founder, Ruben Morris as a fellow in the current cohort, AAHS considers this funding likely.
- **$200k in annual fundraising** is planned each year going forward and is quite reasonable given the success to date in raising funds (roughly $300 per student per year).

The school's financial model is conservatively built and allows for flexibility in the event funding or enrollment declines, or other costs were to increase. Over five years there is a 90+ day cash balance developed which provides a significant cushion to absorb unplanned costs or lower enrollment. Enrollment is steady at 125 per year and with a planned minimum and maximum of 300-600 students allows for appropriate flexibility. Class sizes are planned at 25 but could be increased to 28-30 if financially necessary. As one of the first charters school in Bessemer, AL, we expect significant demand and anticipate meeting the budgeted enrollment targets by year five. Other expenses are conservative and include an overall 1% contingency in each year of the model.

Facilities are a strength of the model and are backed by fully executed LOIs for a 52,000 square foot handicap accessible facility with enough space to house the entire school. An additional LOI exists for a potential longer term space upon renewal. The LOI includes a rent cap of 7% of operating revenues which is conservative and well within normal benchmarks. Keeping rent or lease amounts low is essential to funding a robust program for students. Existing cash anticipated as a result of the CSP funding will support additional facilities investments if necessary, and $300k in funds for facilities improvements, furniture, and technology are included in the startup budget.

Compensation and facilities costs represent are approximately 78% of the total expenses each year and allow for a robust staffing model of approximately 12 students per FTE.

The school's budget also anticipates a generous surplus due to philanthropy in years 1-2, and evidences a 1-4% net surplus in years 3 – 5.

In the event of major challenges to the revenue model the school is designed with additional staff that, while a last resort, can be reduced while still maintaining a base level staffing model. The school also plans to outsource certain functions (food service, nursing, etc.) that should allow for additional budget flexibility. Programmatically, the school could expand its digital learning footprint to realize additional savings and/or utilize its many corporate partners.

Additional philanthropic resources will be sought in adverse financial circumstances or to fund supplemental programs, but typical programs are designed to exist on recurring funding sources. Other options common to smaller schools include merging grades and classes in the event of enrollment declines or some other unexpected challenge. Given the initial interest and likely demand for seats the more likely challenge will be see how demand varies by grade level.

The school has received financial commitments of nearly $2 million already and additional funds are expected based upon charter approval. If the CSP grant is approved, no startup shortage is anticipated. With these funds, and additional funds anticipated upon approval AAHS has the cash resources to operate prior to year one funding flowing to the school. If necessary, the school will secure a line of credit to smooth any cashflow timing issues. Without the CSP grant AAHS acknowledges startup will be a challenge.

The board requires the school to budget at a surplus as a primary cash flow strategy. The school's financial model meets this requirement and produces a large surplus in the first two years (due to philanthropy) and then in years 3, 4, and 5 shows steady surpluses of 1-4%, which are normal for a small school. Building cash resources is an essential strategy for a young school and allows for both financial protection and also the opportunity to make future investments – either in facilities or additional programs.

HIGH SCHOOL

ATTACHMENT 32

Secured Revenue

WALTON FAMILY
FOUNDATION

October 22, 2020

Ruben Morris
Alabama Aerospace and Aviation Schools, Inc.
1731 Oak Park Lane
Helena, AL 35080

Re: Grant #00103945

Dear Ruben,

At the Walton Family Foundation, we work to tackle tough social and environmental problems with urgency and a long-term approach to create access to opportunity for people and communities. To do this, we know we must work with individuals and groups closest to these challenges because they often have the most thoughtful, insightful solutions.

As we support efforts to improve K-12 education, protect our rivers and oceans and the livelihoods they support, and promote quality of life in our Home Region, we look to groups like yours. I am pleased to inform you that your grant request has been approved in the amount of $325,000.00 to support Alabama Aerospace and Aviation High School, a project of Alabama Aerospace and Aviation Schools, Inc. The attached grant agreement outlines the details.

On behalf of the Walton Family Foundation, I express my appreciation for what your organization has accomplished so far and my optimism for your future success. Together, we can have an impact that improves lives today and that will last to benefit future generations.

Sincerely,

DocuSigned by:
Caryl M. Stern
4E5797CFBB26445...

Caryl M. Stern
Executive Director

Grant Agreement

October 22, 2020

Grant #00103945

The Walton Family Foundation, Inc. ("Foundation") has approved a grant in the amount of $325,000.00 to the Alabama Aerospace and Aviation Schools, Inc. ("Grantee"). This grant is subject to the following terms and conditions in this agreement (the "Agreement"):

1. **Purpose:** The purpose of the grant is to support Alabama Aerospace and Aviation High School, a project of Alabama Aerospace and Aviation Schools, Inc. This school will launch August 01, 2022 and is projected to serve 425 students at full enrollment. Grantee agrees to use all grant funds exclusively for the grant's purposes. Any changes in these purposes must be authorized in advance by the Foundation in writing.

2. **Amount:** $325,000.00 USD

3. **Payable:** This grant payment shall be initialed upon receipt of this completed letter from Grantee acknowledging the terms and conditions set forth herein. Grantee should receive grant funds electronically within 14 days of completion of these items.

4. **Accounting:** (a) The Foundation encourages, whenever feasible, the deposit of grant funds in an interest-bearing account. For purposes of this letter, the term "grant funds" includes the grant and any income earned thereon.
(b) Grantee will maintain records of receipts and expenditures made in connection with the grant funds and will keep these records during the period covered by the Grantee's reporting obligations specified in paragraph 5 and for at least four years thereafter ("Maintenance Period"). Grantee will make its books and records in connection with the grant funds available for inspection by the Foundation during normal business hours as the Foundation may request at any time during the Maintenance Period.

5. **Grant and Student Performance Outcomes Reporting:** Grantee will provide the Foundation with annual reports by the due dates listed in the report schedule below. Each report shall include an account of expenditures of grant funds and a narrative of what was accomplished by the use of such funds during the year (including a description of progress made in opening the school and fulfilling the purposes of the grant in addition to a confirmation of Grantee's compliance with the terms of the grant). If at the end of the third reporting period, unexpended funds remain the Grantee must return the unexpended funds according to paragraph 8.

	Type	Scheduled Date
1	**Progress Report**	October 31, 2021
2	**Progress Report**	October 31, 2022
3	**Final Report**	October 31, 2023

Upon request, grantee agrees to provide de-identified student-level test data annually for up to five years. In accordance with privacy laws, no data would be used in any way that would allow individual students to be identified. Grantee may also be requested to submit other aggregate enrollment, demographic, and/or student achievement information. Each annual report will be submitted electronically within thirty (30) days of a WFF request for information. Grantee understands that the terms of expenditure reporting and student performance annually are not negotiable and that, by entering into this grant agreement, the Grantee accepts the terms, conditions and obligations set forth in this paragraph.

In addition, as a school funded through the Innovative Schools grant program, grantee agrees to work with a Foundation-identified research and evaluation partner to share qualitative and quantitative information and learnings about their school, which may include two interviews via phone per year with the school leader; 3-5 interviews per year with school staff or board members; email submission of

relevant resources and documents that pertain to the school's model, innovation, and indicators of success; 1 site visit per year after school is open.

6. **Governance and Finance Best Practice:** Grantee represents that it has in place or is committed to putting in place policies, procedures, and practices that will help ensure compliance with governance and finance best practices, including, but not limited to, the following: conducting a regular review of all governance and financial policies, term limits for the board of directors, board review and approval of Grantee's annual organizational budget, annual review by the board of the executive leader, approval by an independent body of the executive leader's salary and benefits, maintaining an independent governing board, following appropriate contract and expenditure approval, signatory authority, and spending authority/limits procedures.

