INDEX TO MINUTES
STATE BOARD OF EDUCATION
January 15, 2015

Roll Call – Committee of the Whole 1

Roll Call – State Board Meeting 1

Call to Order 1

Inspiration/Pledge of Allegiance 2

Recognition of Guests 2

Superintendent's Report 2

Chair's Report 2

Action Items 2-14

Consent Agenda Items 3-11

Executive Session Items 12-13

Policy and Rules Committee Items 14

Committee Minutes 14

Adjournment 14

Appendices

Appendix 1. Budget Committee Minutes

Appendix 2. District Flexibility and Charter Schools Committee Minutes

Appendix 3. Rules Committee Minutes

Appendix 4. Operations Committee Minutes

Appendix 5. Executive Session Minutes (attachments posted in Executive Session)

Appendix 6. CI – Grant Amendment - FY15 Special Education Allocation Amendment #1 – Adjustment to Charter School Allocations of Federal Funds for a New Charter School and those with Significant Enrollment Expansion

Appendix 7. FBO - $50,000.01 - $250,000 Recurring Contracts List for January, 2015

Appendix 8. SI- State Board Rule - 160-3-3-.04 PROFESSIONAL LEARNING (Initiation)

Appendix 9. CI - State Board Rule - 160-4-3-.13 YOUTH APPRENTICESHIP PROGRAMS (Initiation)

Appendix 10. CI - Curriculum - High School Mathematics Course Options (Approval to Post)

Appendix 11. EAP – State Board Rule 160-5-1-.08 – Class Size Waiver – Atlanta Public Schools)

Appendix 12. CI - Curriculum - English Language Arts and Mathematics Standards (Adoption)

MINUTES OF THE
STATE BOARD OF EDUCATION MEETING

Atlanta, Georgia
Ms. Helen Odom Rice, Chairperson

January 14-15, 2015
Mr. Richard Woods, Superintendent

On January 14, 2015, the State Board of Education assembled to consider its committee work, conduct its public hearings, and take action on official business.

Roll Call – Committee of the Whole
January 14, 2015

Ms. Helen Rice, Chair	Mr. Kevin Boyd	Dr. Mary Sue Murray
Ms. Lisa Kinnemore	Mr. Brian Burdette	Mr. Larry Winter
Mr. Mike Royal	Mr. Mike Long	
Ms. Barbara Hampton	Mr. Scott Johnson	

On January 14, 2015, at 1:00 p.m., by motion of Mr. Kevin Boyd and a second by Ms. Lisa Kinnemore, a unanimous affirmative vote was given to enter into Executive Session for the purpose of discussing waivers, appeals, legal and personnel matters.

At 2:30 p.m., the Budget Committee, District Flexibility and Charter Schools Committee, and Rules and Policy Committee met to consider State Board items to be presented to the Committee of the Whole.

At 4:00 p.m., the Operations Committee met to consider items for the January 15, 2015, State Board of Education meeting agenda.

Roll Call – State Board meeting
January 15, 2015

Ms. Helen Rice, Chair	Mr. Kevin Boyd	Dr. Mary Sue Murray
Ms. Lisa Kinnemore	Mr. Brian Burdette	Mr. Larry Winter
Mr. Mike Royal	Mr. Mike Long	
Ms. Barbara Hampton	Mr. Scott Johnson	

At 8:05 a.m., on January 15, 2015, Chair Helen Rice called the meeting to order.

At 8:10 a.m., by motion of Mr. Mike Royal, seconded by Mr. Kevin Boyd, a unanimous affirmative vote was given to adjourn from Executive Session.

Inspiration Pledge of Allegiance

Mr. Larry Winter provided the inspiration speaking on the importance of parent and family involvement in Georgia's schools and communities. He then led the Pledge of Allegiance.

Guest Recognition

Chair Rice recognized Mr. James Puckett from GSBA and Dr .Thomas R. Koballa, Jr., Dean of the School of Education, Georgia Southern University. She then introduced Superintendent Richard Woods and welcomed him to his first official State Board meeting as Georgia's School Superintendent.

Superintendent's Report

Superintendent Woods acknowledged the State Board members and spoke on the importance of effective communication with stakeholders, working together, and parent and family engagement.

Chair's Report

The State Board of Education received the following report from Chair Rice:

1. Teacher Education and Preparedness. Dr. Thomas J. Koballa, Jr., Dean of Education at Georgia Southern University was invited by Board Member Mike Royal to speak on teacher preparedness.
2. Computer Science courses. Dr. Martha Reichrath gave an update on the computer science course options.
3. Social Studies Curriculum Resources – Ms. Shaun Owen announced that the social studies curriculum resources posted for public comment will now be posted for teachers at GeorgiaStandards.org
4. GPEE Political Forum – Mr. Royal attended the GPEE conference and participated in a panel discussion on the Common Core Georgia Performance Standards.
5. State Schools – Chair Rice acknowledged Mr. Larry Winter for being a champion supporter of our State Schools.

ACTION ITEMS

(Please note that the items in their entirety, with backup material and attachments 1-5, can be found on the State Board of Education's e-Board website, January 15, 2015, State Board meeting.)

AGENDA

By motion of Mr. Kevin Boyd and a second by Ms. Lisa Kinnemore, a unanimous affirmative vote was made to approve the agenda for the January 15, 2015, State Board meeting.

CONSENT AGENDA

By motion of Mr. Kevin Boyd and a second by Mr. Scott Johnson, a unanimous affirmative vote was made to approve the Consent Agenda for the January 15, 2015, State Board meeting.