7. **Notification:** Grantee will promptly notify the Foundation upon the occurrence of any of the following: (i) a change or anticipated change in the executive leader, board leadership, or comparable senior level executive ; (ii) any major financial or governance policy changes (including, but not limited to: change in board structure, change in board meeting schedule, material change to conflict of interest policy, material change in spending authority/limits; material change in executive leader performance review or compensation review process); or (iii) unless prohibited by court or agency order, the filing of a claim in any court or federal, state, or local agency alleging (a) sexual or other harassment, discrimination, a hostile work environment, or similar claims regarding Grantee's activities; (b) financial impropriety by Grantee; or (c) breach of fiduciary obligations by senior leadership or by the board.

8. **Representations:** Grantee represents and warrants to the Foundation that:

(a) Grantee is an organization in good standing, is either an organization described in section 501(c)(3) of the Internal Revenue Code ("Code") or a governmental unit, and is not a "private foundation" described in section 509(a) of the Code. Grantee will promptly notify the Foundation of any change in Grantee's tax status under the Code.

(b) In no event will Grantee use any grant funds:

(i) to carry on propaganda, or otherwise to attempt, to influence legislation;

(ii) to influence the outcome of any specific public election or to carry on, directly or indirectly, any voter registration drive; or

(iii) to undertake any activity other than for a charitable, educational or other exempt purpose specified in section 170(c)(2)(B) of the Code.

(c) Grantee will comply with all applicable laws and regulations.

9. **Release and Indemnity:** Unless prohibited by law, Grantee shall release, indemnify, defend and hold harmless the Foundation and its directors, officers, employees and agents from and against any and all claims, actions, suits, demands, damages, losses, expenses and liabilities, arising out of or related in any way to the actions or omissions of Grantee (or its directors, officers, employees, agents or contractors) in connection with the Grant and the project funded by the Grant, except to the extent caused by the Foundation's (or its directors', officers', employees' or agents') negligent actions or omissions. Grantee further agrees to carry insurance in such forms and amounts as are commercially reasonable and appropriate to cover Grantee's operations and to enable Grantee to indemnify and defend the Foundation as provided hereunder.

10. **Repayment, Rescission and/or Termination:** The Foundation, in its sole discretion, may discontinue or suspend funding, rescind payments made, require the return of any unspent funds, or terminate this agreement if any of the following events occur:

(a) Grantee ceases to maintain its tax-exempt status as described above;

(b) Grantee ceases to be an organization in good standing as described above;

(c) Grantee fails to comply with any of the terms of this agreement, including, but not limited to, failure to submit any required reports on a timely basis;

(d) There is a material change in Grantee's key personnel that in the sole opinion of the

Foundation adversely affects Grantee's management of the grant;

(e) Grantee does not use funds for the purpose of this grant;

(f) The Foundation determines that Grantee will be unable to achieve the purposes for which the grant was made;

(g) The Foundation becomes aware of actual or alleged acts or omissions to act by Grantee or one or more of Grantee's directors, officers, employees, volunteers, sub-grantees or contractors which the Foundation believes pose a reputational risk to the Foundation, and for which the Foundation determines Grantee has not taken immediate and effective remedial measures;

(h) There is an investigation or allegation of unlawful action or gross misconduct by Grantee, any officer, director, trustee, employee, or agent of Grantee, or any organization affiliated with Grantee, and the Foundation, in its sole discretion, determines such investigation or allegation to be credible; or

(i) The Foundation determines that making any payment, in the judgment of the Foundation, might expose the Foundation to liability, adverse tax consequences, or constitute a taxable expenditure.

The Foundation will provide notice of any determinations made under this paragraph and, in its sole discretion, may provide Grantee up to 30 days to respond to and resolve the issues identified in the Foundation's notice. However, the determination to suspend funding, terminate, or continue the grant will remain in the Foundation's sole discretion.

In the event the Foundation takes action permitted by this paragraph solely based on (e), and Grantee provides documentation that it has incurred obligations consistent with the terms of the grant in good faith reliance on the grant agreement and the approved budget, the Foundation will consider permitting grant funds to be used to pay such obligations.

11. **Grant Publicity:** Grant publicity related to this grant consistent with Grantee's normal practice is permitted, subject to the following provisions. The Foundation expects any announcements and other publicity to focus on Grantee's work and the project or issue funded by the grant. Recognition of the Foundation's role in funding the project is permitted. Publicizing the grant and the Foundation in Grantee's publications and communications in a manner consistent with similar grants obtained by Grantee is permitted.

    The Foundation may ask Grantee to provide illustrations, photographs, videos, recordings, information or other materials related to the grant (collectively "Grant Work Product") for use in Foundation communications including the Foundation's website, annual report, newsletters, board materials, presentations, communications and other publications. Grantee agrees to provide the Foundation with such items upon the Foundation's reasonable request and hereby grants to the Foundation and anyone acting under the authority of the Foundation a fully paid-up, world-wide, right and license to use, reproduce, display and distribute the Grant Work Product in connection with the Foundation's charitable operations and activities. In connection therewith, Grantee shall be responsible for obtaining all necessary rights and permissions from third parties for the Foundation to use the Grant Work Product for these purposes. By signing this Agreement, Grantee also acknowledges and agrees to use by the Foundation of historical, programmatic and other information relating to Grantee and the grant hereunder.

12. **Gratuities:** The Foundation desires that all of Grantee's resources be dedicated to accomplishing its philanthropic purposes. Therefore, Grantee agrees that it will not furnish the Foundation or its Board of Directors, officers, staff or affiliates with any type of benefit related to this grant including tickets, tables, memberships, commemorative items, recognition items, or any other benefit or gratuity of any kind.

13. **Contact:** For all communications regarding the grant, your point of contact at the Foundation will be Melissa Reynolds and be contacted via phone (202) 322-4989 or email mreynolds@wffmail.com.

    By electronically signing this document the Grantee acknowledges and agrees to the terms and

conditions herein. A copy of the completed document will be emailed to the Grantee through DocuSign. If the electronic signing of this agreement is not completed by October 30, 2020 the Foundation will consider the Grantee to have declined the grant.

Walton Family Foundation, Inc.

By: DocuSigned by:
Caryl M. Stern
4E5797CFBB26445...

Caryl M. Stern
Executive Director

Alabama Aerospace and Aviation Schools, Inc.

By: DocuSigned by:
Ruben Morris
89E5DDC5D82D438...

Ruben Morris
Founder & CEO

The Daniel Foundation
OF ALABAMA

01/25/2021

Mr. Ruben C. Morris
Alabama Aerospace and Aviation Schools, Inc.
1731 Oak Park Ln
Helena, AL 35080

Dear Mr. MORRIS,

Your request for a contribution was discussed at a meeting of our board of trustees. After analyzing and discussing your request we decided to make a contribution of $75,000.00. Our check for this amount is enclosed. Upon receipt of this award please log on to our grants management system and complete the Grant Agreement form.

You have also been assigned a Grantee Status Report which is due when all the funds have been expended or 12 months after granted to update us on the status of your project. This report will help us understand not just how you spent the funds but its impact on your community. Payout of any future awards will not be considered until this report has been received.

We hope our funding serves as an encouragement for other funding. We continue to be excited about being a part of the good work taking place in the communities throughout Alabama.

Very truly yours,

Maria S. Kennedy

Maria S. Kennedy
Executive Director

Enclosure
MSK/jb

I have no doubt of your success on appeal!
Maria

510 Office Park Drive, Suite 210 • Birmingham, Alabama 35223 • (205) 874-3523

NEW SCHOOLS FOR
ALABAMA

Ruben Morris
1731 Oak Park Ln.
Helena, AL 35080

Dear Mr. Morris,

Congratulations again on being selected into the 2020-21 School Founders Program at New Schools for Alabama. Please retain this Offer Letter of admission into the fellowship for records and for any reference needs.

The yearlong fellowship includes a grant to your proposed charter school, the Alabama Aerospace and Aviation High School, in the amount of $180,000, as well as wrap-around technical assistance from New Schools for Alabama during the application and startup processes and participation in an administrative residency with a high-performing charter management organization (CMO). Details of the grant and the ensuing services are further defined in your Program Memorandum of Understanding (MOU).

Should you or any party at your request have any questions regarding your fellowship, please do not hesitate to reach out at the information below.

Our team and our partners are thrilled to have you join the mission to ensure that every child in Alabama has access to a tuition-free, quality public education.

With gratitude,

Tyler Barnett
Executive Director

newschools venture fund

06/14/2021

Grant Number: AAAHS-0521

Ruben Morris
Alabama Aerospace and Aviation High School
1731 Oak Park Lane,
Helena, Alabama 35080

Dear Ruben Morris,

We are delighted to inform you that NewSchools Venture Fund (NewSchools) will provide Alabama Aerospace and Aviation High School a grant of $ 215,000 over the time period 07/01/2021 to 06/30/2022, to be paid according to the schedule below.

Purpose of Grant

This grant has been provided to advance specific activities of Alabama Aerospace and Aviation High School Program, which NewSchools has determined are consistent with its own charitable purposes. These specific activities are as follows:

- Planning for a successful launch in fall of 2022 of Alabama Aerospace and Aviation High School, a 9-12 school located in Birmingham, AL. The school will serve approximately 500 students by fall 2025. Planning efforts include, but are not limited to:

    - Working towards attaining charter/district approval;
    - Securing a facility;
    - Hiring a school leader and critical team members;
    - Designing an instructional model that fully addresses the needs of the target student population and ensures that all students progress toward achieving an expanded definition of success; and
    - Developing other critical operational components (e.g. student recruitment and community engagement plans, staff hiring and onboarding plans, financial model, governance model, an organizational approach to diversity, equity, and inclusion, etc.)

Working Relationship between Alabama Aerospace and Aviation High School and NewSchools

In addition to providing a grant, we are committed to an open, constructive relationship in support of your organization and its mission.

newschools venture fund

NewSchools Commitments

The Alabama Aerospace and Aviation High School team can expect the following as part of a relationship with NewSchools:

- We aspire to be an active thought partner with you. We strive to be supportive and constructive, which at times may mean that we challenge you as a means of pushing you to higher levels of impact.
- We help to build valuable relationships among our ventures. We will convene you alongside organizations at similar stages so that you can establish an authentic community of practice.
- We will regularly seek out your perspective on how we are doing. Your feedback helps us improve our own work and achieve greater impact.
- As a part of our commitment to capturing knowledge and measuring impact, all of our ventures are required to participate in research and evaluation efforts. We will make every effort to minimize the burden on your team while also ensuring that it provides useful and timely feedback to you.
- We will tell you immediately if there is a problem in our relationship. We share the responsibility to provide hard feedback if it is necessary.

Alabama Aerospace and Aviation High School Commitments

NewSchools also will expect the following from Alabama Aerospace and Aviation High School:

- Ask us for help whenever you believe we may be able to help you think through an issue, connect to a potential partner, customer, vendor, or resource, and execute a strategic project.
- Attend and actively participate in our annual Summit and community of practice convenings.
- Share your victories with us so we can celebrate with you!
- In a proactive, open and timely manner, inform NewSchools and your Board of Directors about every significant issue, challenge, transaction and event that may affect the organization's outcomes and impact.
- Tell us right away if you have any concerns about our working relationship with you or our performance as a funder.

Payment Provisions and Reporting Requirements

NewSchools agrees to pay Alabama Aerospace and Aviation High School $ 215,000 according to Exhibit B. Alabama Aerospace and Aviation High School will report on progress towards the grant goals according to Exhibit C.

NewSchools is a public charity and is able to make grants to tax exempt organizations, organizations applying for tax exempt status, for-profit organizations, and governmental organizations.

Given the critical importance of the leadership team to the success of any venture we fund, NewSchools reserves the right to suspend the disbursement of any remaining grant payments, and/or request the

newschools venture fund

return of unspent grant dollars that have already been disbursed, in the case of material change in the employment status during the grant term of any of the key Alabama Aerospace and Aviation High School personnel related to the management of this grant, including but not limited to: Ruben Morris.

NewSchools also reserves the right to suspend the disbursement of any remaining grant payments and/or request the return of unspent grant dollars that have already been disbursed if, in consultation with Alabama Aerospace and Aviation High School, we determine that the organization has failed to comply with the terms of this grant letter.

No grant funds shall be used to purchase or finance capital expenses (e.g. purchase a building or property, renovate a building, purchase vehicles, etc.).

NewSchools makes grants using funds from a variety of foundations and individuals, and at its sole discretion has selected Alabama Aerospace and Aviation High School to receive this grant. Alabama Aerospace and Aviation High School may not make any statement, or otherwise imply to the media, the general public or any other donor or investor that Alabama Aerospace and Aviation High School is supported by any donor other than NewSchools, unless your organization had directly received funds from that donor.

Further specific provisions of this grant are described in the attached Terms and Conditions for NewSchools Venture Fund Grants. These Terms and Conditions are expressly incorporated by reference herein.

Please indicate agreement to this Grant and its terms by signing and returning this Agreement to NewSchools.

On behalf of NewSchools Venture Fund, we all look forward to a productive relationship. Together, we will transform public education so that all children – especially those underserved – graduate high school prepared and inspired to achieve their most ambitious dreams and plans.

Sincerely,

Miho Kubagawa DocuSigned by: Miho Kubagawa 7229644024B2415...

Partner 6/14/2021

Accepted by: DocuSigned by: Ruben Morris 89E5DDC5D82D438...

Grantee Authorized Representative Signature

Name: Ruben Morris

Title: CEO

Date: 6/14/2021

Encl:

Exhibit A – Terms and Conditions

Exhibit B– Grant Disbursement Schedule

Exhibit C – Reporting Requirements

newschools venture fund

EXHIBIT A

TERMS AND CONDITIONS FOR NEWSCHOOLS VENTURE FUND GRANTS

1. All grant funds must be used only for charitable, literary, scientific or educational purposes within the meaning of Internal Revenue Code Section 170(c)(2)(B) and, more specifically, for the purposes described in the attached grant agreement and substantially in accordance with the attached approved budget. The grant funds may not be expended for any other purpose without NewSchools' prior written approval. Any funds not expended for the purposes of the grant during the grant term must be immediately returned to NewSchools.

2. In addition to other reports required by federal, state or local law, the grantee will provide to NewSchools copies of any annual IRS filings, such as Form 990s and any schedules thereto, and state forms, such as California Franchise Tax Board Forms 109 or 199, that it completes, if the grantee is a nonprofit. If the grantee is a for-profit or governmental organization, the grantee will provide annual audited or compiled financial information. If any report is not received in a timely manner, NewSchools may withhold further grant payments until the report is received, and may terminate the grant if the report is not received within thirty (30) days following the date on which it is due.

3. NewSchools may conduct an evaluation of progress under this grant. The grantee agrees to be supportive of the process. This evaluation may include meetings with NewSchools staff and/or consultants to review the program with the grantee's personnel and constituents, and research evaluations connected with the activities financed by this grant. If the Proposal includes a plan for externally documenting and evaluating the outcomes of this grant, NewSchools expects to receive reports from the chosen evaluation team according to a schedule to be determined and appended to these grant terms.

4. The grantee should provide NewSchools with immediate notification of any changes in its organizational or tax exempt status as it occurs. If you are currently applying to be a tax exempt 501(c)(3) entity, you will provide a copy of your IRS determination to NewSchools immediately upon receiving it.