1. **CI – Grant Amendment - FY15 Special Education Allocation Amendment #1 – Adjustment to Charter School Allocations of Federal Funds for a New Charter School and those with Significant Enrollment Expansion**. The State Board of Education authorized the State School Superintendent to amend the grant with selected LEA charters for a cost not to exceed $142,953.00 in Federal Funds for the purpose of adjusting their grants due to a new charter school and others with significant expansion in enrollment in accordance with the Individuals with Disabilities Education Act (IDEA) regulations. (Appendix 6)

2. **FBO - $50,000.01 - $250,000 Recurring Contracts List for January, 2015**. The State Board of Education authorized the State School Superintendent to enter into contracts with the vendors specified in the Attachment entitled "$50,000.01 - $250,000 Recurring Contracts (January, 2015)" at a cost not to exceed the amounts provided in Appendix 7. (Appendix 7)

3. **AA – Contract Amendment - Race to the Top Technical Assistance for the Implementation of the Georgia Student Growth Model**. The State Board of Education authorized the State School Superintendent to extend the existing contract, at no additional cost, with the National Center for the Improvement of Educational Assessment (NCIEA) to June 30, 2015.

4. **GC - Contract - Smokey Powell Investment Fund**. The State Board of Education authorized the Chair of the State Board to execute the contract with the Georgia Foundation for Public Education (GFPE) and transfer an amount, not to exceed $4,000,000.00 of Smokey Powell Trust Funds to the GFPE for investment purposes.

5. **SI- State Board Rule - 160-3-3-.04 PROFESSIONAL LEARNING (Repeal)**. The State Board of Education authorized the State School Superintendent to initiate rulemaking procedures in accordance with the Georgia Administrative Procedure Act so as to repeal State Board of Education Rule 160-3-3-.04 Professional Learning.

6. **SI- State Board Rule - 160-3-3-.04 PROFESSIONAL LEARNING (Initiation)**. The State Board of Education authorized the State School Superintendent to initiate rulemaking procedures in accordance with the Georgia Administrative Procedure Act so as to create State Board of Education Rule 160-3-3-.04 Professional Learning. (Appendix 8)

7. **EAP- State Board Rule - Rule 160-5-1-.33 Investing in Educational Excellence (IE2): Local Education Agency (LEA) Contracts for Flexibility and Accountability to Improve Student Achievement (Initiation - Repeal)**. The State Board of Education postponed the initiation rulemaking procedures in accordance with the Georgia Administrative Procedure Act so as to repeal State Board of Education Rule 160-5-1-.33 Investing in Educational Excellence (IE2): Local Education Agency (LEA) Contracts for Flexibility and Accountability to Improve Student Achievement until February 19, 2015.

8. **EAP- State Board Rule - Rule 160-5-1-.33 Investing in Educational Excellence (IE2) and Status Quo School Systems (Initiation)**. The State Board of Education postponed the initiation of rulemaking procedures in accordance with the Georgia Administrative Procedure Act so as to create State Board of Education Rule 160-5-1-.33 Investing in Educational Excellence (IE2) and Status Quo School Systems until February 19, 2015.

9. **CI - State Board Rule - 160-4-3-.13 YOUTH APPRENTICESHIP PROGRAMS (Initiation)**. The State Board of Education authorized the State School Superintendent to initiate rulemaking procedures in accordance with the Georgia Administrative Procedure Act so as to amend State Board of Education Rule 160-4-3-.13 YOUTH APPRENTICESHIP PROGRAMS. (Appendix 9)

10. **CI - Curriculum - High School Mathematics Course Options (Approval to Post)**. The State Board of Education granted permission for the posting of the Georgia Performance Standards for Foundations of Algebra, Algebra I, and Geometry courses for public review and comment. (Appendix 10)

11. **EAP – State Board Rule 160-5-1-.08 – Class Size Waiver – Atlanta Public Schools**. The State Board of Education granted a waiver of the class size requirements as set forth in State Board of Education Rule 160-5-1-.08 Class Size for Atlanta Public Schools as requested in the locally adopted board resolution for the 2015-2016 school year. (Appendix 11)

12. **AA – Student Assessment – DeKalb County School District Waiver**. The State Board of Education (SBOE) approved a waiver of Rule 160-3-1-.07 TESTING PROGRAMS-STUDENT ASSESSMENT section (4)(f) for DeKalb County as requested and specified in the DeKalb County Board of Education resolution that accompanies this item.

13. **State Board Meeting Minutes - December 2014**. The State Board of Education approved the minutes of the December 11, 2014 State Board meeting.

14. **Executive Session Minutes - December 2014**. The State Board of Education approved the December 11, 2014 Executive Session minutes.

15. **Personnel**. The State Board of Education approved the January 2015 Personnel Report as presented.

16. **Case Number 2015-09. S.K. v. Houston County Board of Education**. The State Board of Education sustained the decisions of the local Board.

17. **Case Number 2015-10. F.S. v. Griffin-Spalding County Board of Education**. The State Board of Education sustained the decisions of the local Board.

18. **Case Number 2015-11. Tangela Hillman v. Walton County Board of Education**. The State Board of Education sustained the decisions of the local Board.

19. **EAP - Individual Student Waiver - Case #15-0892**. The State Board of Education (SBOE) approved case number 15-0892 requesting a waiver of prior year public school attendance requirement based on specific medical needs to gain eligibility to the Georgia Special Needs Scholarship Program.

20. **Waiver and Reconsideration Requests**. The State Board of Education approved or denied the waiver requests of the Georgia High School Graduation Tests (GHSGT) or the Georgia High School Writing Test (GHSWT) for the following cases:

Waiver requests of the Georgia High School Graduation Tests (GHSGT) for English Language Arts. Made the following decisions on the waiver requests of the Georgia High School Graduation Tests (GHSGT) for **English Language Arts** for the students listed below:

Case Number	SBOE Decision	Type of Waiver
15-0526 E	Deny	Disability
15-0613 E	Deny	Disability
15-0625	Approve	Disability
15-0631	Deny	Hardship
15-0634 E	Approve	Hardship
15-0640 E	Deny	Disability
15-0654 E	Deny	Hardship
15-0673 E	Deny	Hardship and Disability
15-0696 E	Deny	Hardship
15-0701 E	Deny	Hardship and Disability
15-0717 E	Deny	Disability
15-0718 E	Approve	Disability
15-0724 E	Deny	Hardship
15-0746 E	Deny	Hardship and Disability
15-0753 E	Deny	Disability
15-0776 E	Approve	Disability
15-0778 E	Approve	Hardship
15-0780 E	Approve	Hardship
15-0805 E	Deny	Hardship and Disability
15-0825 E	Deny	Hardship
15-0831	Approve	Hardship
15-0840 E	Approve	Disability
15-0958	Approve	Disability