5. The grantee agrees to give NewSchools a reasonable opportunity to review and approve or disapprove any mention whatsoever of NewSchools in any publication proposed to be produced and/or disseminated by the grantee's organization prior to the production of such publication. In addition to this general publicity requirement, NewSchools will have the choice regarding whether and in what manner any publication produced or disseminated wholly or in part with the grant funds acknowledges NewSchools' financial support. In any case in which NewSchools is mentioned in a publication, the publication must state that NewSchools does not take responsibility for any statements or views expressed. Two (2) copies of any publication that mentions NewSchools and/or that is produced or disseminated with grant funds must be furnished to NewSchools at least two (2) business days in advance of public dissemination.

6. The grantee acknowledges that NewSchools has not earmarked any of the grant funds for any organization or individual other than the grantee.

7. The foregoing conditions comply with obligations imposed on NewSchools by federal law to make reasonable efforts and establish adequate procedures to see the grant funds are spent solely for the purposes for which they were granted, and to obtain full and complete reports on how grant funds have been expended. Changes in federal law, or in regulations interpreting it, may require NewSchools to ask that more detailed reports be submitted or that other steps be taken. NewSchools will promptly inform the grantee of any such changes.

8. If the grantee makes payments to individuals or non-501(c)(3) organizations, the grantee may enter into direct contracts with them so long as the goods and services provided to the grantee by the individuals/organizations further the purpose of NewSchools' grant to the grantee. In these cases, the grantee organization must incorporate the individual's or non 501(c)(3) organization's accounting of expenditures within the grantee's accounting to NewSchools.

9. Any violation of the foregoing conditions will require refunding to NewSchools of any amounts subject to the violation. NewSchools may discontinue, modify or withhold any payments due under this grant award or to require a refund of any unexpended grant funds if, in its sole judgment, such action is necessary to comply with the requirements of any law of regulation affecting its responsibilities under this grant award.

10. By making this grant, NewSchools assumes no liability for any actions or omissions of the grantee's organization, including those of any officers, directors, employees or agents of the grantee's organization ("the grantee's actions or omissions"). The grantee agrees to indemnify, defend and hold harmless NewSchools from any and all damages or claims made against the grantee or NewSchools relating to any of the grantee's actions or omissions in connection with the grant.

11. In connection with this grant, the grantee's organization, including the grantee's officers, directors, employees, agents, affiliates and beneficiaries (collectively "the grantee's Organization Members") may have access to, receive, and be entrusted with confidential information, including but in no way limited to development, marketing, organizational, financial, management, administrative, production, distribution, information, data, specifications and processes presently owned by or at any time in the future developed by NewSchools or its agents, consultants or portfolio companies, or used presently or at any time in the future course of its business, personal information relating to any officer, director or employee of NewSchools that is not otherwise public knowledge or in the public domain (collectively, "Confidential Material"). All such Confidential Material is considered secret and will be available to the grantee's Organization Members in strict confidence. Except in carrying out the purposes for which the grant was made, the grantee's Organization Members will not, directly or indirectly for any reason whatsoever, disclose or use any such Confidential Material, unless and until such Confidential Material ceases (through no fault whatsoever or the grantee's Organization Members) to be confidential

because it has become public knowledge or part of the public domain. All records, files, drawings, documents, equipment, and other tangible items, wherever located, relating in any way to the Confidential Material or otherwise to NewSchools' business, that the grantee's Organization Members prepare, use or encounter, will be and remain NewSchools' sole and exclusive property and will be included as Confidential Material hereunder. Upon termination of this Agreement by any means, or whenever requested by NewSchools, the grantee's organization will promptly deliver to NewSchools all of the Confidential Material, not previously delivered to NewSchools. Grantee, grantee's employees and any independent contractors associated with the grantee's Organization Members also agree that this confidentiality provision of this Agreement shall survive and continue after the termination of this Agreement for any reason whatsoever.

12. The grantee will participate in NewSchools' activities related to gathering and sharing effective practices as public resources to benefit the improvement of the education sector. These activities may include data collection, surveys and meetings. As a result of these efforts, NewSchools may share anonymized, aggregated learnings and findings from across the grantees funded by NewSchools. NewSchools will notify the grantee in advance of such use. If NewSchools wishes to share specific information about the grantee, NewSchools and the grantee will work to mutually agree on the specific information to be released. NewSchools will not intentionally or knowingly directly impede the grantee's ability to generate earned revenue from the program.

13. If the grantee is acquired by or merges with another entity, or sells all or substantially all of its assets to another entity, then at NewSchools' option, the grant may be converted into a recoverable loan, without interest, to be paid back within thirty (30) days after such merger, acquisition, or asset sale. This clause expires one (1) year after the date of the grant disbursement.

14. This agreement constitutes the entire agreement between NewSchools and the grantee's organization and supersedes all prior agreements, understandings and writings with respect to the subject matter hereof. This Agreement may be amended or modified only in writing, which writing must be signed by duly authorized representatives of each party. This Agreement is not intended to, and does not create a partnership/agent relationship or joint venture between the grantee's organization and NewSchools. This Agreement will be interpreted in accordance with the laws of the State of California, without regard to choice of law principles. The parties agree to submit to the jurisdiction of the State of California, County of Alameda for the resolution of any dispute that may arise hereunder.

15. The grantee agrees that it owns or possesses sufficient legal rights to all patents, trademarks, service marks, trade names, copyrights, trade secrets, licenses, information and other proprietary rights and processes necessary for its business as now conducted and as presently proposed to be conducted, without any violation of any material license or infringement of the rights of others.

newschools venture fund

EXHIBIT B

Grant Disbursement Schedule

At any time, NewSchools may amend this Exhibit B to change the disbursement schedule.

Anticipated Date	Disbursement Amount	Milestones
7/1/2021	$215,000	See below

First Payment Milestones

- This fully executed original Letter of Agreement,
- IRS Form W-9 with your entity status and taxpayer identification number (TIN); and
- If you are a tax exempt organization, or applying to be a tax exempt organization under section 501(c)(3) of the United States Internal Revenue Code, please provide one of the following documents to verify your tax exempt entity status:
    - A copy of your IRS determination letter
    - A copy of IRS Form 1023 (your application to the IRS to obtain 501(c)(3) status)
- Updated ACH transfer information including: Routing Number, Account Number, Bank Name, Bank Address, and Name of Account Holder

newschools venture fund

EXHIBIT C

Reporting Requirements

At any time, NewSchools may amend this Exhibit C to change the reporting requirements.

Expectation/ Deliverable	Purpose and Description	Timing/Notes
Participate in Community of Practice meetings	Purpose: Used by NewSchools to provide management assistance and to foster a learning community for ventures Two representatives (typically the organization leader and another senior leader) from each team are required to attend these meetings.	We will hold three Community of Practice events over the course of this grant. While dates will be confirmed later this summer, at this time they are tentatively scheduled for the following: • September 15-16, 2021 • November 2-4, 2021 • March 1-3, 2022 At this time, the events for the remainder of 2021 are virtual. In the event we shift to in-person events in 2022, additional funds have been included in this grant so that Alabama Aerospace and Aviation High School can pay directly for hotel, flights and other personal costs associated with attending these events. NewSchools will pay for meals and meeting space during the events.
Attend NewSchools Summit	Purpose: Used by NewSchools to provide management assistance and foster a learning community for ventures, while also surfacing key issues and ideas for a broader cross-section of education leaders Includes: Ventures may send up to two representatives (typically the organization leader and another senior leader) to participate in two full days of programming: (1) Community of Practice event (the day prior to Summit) and (2) Summit itself	Held annually in May. Additional funds have been included to this grant so that Alabama Aerospace and Aviation High School can pay directly for hotel, flights and other personal costs associated with attending these events. NewSchools will pay for meals and meeting space during the events.

Expectation/ Deliverable	Purpose and Description	Timing/Notes
Participate in Check-in Calls	Purpose: Used by NewSchools to monitor progress, surface key needs, and offer support to our ventures throughout the grant period Check-in calls will take place with venture leaders.	Check-In Calls: Monthly during grant period.
Provide All Requested Data for Annual Data Collection	Purpose: Used by NewSchools to gather feedback on the support we provide our ventures, evaluate the performance of our portfolio, identify benchmarks, and inform our board, investment partners, and funders of our impact.	We will administer an annual survey every fall.

Financial Management Capacity

AAHS is considering participation in the New Schools for Alabama Back-office support service program for charter schools. NSFA has arranged an experienced team of best-in-class providers to ensure a range of expertise is available to AAHS and its other schools. These services ensure extensive operational and strategic capacity to support a strong financial management, accounting, and operational program as well as access to non-profit lenders, facilities advisors, etc. In addition, the school has a board of directors with financial, legal, and fundraising experience that gives the school strong functional expertise, as well as direct experience in managing and governing both for-profit and nonprofit organizations. The organization chart identifies a key leadership role for finance and operations and the outsourced strategy provides capacity to support that function at fractional levels that match the planned growth of the school. Outsourcing also provides functional expertise for non-instructional activities at a lower cost and with deeper capacity than can be obtained by hiring internally.

New Schools For Alabama provides access to both legal and accounting expertise through its technical assistance team and through relationships with other outsource providers, such as accountants, law firms, lenders, and facility advisors, and also food service and federal programs experts.

NSFA's accounting partner is LBMC W Squared, a skilled outsourced provider with nearly twenty years of experience serving a wide range of clients including several charter schools in multiple states regionally.

NSFA's food service partner is School Food Wellness Group, an experienced team of school food service professionals who support hundreds of charter schools and district schools across the U.S. NSFA's federal programs support is led by Joslyn Reddick, a long-time former ALSDE employee who managed federal programs at the state level. She is also a former principal, teacher, and administrator and has supported charter schools in Georgia during their startup phase.

NSFA has multiple technology providers identified that will assist with device acquisition and deployment, ensuring a digital environment that is in compliance with the Child Internet Protection Act (CIPA), and are able to support the application and use of E-Rate technology funds for creation of a proper technology environment. The objective of using the NSFA back-office program is to ensure high quality services during the startup and growth phase of the school and to allow management to focus their time on staff, students, culture, and instructional practices.

WALTON FAMILY
FOUNDATION

October 22, 2020

Ruben Morris
Alabama Aerospace and Aviation Schools, Inc.
1731 Oak Park Lane
Helena, AL 35080

Re: Grant #00103945

Dear Ruben,

At the Walton Family Foundation, we work to tackle tough social and environmental problems with urgency and a long-term approach to create access to opportunity for people and communities. To do this, we know we must work with individuals and groups closest to these challenges because they often have the most thoughtful, insightful solutions.

As we support efforts to improve K-12 education, protect our rivers and oceans and the livelihoods they support, and promote quality of life in our Home Region, we look to groups like yours. I am pleased to inform you that your grant request has been approved in the amount of $325,000.00 to support Alabama Aerospace and Aviation High School, a project of Alabama Aerospace and Aviation Schools, Inc. The attached grant agreement outlines the details.

On behalf of the Walton Family Foundation, I express my appreciation for what your organization has accomplished so far and my optimism for your future success. Together, we can have an impact that improves lives today and that will last to benefit future generations.

Sincerely,

DocuSigned by:
Caryl M. Stern
4E5797CFBB26445...

Caryl M. Stern
Executive Director

Grant Agreement

October 22, 2020

Grant #00103945

The Walton Family Foundation, Inc. ("Foundation") has approved a grant in the amount of $325,000.00 to the Alabama Aerospace and Aviation Schools, Inc. ("Grantee"). This grant is subject to the following terms and conditions in this agreement (the "Agreement"):

1. **Purpose:** The purpose of the grant is to support Alabama Aerospace and Aviation High School, a project of Alabama Aerospace and Aviation Schools, Inc. This school will launch August 01, 2022 and is projected to serve 425 students at full enrollment. Grantee agrees to use all grant funds exclusively for the grant's purposes. Any changes in these purposes must be authorized in advance by the Foundation in writing.

2. **Amount:** $325,000.00 USD

3. **Payable:** This grant payment shall be initialed upon receipt of this completed letter from Grantee acknowledging the terms and conditions set forth herein. Grantee should receive grant funds electronically within 14 days of completion of these items.

4. **Accounting:** (a) The Foundation encourages, whenever feasible, the deposit of grant funds in an interest-bearing account. For purposes of this letter, the term "grant funds" includes the grant and any income earned thereon.
(b) Grantee will maintain records of receipts and expenditures made in connection with the grant funds and will keep these records during the period covered by the Grantee's reporting obligations specified in paragraph 5 and for at least four years thereafter ("Maintenance Period"). Grantee will make its books and records in connection with the grant funds available for inspection by the Foundation during normal business hours as the Foundation may request at any time during the Maintenance Period.

5. **Grant and Student Performance Outcomes Reporting:** Grantee will provide the Foundation with annual reports by the due dates listed in the report schedule below. Each report shall include an account of expenditures of grant funds and a narrative of what was accomplished by the use of such funds during the year (including a description of progress made in opening the school and fulfilling the purposes of the grant in addition to a confirmation of Grantee's compliance with the terms of the grant). If at the end of the third reporting period, unexpended funds remain the Grantee must return the unexpended funds according to paragraph 8.

	Type	Scheduled Date
1	**Progress Report**	October 31, 2021
2	**Progress Report**	October 31, 2022
3	**Final Report**	October 31, 2023

Upon request, grantee agrees to provide de-identified student-level test data annually for up to five years. In accordance with privacy laws, no data would be used in any way that would allow individual students to be identified. Grantee may also be requested to submit other aggregate enrollment, demographic, and/or student achievement information. Each annual report will be submitted electronically within thirty (30) days of a WFF request for information. Grantee understands that the terms of expenditure reporting and student performance annually are not negotiable and that, by entering into this grant agreement, the Grantee accepts the terms, conditions and obligations set forth in this paragraph.

In addition, as a school funded through the Innovative Schools grant program, grantee agrees to work with a Foundation-identified research and evaluation partner to share qualitative and quantitative information and learnings about their school, which may include two interviews via phone per year with the school leader; 3-5 interviews per year with school staff or board members; email submission of

relevant resources and documents that pertain to the school's model, innovation, and indicators of success; 1 site visit per year after school is open.

6. **Governance and Finance Best Practice:** Grantee represents that it has in place or is committed to putting in place policies, procedures, and practices that will help ensure compliance with governance and finance best practices, including, but not limited to, the following: conducting a regular review of all governance and financial policies, term limits for the board of directors, board review and approval of Grantee's annual organizational budget, annual review by the board of the executive leader, approval by an independent body of the executive leader's salary and benefits, maintaining an independent governing board, following appropriate contract and expenditure approval, signatory authority, and spending authority/limits procedures.

7. **Notification:** Grantee will promptly notify the Foundation upon the occurrence of any of the following: (i) a change or anticipated change in the executive leader, board leadership, or comparable senior level executive ; (ii) any major financial or governance policy changes (including, but not limited to: change in board structure, change in board meeting schedule, material change to conflict of interest policy, material change in spending authority/limits; material change in executive leader performance review or compensation review process); or (iii) unless prohibited by court or agency order, the filing of a claim in any court or federal, state, or local agency alleging (a) sexual or other harassment, discrimination, a hostile work environment, or similar claims regarding Grantee's activities; (b) financial impropriety by Grantee; or (c) breach of fiduciary obligations by senior leadership or by the board.