Waiver requests of the Georgia High School Graduation Tests (GHSGT) for Mathematics. Made the following decisions on the waiver requests of the Georgia High School Graduation Tests (GHSGT) for **Mathematics** for the students listed below:

Case Number	SBOE Decision	Type of Waiver
15-0198 M	Deny	Hardship and Disability
15-0376 M	Deny	Hardship
15-0479 M	Deny	Hardship
15-0501	Approve	Hardship
15-0511 M	Deny	Hardship
15-0518 M	Deny	Hardship and Disability
15-0519	Deny	Hardship and Disability
15-0520 M	Deny	Disability
15-0526 M	Deny	Disability

Case Number	SBOE Decision	Type of Waiver
15-0537	Approve	Disability
15-0557 M	Deny	Hardship and Disability
15-0565 M	Deny	Hardship and Disability
15-0566 M	Approve	Hardship and Disability
15-0576 M	Deny	Disability
15-0592	Approve	Hardship and Disability
15-0601	Approve	Disability
15-0613 M	Deny	Disability
15-0618	Deny	Disability
15-0628	Approve	Hardship
15-0629 M	Approve	Disability
15-0630	Approve	Disability
15-0632	Approve	Hardship
15-0633	Approve	Hardship
15-0637 M	Approve	Hardship and Disability
15-0638 M	Deny	Hardship and Disability
15-0640 M	Deny	Disability
15-0645	Approve	Hardship and Disability
15-0648	Approve	Hardship
15-0654 M	Deny	Hardship
15-0657	Deny	Hardship
15-0659 M	Approve	Disability
15-0660 M	Deny	Disability
15-0662	Deny	Hardship and Disability
15-0668 M	Approve	Disability
15-0670	Deny	Hardship and Disability
15-0671	Deny	Hardship and Disability
15-0673 M	Deny	Hardship and Disability
15-0674	Deny	Hardship
15-0679 M	Approve	Hardship
15-0680	Approve	Hardship
15-0687	Approve	Hardship
15-0689	Approve	Hardship
15-0690 M	Deny	Hardship and Disability
15-0693	Approve	Hardship
15-0695 M	Deny	Hardship
15-0696 M	Deny	Hardship
15-0697	Approve	Hardship
15-0699	Approve	Disability
15-0701 M	Deny	Hardship and Disability
15-0702	Deny	Hardship
15-0704	Approve	Hardship
15-0706	Deny	Hardship and Disability
15-0708	Approve	Hardship
15-0709	Approve	Hardship
15-0717 M	Deny	Disability

Case Number	SBOE Decision	Type of Waiver
15-0718 M	Deny	Disability
15-0719	Approve	Disability
15-0720	Deny	Disability
15-0722 M	Deny	Hardship
15-0723 M	Deny	Hardship
15-0728	Deny	Hardship
15-0730	Deny	Hardship and Disability
15-0731	Approve	Disability
15-0732	Approve	Hardship
15-0733	Approve	Hardship
15-0734 M	Approve	Hardship
15-0743	Approve	Hardship and Disability
15-0753 M	Deny	Disability
15-0758 M	Deny	Disability
15-0760	Approve	Hardship
15-0762	Approve	Hardship and Disability
15-0763	Deny	Disability
15-0772	Deny	Hardship
15-0774	Approve	Disability
15-0775 M	Deny	Hardship
15-0776 M	Deny	Disability
15-0778 M	Deny	Hardship
15-0783	Deny	Hardship
15-0794	Deny	Hardship
15-0804	Approve	Hardship
15-0805 M	Deny	Hardship and Disability
15-0806	Approve	Hardship
15-0816	Approve	Hardship
15-0823	Approve	Hardship
15-0825 M	Deny	Hardship
15-0827	Approve	Hardship
15-0832	Approve	Hardship
15-0835	Deny	Hardship
15-0840 M	Approve	Disability
15-0845	Deny	Disability
15-0902	Approve	Hardship

Waiver requests of the Georgia High School Graduation Tests (GHSGT) for Science. Made the following decisions on the waiver requests of the Georgia High School Graduation Tests (GHSGT) for **Science** for the students listed below:

Case Number	SBOE Decision	Type of Waiver
15-0198 SC	Approve	Hardship and Disability
15-0479 SC	Deny	Hardship
15-0554 SC	Approve	Hardship and Disability
15-0562 SC	Deny	Hardship
15-0583	Approve	Hardship

Case Number	SBOE Decision	Type of Waiver
15-0608	Approve	Disability
15-0636 SC	Deny	Hardship
15-0641	Approve	Hardship and Disability
15-0652 SC	Deny	Hardship
15-0654 SC	Deny	Hardship
15-0668 SC	Approve	Disability
15-0673 SC	Approve	Hardship and Disability
15-0678	Approve	Hardship
15-0690 SC	Deny	Hardship and Disability
15-0715 SC	Deny	Hardship
15-0717 SC	Deny	Disability
15-0721 SC	Approve	Hardship
15-0723 SC	Deny	Hardship
15-0724 SC	Deny	Hardship
15-0736 SC	Approve	Hardship
15-0750	Approve	Hardship
15-0753 SC	Deny	Disability
15-0758 SC	Deny	Disability
15-0780 SC	Approve	Hardship
15-0793 SC	Deny	Hardship
15-0801	Deny	Hardship
15-0803	Approve	Hardship
15-0805 SC	Deny	Hardship and Disability
15-0810	Approve	Hardship
15-0824	Approve	Hardship
15-0825 SC	Deny	Hardship
15-0999 SC	Approve	Hardship

Waiver requests of the Georgia High School Graduation Tests (GHSGT) for Social Studies. Made the following decisions on the waiver requests of the Georgia High School Graduation Tests (GHSGT) for **Social Studies** for the students listed below:

Case Number	SBOE Decision	Type of Waiver
15-0307	Deny	Disability
15-0376 SS	Deny	Hardship
15-0479 SS	Deny	Hardship
15-0511 SS	Deny	Hardship
15-0520 SS	Deny	Disability
15-0526 SS	Deny	Disability
15-0548	Approve	Disability
15-0554 SS	Approve	Hardship and Disability
15-0557 SS	Deny	Hardship and Disability
15-0562 SS	Deny	Hardship
15-0566 SS	Deny	Hardship and Disability
15-0576 SS	Approve	Disability
15-0578	Approve	Hardship and Disability
15-0594	Approve	Disability

Case Number	SBOE Decision	Type of Waiver
15-0613 SS	Approve	Disability
15-0619	Deny	Disability
15-0620	Deny	Disability
15-0636 SS	Approve	Hardship
15-0637 SS	Deny	Hardship and Disability
15-0638 SS	Deny	Hardship and Disability
15-0640 SS	Deny	Disability
15-0647	Approve	Hardship
15-0651 SS	Approve	Hardship
15-0653	Deny	Hardship
15-0655	Approve	Disability
15-0656	Deny	Disability
15-0658	Deny	Disability
15-0659 SS	Deny	Disability
15-0660 SS	Deny	Disability
15-0664 SS	Approve	Hardship
15-0672	Deny	Hardship
15-0673 SS	Deny	Hardship and Disability
15-0676	Deny	Disability
15-0679 SS	Approve	Hardship
15-0681	Approve	Hardship
15-0682	Approve	Hardship
15-0684	Deny	Hardship
15-0692	Approve	Hardship
15-0695 SS	Approve	Hardship
15-0696 SS	Deny	Hardship
15-0698	Deny	Disability
15-0700	Approve	Disability
15-0701 SS	Deny	Hardship and Disability
15-0710	Deny	Hardship and Disability
15-0717 SS	Deny	Disability
15-0718 SS	Deny	Disability
15-0721 SS	Approve	Hardship
15-0722 SS	Deny	Hardship
15-0724 SS	Approve	Hardship
15-0725	Deny	Hardship
15-0735	Approve	Hardship
15-0736 SS	Approve	Hardship
15-0738	Approve	Hardship
15-0741	Deny	Hardship
15-0742	Deny	Hardship
15-0746 SS	Deny	Hardship and Disability
15-0751	Deny	Hardship
15-0753 SS	Deny	Disability
15-0754 SS	Approve	Hardship
15-0758 SS	Deny	Disability

Case Number	SBOE Decision	Type of Waiver
15-0761	Deny	Hardship
15-0767	Approve	Disability
15-0768	Approve	Hardship
15-0771	Deny	Hardship
15-0775 SS	Deny	Hardship
15-0779	Deny	Hardship
15-0780 SS	Approve	Hardship
15-0781	Approve	Hardship
15-0786	Deny	Hardship
15-0788	Deny	Hardship
15-0793 SS	Approve	Hardship
15-0805 SS	Deny	Hardship and Disability
15-0809 SS	Deny	Hardship and Disability
15-0813	Deny	Hardship
15-0825 SS	Deny	Hardship
15-0840 SS	Approve	Disability
15-0967	Approve	Hardship
15-1075	Approve	Hardship

Waiver requests of the Georgia High School Writing Tests (GHSWT). Made the following decisions on the waiver requests of the **Georgia High School Writing Tests** (GHSWT) for the students listed below:

Case Number	Recommendation	Type of Waiver
15-0518 W	Approve	Hardship and Disability
15-0526 W	Deny	Disability
15-0582 W	Approve	Disability
15-0640 W	Deny	Disability
15-0651 W	Deny	Hardship
15-0717 W	Approve	Disability
15-0724 W	Deny	Hardship
15-0787	Approve	Hardship
15-0825 W	Deny	Hardship
15-0830	Deny	Hardship
15-0840 W	Approve	Disability

Waiver Reconsideration Requests of the Georgia High School Graduation Tests (GHSGT) and/or the Georgia High School Writing Test (GHSWT). Made the following decisions on the **reconsidered waiver** requests of the Georgia High School Graduation Tests (GHSGT) and/or the Georgia High School Writing Test (GHSWT) for the students listed below:

Case Number	SBOE Decision	Type of Waiver	Subject
15-0238 SS	Deny	Hardship	Social Studies
15-0547	Approve	Disability	Mathematics
15-0558	Approve	Disability	Mathematics
15-0591	Approve	Disability	Mathematics
15-0617	Deny	Hardship	Writing
15-0621	Deny	Hardship	Social Studies

Case Number	SBOE Decision	Type of Waiver	Subject
15-0624	Approve	Hardship and Disability	Mathematics
15-0626	Approve	Hardship and Disability	English/Language Arts
15-0635	Deny	Hardship	Mathematics
15-0686	Deny	Hardship and Disability	Mathematics
15-0688	Approve	Hardship	Mathematics
15-0703	Deny	Hardship	Mathematics
15-0711	Approve	Disability	Mathematics
15-0713	Approve	Hardship	Mathematics
15-0714 M	Deny	Disability	Mathematics
15-0714 SS	Deny	Disability	Social Studies
15-0716	Approve	Hardship and Disability	Mathematics
15-0739	Approve	Hardship	Mathematics
15-0755	Deny	Hardship and Disability	Mathematics
15-0756 M	Deny	Hardship and Disability	Mathematics
15-0756 SS	Approve	Hardship and Disability	Social Studies
15-0757	Deny	Disability	Mathematics
15-0764	Approve	Disability	Social Studies
15-0766	Approve	Hardship and Disability	Mathematics
15-0769 M	Approve	Disability	Mathematics
15-0769 SS	Deny	Disability	Social Studies
15-0770	Approve	Disability	Mathematics
15-0773	Deny	Hardship	Mathematics
15-0784	Approve	Hardship and Disability	Mathematics
15-0785 M	Deny	Disability	Mathematics
15-0785 W	Deny	Disability	Writing
15-0821	Approve	Hardship and Disability	Mathematics
15-0829	Approve	Disability	Social Studies