8. **Representations:** Grantee represents and warrants to the Foundation that:

(a) Grantee is an organization in good standing, is either an organization described in section 501(c)(3) of the Internal Revenue Code ("Code") or a governmental unit, and is not a "private foundation" described in section 509(a) of the Code. Grantee will promptly notify the Foundation of any change in Grantee's tax status under the Code.

(b) In no event will Grantee use any grant funds:

(i) to carry on propaganda, or otherwise to attempt, to influence legislation;

(ii) to influence the outcome of any specific public election or to carry on, directly or indirectly, any voter registration drive; or

(iii) to undertake any activity other than for a charitable, educational or other exempt purpose specified in section 170(c)(2)(B) of the Code.

(c) Grantee will comply with all applicable laws and regulations.

9. **Release and Indemnity:** Unless prohibited by law, Grantee shall release, indemnify, defend and hold harmless the Foundation and its directors, officers, employees and agents from and against any and all claims, actions, suits, demands, damages, losses, expenses and liabilities, arising out of or related in any way to the actions or omissions of Grantee (or its directors, officers, employees, agents or contractors) in connection with the Grant and the project funded by the Grant, except to the extent caused by the Foundation's (or its directors', officers', employees' or agents') negligent actions or omissions. Grantee further agrees to carry insurance in such forms and amounts as are commercially reasonable and appropriate to cover Grantee's operations and to enable Grantee to indemnify and defend the Foundation as provided hereunder.

10. **Repayment, Rescission and/or Termination:** The Foundation, in its sole discretion, may discontinue or suspend funding, rescind payments made, require the return of any unspent funds, or terminate this agreement if any of the following events occur:

(a) Grantee ceases to maintain its tax-exempt status as described above;

(b) Grantee ceases to be an organization in good standing as described above;

(c) Grantee fails to comply with any of the terms of this agreement, including, but not limited to, failure to submit any required reports on a timely basis;

(d) There is a material change in Grantee's key personnel that in the sole opinion of the

Foundation adversely affects Grantee's management of the grant;

(e) Grantee does not use funds for the purpose of this grant;

(f) The Foundation determines that Grantee will be unable to achieve the purposes for which the grant was made;

(g) The Foundation becomes aware of actual or alleged acts or omissions to act by Grantee or one or more of Grantee's directors, officers, employees, volunteers, sub-grantees or contractors which the Foundation believes pose a reputational risk to the Foundation, and for which the Foundation determines Grantee has not taken immediate and effective remedial measures;

(h) There is an investigation or allegation of unlawful action or gross misconduct by Grantee, any officer, director, trustee, employee, or agent of Grantee, or any organization affiliated with Grantee, and the Foundation, in its sole discretion, determines such investigation or allegation to be credible; or

(i) The Foundation determines that making any payment, in the judgment of the Foundation, might expose the Foundation to liability, adverse tax consequences, or constitute a taxable expenditure.

The Foundation will provide notice of any determinations made under this paragraph and, in its sole discretion, may provide Grantee up to 30 days to respond to and resolve the issues identified in the Foundation's notice. However, the determination to suspend funding, terminate, or continue the grant will remain in the Foundation's sole discretion.

In the event the Foundation takes action permitted by this paragraph solely based on (e), and Grantee provides documentation that it has incurred obligations consistent with the terms of the grant in good faith reliance on the grant agreement and the approved budget, the Foundation will consider permitting grant funds to be used to pay such obligations.

11. **Grant Publicity:** Grant publicity related to this grant consistent with Grantee's normal practice is permitted, subject to the following provisions. The Foundation expects any announcements and other publicity to focus on Grantee's work and the project or issue funded by the grant. Recognition of the Foundation's role in funding the project is permitted. Publicizing the grant and the Foundation in Grantee's publications and communications in a manner consistent with similar grants obtained by Grantee is permitted.

    The Foundation may ask Grantee to provide illustrations, photographs, videos, recordings, information or other materials related to the grant (collectively "Grant Work Product") for use in Foundation communications including the Foundation's website, annual report, newsletters, board materials, presentations, communications and other publications. Grantee agrees to provide the Foundation with such items upon the Foundation's reasonable request and hereby grants to the Foundation and anyone acting under the authority of the Foundation a fully paid-up, world-wide, right and license to use, reproduce, display and distribute the Grant Work Product in connection with the Foundation's charitable operations and activities. In connection therewith, Grantee shall be responsible for obtaining all necessary rights and permissions from third parties for the Foundation to use the Grant Work Product for these purposes. By signing this Agreement, Grantee also acknowledges and agrees to use by the Foundation of historical, programmatic and other information relating to Grantee and the grant hereunder.

12. **Gratuities:** The Foundation desires that all of Grantee's resources be dedicated to accomplishing its philanthropic purposes. Therefore, Grantee agrees that it will not furnish the Foundation or its Board of Directors, officers, staff or affiliates with any type of benefit related to this grant including tickets, tables, memberships, commemorative items, recognition items, or any other benefit or gratuity of any kind.

13. **Contact:** For all communications regarding the grant, your point of contact at the Foundation will be Melissa Reynolds and be contacted via phone (202) 322-4989 or email mreynolds@wffmail.com.

    By electronically signing this document the Grantee acknowledges and agrees to the terms and

conditions herein. A copy of the completed document will be emailed to the Grantee through DocuSign. If the electronic signing of this agreement is not completed by October 30, 2020 the Foundation will consider the Grantee to have declined the grant.

Walton Family Foundation, Inc.

By: DocuSigned by:
Caryl M. Stern
4E5797CFBB26445...

Caryl M. Stern
Executive Director

Alabama Aerospace and Aviation Schools, Inc.

By: DocuSigned by:
Ruben Morris
89E5DDC5D82D438...

Ruben Morris
Founder & CEO

The Daniel Foundation
OF ALABAMA

01/25/2021

Mr. Ruben C. Morris
Alabama Aerospace and Aviation Schools, Inc.
1731 Oak Park Ln
Helena, AL 35080

Dear Mr. MORRIS,

Your request for a contribution was discussed at a meeting of our board of trustees. After analyzing and discussing your request we decided to make a contribution of $75,000.00. Our check for this amount is enclosed. Upon receipt of this award please log on to our grants management system and complete the Grant Agreement form.

You have also been assigned a Grantee Status Report which is due when all the funds have been expended or 12 months after granted to update us on the status of your project. This report will help us understand not just how you spent the funds but its impact on your community. Payout of any future awards will not be considered until this report has been received.

We hope our funding serves as an encouragement for other funding. We continue to be excited about being a part of the good work taking place in the communities throughout Alabama.

Very truly yours,

Maria S. Kennedy

Maria S. Kennedy
Executive Director

Enclosure
MSK/jb

I have no doubt of your success on appeal!
Maria

510 Office Park Drive, Suite 210 • Birmingham, Alabama 35223 • (205) 874-3523

NEW SCHOOLS FOR
ALABAMA

Ruben Morris
1731 Oak Park Ln.
Helena, AL 35080

Dear Mr. Morris,

Congratulations again on being selected into the 2020-21 School Founders Program at New Schools for Alabama. Please retain this Offer Letter of admission into the fellowship for records and for any reference needs.

The yearlong fellowship includes a grant to your proposed charter school, the Alabama Aerospace and Aviation High School, in the amount of $180,000, as well as wrap-around technical assistance from New Schools for Alabama during the application and startup processes and participation in an administrative residency with a high-performing charter management organization (CMO). Details of the grant and the ensuing services are further defined in your Program Memorandum of Understanding (MOU).

Should you or any party at your request have any questions regarding your fellowship, please do not hesitate to reach out at the information below.