21. **Variance Requests of the Georgia High School Graduation Tests or the Georgia High School Writing Test.** The State Board of Education approved the request for a variance of the identified portions(s) of the Georgia High School Graduation Tests or the Georgia High School Writing Test for the following cases:

Social Studies: N/A

Science: N/A

Mathematics: N/A

Writing: N/A

English/Language Arts: N/A

EXECUTIVE SESSION ACTION

1. Waivers. **To remain consistent with the State Board of Education's waiver voting practice, Dr. Murray made the motion to approve all student waivers and Mr. Mike Long made the second to approve all waivers in order to expedite the process.**

Made the following decisions on the waiver requests of the Georgia High School Graduation Tests (GHSGT) for **English Language Arts** for the students listed below:

Case Number	Type of Waiver	Yes/No Vote	Pass/Fail
15-0383 E	Hardship	9/1	Pass
15-0397 E	Hardship	5/5	Fail
15-0433 E	Hardship and Disability	7/3	Pass
15-0809 E	Hardship and Disability	10/0	Pass

Made the following decisions on the waiver requests of the Georgia High School Graduation Tests (GHSGT) for **Mathematics** for the students listed below:

Case Number	Type of Waiver	Yes/No Vote	Pass/Fail
15-0398	Hardship	7/3	Pass
15-0433 M	Hardship and Disability	7/3	Pass
15-0541	Disability	8/2	Pass
15-0546	Disability	8/2	Pass
15-0582 M	Disability	8/2	Pass
15-0634 M	Hardship	7/3	Pass
15-0643	Hardship and Disability	10/0	Pass
15-0652 M	Hardship	9/1	Pass
15-0664 M	Hardship	9/1	Pass
15-0745 M	Hardship	9/1	Pass
15-0793 M	Hardship	8/2	Pass
15-0828	Hardship	6/4	Pass

Made the following decisions on the waiver requests of the Georgia High School Graduation Tests (GHSGT) for **Science** for the students listed below:

Case Number	Type of Waiver	Yes/No Vote	Pass/Fail
15-0383 SC	Hardship	9/1	Pass
15-0452 SC	Hardship and Disability	6/4	Pass
15-0513	Hardship	9/1	Pass
15-0534	Hardship	10/0	Pass
15-0640 SC	Disability	8/2	Pass
15-0651 SC	Hardship	9/1	Pass
15-0679 SC	Hardship	8/2	Pass
15-0685	Hardship	9/1	Pass
15-0691	Hardship	10/0	Pass
15-0734 SC	Hardship	8/2	Pass
15-0744	Hardship	8/2	Pass

Case Number	Type of Waiver	Yes/No Vote	Pass/Fail
15-0754 SC	Hardship	10/0	Pass
15-0822	Hardship	9/1	Pass

Made the following decisions on the waiver requests of the Georgia High School Graduation Tests (GHSGT) for **Social Studies** for the students listed below:

Case Number	Type of Waiver	Yes/No Vote	Pass/Fail
15-0198 SS	Hardship and Disability	10/0	Pass
15-0383 SS	Hardship	9/1	Pass
15-0397 SS	Hardship	4/6	Fail
15-0452 SS	Hardship and Disability	10/0	Pass
15-0565 SS	Hardship and Disability	10/0	Pass
15-0581	Disability	10/0	Pass
15-0629 SS	Disability	8/2	Pass
15-0649	Hardship	9/1	Pass
15-0669	Hardship	8/2	Pass
15-0715 SS	Hardship	9/1	Pass
15-0737	Hardship	10/0	Pass
15-0745 SS	Hardship	9/1	Pass
15-0749	Hardship	8/2	Pass
15-0999 SS	Hardship	8/2	Pass

Made the following decisions on the waiver requests of the Georgia High School Writing Tests (GHSWT) for **Writing** for the students listed below:

Case Number	Type of Waiver	Yes/No Vote	Pass/Fail
15-0652 W	Hardship	7/3	Pass
15-0791	Hardship	8/2	Pass
15-0805 W	Hardship and Disability	7/3	Pass

Made the following decisions on the **reconsidered waiver requests** of the Georgia High School Graduation Tests (GHSGT) or the Georgia High School Writing Test (GHSWT) for the students listed below:

Case Number	Type of Waiver	Subject	Yes/No Vote	Pass/Fail
15-0238 E	Hardship	English/Language Arts	8/2	Pass
15-0623	Hardship	Social Studies	10/0	Pass
15-0729	Hardship	Science	10/0	Pass
15-1000	Hardship and Disability	Social Studies	10/0	Pass

POLICY AND RULES COMMITTEE

1. **CI - Curriculum - English Language Arts and Mathematics Standards (Adoption).** Superintendent Richard Woods recommended that the State Board of Education adopt the revised Common Core Georgia Performance Standards (CCGPS) for English Language Arts and Mathematics. Following much discussion, motion was made by Mr. Scott Johnson and seconded by Dr. Mary Sue Murray, and the recommendation was unanimously adopted by those present by a 10/0 vote. (Appendix 12)

COMMITTEE MINUTES

The minutes of the Budget Committee, Rules Committee, District Flexibility and Charter Schools Committee, Operations Committee, and Executive Session meetings are located in the Appendices as 1-5.

ADJOURNMENT

At 10:30 a.m., by motion of Mr. Scott Johnson and a second by Mr. Mike Long, a unanimous affirmative vote was given to adjourn the State Board meeting.

The next meeting of the State Board of Education is scheduled for Thursday, February 19, at 10:00 a.m.

Respectfully submitted by:
Debbie Caputo
Recording Secretary

STATE BOARD BUDGET COMMITTEE MEETING
GEORGIA DEPARTMENT OF EDUCATION
January 14, 2014– 2:30p.m

Attending: Barbara Hampton (chair), Mike Royal, Larry Winter

Action Items

1. CI – Grant Amendment – FY15 Special Education Allocation Amendment #1 – Adjustment to Charter School Allocations of Federal Funds for a New Charter School and those with Significant Enrollment Expansion
    - Debbie Gay presented
2. FBO - $50,000.01 - $250,000 Recurring Contracts List for January, 2015
    - Reggie Lampkin Presented
3. AA- Contract Amendment - Race to the Top Technical Assistance for the Implementation of the Georgia Student Growth Model
    - Allison Timberlake
4. GC - Contract – Smokey Powell Investment fund
    - Jennifer Hackemeyer Presented – agreed to change amount not to exceed 4 million.
    - New language added to "disperse funds to the Department" instead of annual funds.

Georgia Department of Education

Richard Woods, Georgia's School Superintendent
"Educating Georgia's Future"

STATE BOARD
DISTRICT FLEXIBILITY AND CHARTER SCHOOLS COMMITTEE
MEETING

January 14, 2015 • 2:30 P.M.

Minutes

1. The meeting was called to order by Mr. Burdette at 2:32 P.M.

2. State Board of Education District Flexibility and Charter Schools Committee Chair Brian Burdette and members Scott Johnson, Lisa Kinnemore, and Kevin Boyd were present.

3. Georgia Department of Education staff present included Associate Superintendent for Policy, Charter Schools, District Flexibility, and Governmental Affairs Louis Erste and Associate Superintendent for School Improvement Barbara Lunsford, who joined the meeting in progress after her part in the Rules Committee was completed.
    - State Charter Schools Commission General Counsel Gregg Stevens was also present.
    - Robert Morales, CFO for the Fulton County Schools, and Sam Rauschenberg, Deputy Director of the Governor's Office of Student Achievement, were present in the audience.
    - Five members of the general public attended the meeting, including charter and traditional school representatives and advocates.

4. Mr. Burdette welcomed the Committee, staff and general public, and at Mr. Burdette's request, Mr. Boyd read the Georgia District Flexibility and Charter Schools Mission Statement.

5. At Mr. Burdette's request, Mr. Stevens provided a State Charter Schools Commission update. Discussion ensued.

6. At Mr. Burdette's request, Mr. Erste presented the Department's 2015 Petition Pipeline and System Flexibility pipeline reports. Discussion ensued.

7. At Mr. Burdette's request, Dr. Lunsford spoke on the Charter/IE2 Federal Programs Collaboration begun in response to Mr. Burdette's request that the Charter Advisory

Committee add to its bi-monthly agenda issues that blocked charter systems from fully utilizing the flexibility they are provided by law and contract. Dr. Lunsford spoke about her participation in the CAC's December 2014 meeting and the follow-up meetings with statewide federal programs staff, school districts, and others, as well as the next steps now underway. Discussion ensued.

8. At Mr. Burdette's request, Mr. Erste presented information on the Department's proposed new IE2 and Status Quo Rule and on the Atlanta Public Schools Class Size Waiver. Discussion ensued.

9. At Mr. Burdette's request, Mr. Erste presented the Charter Schools and Charter Systems 2014 Annual Report shared with the General Assembly on December 31, 2014. Discussion ensued.

10. Mr. Burdette adjourned the meeting at 3:40 P.M.

State Board of Education Rules Committee
20th Floor Conference Room, 2056 Twin Towers East
January 14, 2015, 2:30 P.M.

Members present: Dr. Mary Sue Murray, Mrs. Helen Rice, Mr. Michael Long, Mr. Michael Royal, Mr. Larry Winter, Mrs. Barbara Hampton

AGENDA

I. **Action Items**

1. **(Initiate Repeal) State Board Rule 160-3-3-.04 Professional Learning**

2. **(Initiate) State Board Rule 160-3-3-.04 Professional Learning**
   a. The 2012 General Assembly passed House Bill 184, which was codified as O.C.G.A. §20-2-2011, requiring principals, school district leaders, and state leaders to ensure that teachers have opportunities for professional learning that are consistent with research findings and best practices.
   b. The bill directed the formation of a Professional Learning Task Force. The Department worked with several entities specified in the bill to formulate revisions to State Board rule and Professional Standards Commission rule.
   c. The rule initiation and adoption is aligned with a new certification requirement that will be adopted by the Professional Standards Commission.
   d. The proposed new rule includes the following:
      1. States that professional learning is an ongoing process,
      2. Eliminates the requirement that local districts have a Professional Learning Committee,
      3. Designates responsibility for providing professional learning to principals, districts, and state leaders,
      4. Updates and adds definitions, and
      5. Updates allowable uses of professional learning funds.
   e. The rule was last adopted in 2003.
   f. It is recommended that the State Board initiate for 30 days a proposed new State Board Rule 160-3-3-.04 Professional Learning and repeal the current rule.

   Dr. Garry McGiboney presented this item. The Committee discussed the importance of professional learning in providing instruction and the importance of reflecting certification changes. This item will be placed on the Consent Agenda.

3. **(Initiate Repeal) State Board of Education Rule 160-5-1-.33 Investing in Educational Excellence (IE2)** postponed to February

4. **(Initiate) State Board of Education Rule 160-5-1-.33 Investing in Educational Excellence (IE2)** postponed to February
    a. The new rule clarifies the terms and conditions of contracts, including the application document and timeline for document submissions.
    b. The new rule removes definitions which are not used in the requirements section and provides additional edification for definitions that are included in the requirements section.
    c. The new rule establishes a common metric to be used in establishing benchmarks and setting school-level assessment goals and targets.
    d. The new rule includes conditions and circumstances for granting waivers to Status Quo school systems after June 30, 2015.
    e. The new rule includes conditions and circumstances for granting waivers to systems who have submitted a letter of intent for flexibility by June 30, 2015, but do not have an executed contract in place by that date.
    f. The rule was last adopted on November 4, 2009.
    g. It is recommended that the State Board initiate for 30 days a proposed new State Board Rule 160-5-1-.33 IE2 and repeal the current rule.