Our team and our partners are thrilled to have you join the mission to ensure that every child in Alabama has access to a tuition-free, quality public education.

With gratitude,

Tyler Barnett
Executive Director

newschools venture fund

06/14/2021

Grant Number: AAAHS-0521

Ruben Morris
Alabama Aerospace and Aviation High School
1731 Oak Park Lane,
Helena, Alabama 35080

Dear Ruben Morris,

We are delighted to inform you that NewSchools Venture Fund (NewSchools) will provide Alabama Aerospace and Aviation High School a grant of $ 215,000 over the time period 07/01/2021 to 06/30/2022, to be paid according to the schedule below.

Purpose of Grant

This grant has been provided to advance specific activities of Alabama Aerospace and Aviation High School Program, which NewSchools has determined are consistent with its own charitable purposes. These specific activities are as follows:

- Planning for a successful launch in fall of 2022 of Alabama Aerospace and Aviation High School, a 9-12 school located in Birmingham, AL. The school will serve approximately 500 students by fall 2025. Planning efforts include, but are not limited to:

    - Working towards attaining charter/district approval;
    - Securing a facility;
    - Hiring a school leader and critical team members;
    - Designing an instructional model that fully addresses the needs of the target student population and ensures that all students progress toward achieving an expanded definition of success; and
    - Developing other critical operational components (e.g. student recruitment and community engagement plans, staff hiring and onboarding plans, financial model, governance model, an organizational approach to diversity, equity, and inclusion, etc.)

Working Relationship between Alabama Aerospace and Aviation High School and NewSchools

In addition to providing a grant, we are committed to an open, constructive relationship in support of your organization and its mission.

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NewSchools Commitments

The Alabama Aerospace and Aviation High School team can expect the following as part of a relationship with NewSchools:

- We aspire to be an active thought partner with you. We strive to be supportive and constructive, which at times may mean that we challenge you as a means of pushing you to higher levels of impact.
- We help to build valuable relationships among our ventures. We will convene you alongside organizations at similar stages so that you can establish an authentic community of practice.
- We will regularly seek out your perspective on how we are doing. Your feedback helps us improve our own work and achieve greater impact.
- As a part of our commitment to capturing knowledge and measuring impact, all of our ventures are required to participate in research and evaluation efforts. We will make every effort to minimize the burden on your team while also ensuring that it provides useful and timely feedback to you.
- We will tell you immediately if there is a problem in our relationship. We share the responsibility to provide hard feedback if it is necessary.

Alabama Aerospace and Aviation High School Commitments

NewSchools also will expect the following from Alabama Aerospace and Aviation High School:

- Ask us for help whenever you believe we may be able to help you think through an issue, connect to a potential partner, customer, vendor, or resource, and execute a strategic project.
- Attend and actively participate in our annual Summit and community of practice convenings.
- Share your victories with us so we can celebrate with you!
- In a proactive, open and timely manner, inform NewSchools and your Board of Directors about every significant issue, challenge, transaction and event that may affect the organization's outcomes and impact.
- Tell us right away if you have any concerns about our working relationship with you or our performance as a funder.

Payment Provisions and Reporting Requirements

NewSchools agrees to pay Alabama Aerospace and Aviation High School $ 215,000 according to Exhibit B. Alabama Aerospace and Aviation High School will report on progress towards the grant goals according to Exhibit C.

NewSchools is a public charity and is able to make grants to tax exempt organizations, organizations applying for tax exempt status, for-profit organizations, and governmental organizations.

Given the critical importance of the leadership team to the success of any venture we fund, NewSchools reserves the right to suspend the disbursement of any remaining grant payments, and/or request the

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return of unspent grant dollars that have already been disbursed, in the case of material change in the employment status during the grant term of any of the key Alabama Aerospace and Aviation High School personnel related to the management of this grant, including but not limited to: Ruben Morris.

NewSchools also reserves the right to suspend the disbursement of any remaining grant payments and/or request the return of unspent grant dollars that have already been disbursed if, in consultation with Alabama Aerospace and Aviation High School, we determine that the organization has failed to comply with the terms of this grant letter.

No grant funds shall be used to purchase or finance capital expenses (e.g. purchase a building or property, renovate a building, purchase vehicles, etc.).

NewSchools makes grants using funds from a variety of foundations and individuals, and at its sole discretion has selected Alabama Aerospace and Aviation High School to receive this grant. Alabama Aerospace and Aviation High School may not make any statement, or otherwise imply to the media, the general public or any other donor or investor that Alabama Aerospace and Aviation High School is supported by any donor other than NewSchools, unless your organization had directly received funds from that donor.

Further specific provisions of this grant are described in the attached Terms and Conditions for NewSchools Venture Fund Grants. These Terms and Conditions are expressly incorporated by reference herein.

Please indicate agreement to this Grant and its terms by signing and returning this Agreement to NewSchools.

On behalf of NewSchools Venture Fund, we all look forward to a productive relationship. Together, we will transform public education so that all children – especially those underserved – graduate high school prepared and inspired to achieve their most ambitious dreams and plans.

Sincerely,

Miho Kubagawa DocuSigned by: Miho Kubagawa 7229644024B2415...

Partner 6/14/2021

Accepted by: DocuSigned by: Ruben Morris 89E5DDC5D82D438...

Grantee Authorized Representative Signature

Name: Ruben Morris

Title: CEO

Date: 6/14/2021

Encl:

Exhibit A – Terms and Conditions

Exhibit B– Grant Disbursement Schedule

Exhibit C – Reporting Requirements

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EXHIBIT A

TERMS AND CONDITIONS FOR NEWSCHOOLS VENTURE FUND GRANTS

1. All grant funds must be used only for charitable, literary, scientific or educational purposes within the meaning of Internal Revenue Code Section 170(c)(2)(B) and, more specifically, for the purposes described in the attached grant agreement and substantially in accordance with the attached approved budget. The grant funds may not be expended for any other purpose without NewSchools' prior written approval. Any funds not expended for the purposes of the grant during the grant term must be immediately returned to NewSchools.

2. In addition to other reports required by federal, state or local law, the grantee will provide to NewSchools copies of any annual IRS filings, such as Form 990s and any schedules thereto, and state forms, such as California Franchise Tax Board Forms 109 or 199, that it completes, if the grantee is a nonprofit. If the grantee is a for-profit or governmental organization, the grantee will provide annual audited or compiled financial information. If any report is not received in a timely manner, NewSchools may withhold further grant payments until the report is received, and may terminate the grant if the report is not received within thirty (30) days following the date on which it is due.

3. NewSchools may conduct an evaluation of progress under this grant. The grantee agrees to be supportive of the process. This evaluation may include meetings with NewSchools staff and/or consultants to review the program with the grantee's personnel and constituents, and research evaluations connected with the activities financed by this grant. If the Proposal includes a plan for externally documenting and evaluating the outcomes of this grant, NewSchools expects to receive reports from the chosen evaluation team according to a schedule to be determined and appended to these grant terms.

4. The grantee should provide NewSchools with immediate notification of any changes in its organizational or tax exempt status as it occurs. If you are currently applying to be a tax exempt 501(c)(3) entity, you will provide a copy of your IRS determination to NewSchools immediately upon receiving it.

5. The grantee agrees to give NewSchools a reasonable opportunity to review and approve or disapprove any mention whatsoever of NewSchools in any publication proposed to be produced and/or disseminated by the grantee's organization prior to the production of such publication. In addition to this general publicity requirement, NewSchools will have the choice regarding whether and in what manner any publication produced or disseminated wholly or in part with the grant funds acknowledges NewSchools' financial support. In any case in which NewSchools is mentioned in a publication, the publication must state that NewSchools does not take responsibility for any statements or views expressed. Two (2) copies of any publication that mentions NewSchools and/or that is produced or disseminated with grant funds must be furnished to NewSchools at least two (2) business days in advance of public dissemination.