    Dr. Garry McGiboney presented this item. Dr. McGiboney explained that this item would be removed from the January agenda but would be presented to the Committee for initiation at the February meeting.

5. **(Initiate) State Board Rule 160-4-3-.13 Youth Apprenticeship Programs**
    a. The proposed amended rule will include provisions from HB 766 which passed in 2014.
    b. The proposed amended rule modifies and revises definitions to be consistent with the language in HB 766, such as changing "Work Based Learning" in the existing rule to "Training Plan" in the proposed amended rule.
    c. The proposed amended rule will remove the local education agency requirement to have a full-time youth apprenticeship coordinator.
    d. The proposed amended rule establishes a minimum of 720 hours of on-the-job skill training in the Youth Apprenticeship Program to be awarded a Completer Certificate.
    e. The rule was last adopted on April 13, 1995.
    f. It is recommended that the State Board initiate for 30 days the proposed amendment of State Board Rule 160-4-3-.13 Youth Apprenticeship Programs.

    Dr. Garry McGiboney presented this item. The Committee discussed the need to remain current in the terminology and requirements in this rule. The Committee discussed the importance of creating and maintaining effective partnerships with community and business stakeholders. This item will be placed on the Consent Agenda.

6. **(Adoption) State Board English Language Arts and Mathematics Standards**
    a. The Common Core Georgia Performance Standards in English Language Arts and Mathematics have been revised based on a formal review and evaluation process as directed by the Governor.
    b. The University System of Georgia provided survey results and recommendations for revisions to the standards to the State Board of Education on September 24, 2014.
    c. A working committee representing K-12 Georgia public school teachers, post-secondary staff, parents, and instructional leaders from across the state made revisions to the standards based on public feedback and recommendations from survey results for standards with less than 90% approval.
    d. An Academic Review Committee reviewed and finalized the draft revised standards for presentation to the State Board of Education for permission to post for public comment and review (posted at November 12 Called State Board Meeting).
    e. It is recommended that the State Board of Education adopt the Georgia Performance Standards for English Language Arts and Mathematics.

    Dr. Garry McGiboney presented this item. The Committee discussed the process that was used to review the standards and stakeholders' feedback and input into the proposed revised standards. This item will not be placed on the Consent Agenda, but will be voted on at the January Board Meeting. The Rules Committee will recommend approval of this item.

7. **(Posting) Courses in Foundations of Algebra, Algebra I, and Geometry**
    a. The Foundations of Algebra course has been created to meet the academic needs of ninth graders who struggle significantly with middle grades mathematics.
    b. Students eligible to enroll in the Foundations of Algebra course will be identified based on K-8 data analysis.
    c. Foundations of Algebra course completers will be able to earn one core unit of credit toward graduation requirements.
    d. High school mathematics standards for the current Coordinate Algebra and Analytic Geometry courses have been resorted to create a more discrete mathematics course sequence with Algebra I and Geometry.
    e. It is recommended that the State Board of Education grant permission for the posting of the following courses: Foundations of Algebra, Algebra I, and Geometry.

Dr. Garry McGiboney presented this item. The Committee discussed the relationship between students' passing mathematics courses and staying on track for graduation. This item will be placed on the Consent Agenda.

8. **State Board Rule 160-5-1-.08 - Class Size Waiver – Atlanta Public Schools**
    a. The rule sets forth class size requirements and restrictions.

b. Atlanta Public Schools is requesting approval of its class size waiver for the 2015-2016 school year.
c. Atlanta Public Schools is eligible to request a class size waiver, as provided in State Board Rule 160-4-9-.07 Charter Systems, because the district submitted a letter of intent to become a Charter System with a supporting resolution from the Atlanta Public Schools Board of Education.
d. Atlanta Public Schools has 100 schools and approximately 49,000 students.
e. Atlanta Public Schools superintendent is Dr. Meria Carstarphen.
f. It is recommended that the waiver be approved for the 2015-2016 school year, provided the school district continues to meet all federal and state accountability requirements.

Dr. Garry McGiboney presented this item. The Committee discussed the conditions under which the school district would be recommended for a class size waiver as the district transitions to operating under a charter contract. This item will be placed on the Consent Agenda.

9. State Board Rule 160-3-1-.7 Testing Programs – Student Assessment – System Waiver – DeKalb County School System

a. The rule sets forth student assessment requirements and assessment administration requirements and restrictions.
b. DeKalb County School System is requesting a waiver of the Testing Programs-Student Assessment Rule 160-3-1-.07 (4)(f) for 46 students attending the Gateway to College Charter School in the DeKalb County School System for the 2013-2014 school year.
c. Forty-six students enrolled at the Gateway to College Charter School were administered one or more state-mandated assessments by an educator whose teaching certificate had expired.
d. The rule expressly states that "all assessments shall be administered by Georgia-certified educators".
e. DeKalb County School System reported the irregularity to the Georgia Department of Education (Department) October, 2014.
f. The students involved have matriculated, exited school, or received a diploma.
g. The Department has determined that the assessments were administered appropriately, so there are no concerns about the integrity of the assessment administration.
h. It is recommended that the waiver of section (4)(f) of State Board Rule 160-3-1-.07 be approved for only the 46 students specified in the DeKalb County School System Board of Education resolution and subsequent waiver request.

Dr. Garry McGiboney presented this item. The Committee discussed the required integrity for administering all assessments and the need for districts to report all irregularities. This item will be placed on the Consent Agenda.