6. The grantee acknowledges that NewSchools has not earmarked any of the grant funds for any organization or individual other than the grantee.

7. The foregoing conditions comply with obligations imposed on NewSchools by federal law to make reasonable efforts and establish adequate procedures to see the grant funds are spent solely for the purposes for which they were granted, and to obtain full and complete reports on how grant funds have been expended. Changes in federal law, or in regulations interpreting it, may require NewSchools to ask that more detailed reports be submitted or that other steps be taken. NewSchools will promptly inform the grantee of any such changes.

8. If the grantee makes payments to individuals or non-501(c)(3) organizations, the grantee may enter into direct contracts with them so long as the goods and services provided to the grantee by the individuals/organizations further the purpose of NewSchools' grant to the grantee. In these cases, the grantee organization must incorporate the individual's or non 501(c)(3) organization's accounting of expenditures within the grantee's accounting to NewSchools.

9. Any violation of the foregoing conditions will require refunding to NewSchools of any amounts subject to the violation. NewSchools may discontinue, modify or withhold any payments due under this grant award or to require a refund of any unexpended grant funds if, in its sole judgment, such action is necessary to comply with the requirements of any law of regulation affecting its responsibilities under this grant award.

10. By making this grant, NewSchools assumes no liability for any actions or omissions of the grantee's organization, including those of any officers, directors, employees or agents of the grantee's organization ("the grantee's actions or omissions"). The grantee agrees to indemnify, defend and hold harmless NewSchools from any and all damages or claims made against the grantee or NewSchools relating to any of the grantee's actions or omissions in connection with the grant.

11. In connection with this grant, the grantee's organization, including the grantee's officers, directors, employees, agents, affiliates and beneficiaries (collectively "the grantee's Organization Members") may have access to, receive, and be entrusted with confidential information, including but in no way limited to development, marketing, organizational, financial, management, administrative, production, distribution, information, data, specifications and processes presently owned by or at any time in the future developed by NewSchools or its agents, consultants or portfolio companies, or used presently or at any time in the future course of its business, personal information relating to any officer, director or employee of NewSchools that is not otherwise public knowledge or in the public domain (collectively, "Confidential Material"). All such Confidential Material is considered secret and will be available to the grantee's Organization Members in strict confidence. Except in carrying out the purposes for which the grant was made, the grantee's Organization Members will not, directly or indirectly for any reason whatsoever, disclose or use any such Confidential Material, unless and until such Confidential Material ceases (through no fault whatsoever or the grantee's Organization Members) to be confidential

because it has become public knowledge or part of the public domain. All records, files, drawings, documents, equipment, and other tangible items, wherever located, relating in any way to the Confidential Material or otherwise to NewSchools' business, that the grantee's Organization Members prepare, use or encounter, will be and remain NewSchools' sole and exclusive property and will be included as Confidential Material hereunder. Upon termination of this Agreement by any means, or whenever requested by NewSchools, the grantee's organization will promptly deliver to NewSchools all of the Confidential Material, not previously delivered to NewSchools. Grantee, grantee's employees and any independent contractors associated with the grantee's Organization Members also agree that this confidentiality provision of this Agreement shall survive and continue after the termination of this Agreement for any reason whatsoever.

12. The grantee will participate in NewSchools' activities related to gathering and sharing effective practices as public resources to benefit the improvement of the education sector. These activities may include data collection, surveys and meetings. As a result of these efforts, NewSchools may share anonymized, aggregated learnings and findings from across the grantees funded by NewSchools. NewSchools will notify the grantee in advance of such use. If NewSchools wishes to share specific information about the grantee, NewSchools and the grantee will work to mutually agree on the specific information to be released. NewSchools will not intentionally or knowingly directly impede the grantee's ability to generate earned revenue from the program.

13. If the grantee is acquired by or merges with another entity, or sells all or substantially all of its assets to another entity, then at NewSchools' option, the grant may be converted into a recoverable loan, without interest, to be paid back within thirty (30) days after such merger, acquisition, or asset sale. This clause expires one (1) year after the date of the grant disbursement.

14. This agreement constitutes the entire agreement between NewSchools and the grantee's organization and supersedes all prior agreements, understandings and writings with respect to the subject matter hereof. This Agreement may be amended or modified only in writing, which writing must be signed by duly authorized representatives of each party. This Agreement is not intended to, and does not create a partnership/agent relationship or joint venture between the grantee's organization and NewSchools. This Agreement will be interpreted in accordance with the laws of the State of California, without regard to choice of law principles. The parties agree to submit to the jurisdiction of the State of California, County of Alameda for the resolution of any dispute that may arise hereunder.

15. The grantee agrees that it owns or possesses sufficient legal rights to all patents, trademarks, service marks, trade names, copyrights, trade secrets, licenses, information and other proprietary rights and processes necessary for its business as now conducted and as presently proposed to be conducted, without any violation of any material license or infringement of the rights of others.

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EXHIBIT B

Grant Disbursement Schedule

At any time, NewSchools may amend this Exhibit B to change the disbursement schedule.

Anticipated Date	Disbursement Amount	Milestones
7/1/2021	$215,000	See below

First Payment Milestones

- This fully executed original Letter of Agreement,
- IRS Form W-9 with your entity status and taxpayer identification number (TIN); and
- If you are a tax exempt organization, or applying to be a tax exempt organization under section 501(c)(3) of the United States Internal Revenue Code, please provide one of the following documents to verify your tax exempt entity status:
    - A copy of your IRS determination letter
    - A copy of IRS Form 1023 (your application to the IRS to obtain 501(c)(3) status)
- Updated ACH transfer information including: Routing Number, Account Number, Bank Name, Bank Address, and Name of Account Holder

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EXHIBIT C

Reporting Requirements

At any time, NewSchools may amend this Exhibit C to change the reporting requirements.

Expectation/ Deliverable	Purpose and Description	Timing/Notes
Participate in Community of Practice meetings	Purpose: Used by NewSchools to provide management assistance and to foster a learning community for ventures Two representatives (typically the organization leader and another senior leader) from each team are required to attend these meetings.	We will hold three Community of Practice events over the course of this grant. While dates will be confirmed later this summer, at this time they are tentatively scheduled for the following: • September 15-16, 2021 • November 2-4, 2021 • March 1-3, 2022 At this time, the events for the remainder of 2021 are virtual. In the event we shift to in-person events in 2022, additional funds have been included in this grant so that Alabama Aerospace and Aviation High School can pay directly for hotel, flights and other personal costs associated with attending these events. NewSchools will pay for meals and meeting space during the events.
Attend NewSchools Summit	Purpose: Used by NewSchools to provide management assistance and foster a learning community for ventures, while also surfacing key issues and ideas for a broader cross-section of education leaders Includes: Ventures may send up to two representatives (typically the organization leader and another senior leader) to participate in two full days of programming: (1) Community of Practice event (the day prior to Summit) and (2) Summit itself	Held annually in May. Additional funds have been included to this grant so that Alabama Aerospace and Aviation High School can pay directly for hotel, flights and other personal costs associated with attending these events. NewSchools will pay for meals and meeting space during the events.

Expectation/ Deliverable	Purpose and Description	Timing/Notes
Participate in Check-in Calls	Purpose: Used by NewSchools to monitor progress, surface key needs, and offer support to our ventures throughout the grant period Check-in calls will take place with venture leaders.	Check-In Calls: Monthly during grant period.
Provide All Requested Data for Annual Data Collection	Purpose: Used by NewSchools to gather feedback on the support we provide our ventures, evaluate the performance of our portfolio, identify benchmarks, and inform our board, investment partners, and funders of our impact.	We will administer an annual survey every fall.