II. Discussion Items

1. **State Board Rule – 160-4-2-.20 List of State-Funded K-8 Subjects and 9-12 Courses**
   a. The amended rule adds math courses, K-12 course numbers to allow local flexibility, K-5 STEM Exploratory courses, K-5 Career Awareness courses, K-5 Social Skills courses, Tools for College Success courses, middle school transition courses, and recently developed Pathway courses.
   b. The rule will be initiated at the February, 2015 State Board meeting and adopted at the April, 2015, State Board meeting.
   c. The rule was last adopted in 2013.

2. **Federal Update**

Over 100 Superintendents from Across the Nation Attend White House Digital Learning Conference. On November 19th, over 100 superintendents from all over the nation were selected by the U.S. Department of Education to attend a conference in Washington, D.C. concerning the transition to digital learning, titled "ConnectED to the Future". Furthermore, ConnectED to the Future aims to ride the momentum generated by the President's ConnectED Initiative—a plan to connect 99% of students to high-speed internet, in order to bring about the technology needed to transform learning. It is noteworthy to also mention the launching of the Future Ready Pledge, this past fall, where superintendents nationwide pledged a commitment to lead their districts to innovations in teaching and utilizing technology; and to share best practices in partnership with other school districts. The following district superintendents from Georgia were in attendance: Phillip Lanoue (Clarke County); Luvenia Jackson (Clayton County); and Will Schofield (Hall County).

Source: http://www.ed.gov/news/press-releases/more-100-school-leaders-chosen-attend-white-house-conference-digital-learning

Omnibus Appropriations Bill Signed Into Law For Fiscal Year 2015. Recently, H.R. 83, the "Consolidated and Further Continuing Appropriations Act, 2015," was signed into law. The new law will provide full year appropriations to most federal agencies including the Title I Program and the Individuals with Disabilities Act through September 30, 2015. More specifically, under this bill, both Special Education and Title I grants will receive an additional twenty five million dollars. Both the Investing in Innovation (i3) Fund and the Teacher Incentive Fund will see a decrease in funding, to the tune of $21.6 million and $58.8 million, respectively.

Source: http://www2.ed.gov/news/newsletters/edreview/2014/1219.html

State Board of Education Operations Committee

Minutes

January 14, 2015

Ms. Helen Rice, Chair	Mr. Kevin Boyd	Dr. Mary Sue Murray
Ms. Lisa Kinnemore	Mr. Brian Burdette	Mr. Larry Winter
Mr. Mike Royal	Mr. Mike Long	Mr. Scott Johnson
Ms. Barbara Hampton	Ms. Jennifer Hackemeyer	Dr. Garry McGiboney
Mr. Richard Woods		

I. Committee Agenda Items

a. ***Budget Committee Recommendations*** – Requested that **Items #1-4** under Budget Committee Items be moved as action items to the Committee of the Whole agenda.

b. ***Charter Committee Recommendations*** – No Items at this time.

c. ***Rules Committee Recommendations*** - Requested that **Items #1, 2, 5, 7-9** under Rules Committee Items be moved as action items to the Committee of the Whole agenda. It was recommended that **Item #6** under Rules Committee be placed under the Rules Committee Item for separate vote. Also, **Items 3 & 4** under Rules Committee be placed under Committee of the Whole as items ***postponed*** for further review.

d. Superintendent's Report – No Report was given, Superintendent Woods addressed the Board

e. Chair's Report
   1. Teacher Preparedness – Dean of Education, Georgia Southern University
   2. GPEE Political Forum – Mike Royal
   3. Computer Science Courses – Martha Reichrath
   4. Social Studies Curricular Resources – Shaun Owen

State Board of Education
Executive Session Minutes
January 14, 2015
1:00 p.m.

Attendees

Ms. Helen Rice, Chair	Mr. Kevin Boyd	Dr. Mary Sue Murray
Ms. Lisa Kinnemore	Mr. Brian Burdette	Mr. Larry Winter
Ms. Barbara Hampton	Mr. Mike Long	Mr. Scott Johnson
Mr. Mike Royal	Mr. Richard Woods	Ms. Jennifer Hackemeyer

Agenda

1. **Student Waivers Discussion**. Dr. Garry McGiboney presented the GHSGT Waivers and Reconsiderations pulled for discussion. Refer to the list of waivers for vote in Attachment A.

2. **Legal Appeals Discussion**. Jennifer Hackemeyer briefed the committee members on certain pending litigation and appeals. Refer to Legal Memorandum dated January 15, 2015 for a summary of December legal matters. (Attachment B)

3. **Personnel**. Denise Peterson presented the personnel action items to the Committee for discussion. (Attachment C)

Adjournment

The Executive Session adjourned at 2:30 p.m.

Amendment #1 - LEA Charter Allocations

District #	School Systems and SOPs	FY2015 Total IDEA 611 Grant Allocation	IDEA 619 Preschool Grant Allocation	Original FY2015 Funds Approved	Amendment #1 IDEA 611 Grant	FY2015 Amended Total
7820108	Mtn. Ed Center-Added 7/07	$ 146,718	$ -	$ 146,718	$ 35,923	$ 182,641
7820110	Odyssey-Added 7/05	$ 48,843	$ -	$ 48,843	$ -	$ 48,843
	Georgia Cyber Academy 7/14	$ 1,367,223	$ 13,946	$ 1,381,169	$ -	$ 1,381,169
7820119	Provost Academy 7/12	$ 214,295	$ -	$ 214,295	$ -	$ 214,295
7820212	Cherokee Prep Academy 7/11	$ 144,552	$ 1,136	$ 145,688	$ -	$ 145,688
7820412	Georgia Connections 7/11	$ 335,631	$ 3,160	$ 338,791	$ 85,838	$ 424,629
7820512	Ivy Prep. for Boys 7/11	$ 46,479	$ 401	$ 46,880	$ -	$ 46,880
7820612	Ivy Prep. for Girls 7/11	$ 43,824	$ -	$ 43,824	$ -	$ 43,824
7830103	CCAT-7/03	$ 27,775	$ -	$ 27,775	$ -	$ 27,775
7830110	Ivy Prep Academy School 7/12	$ 59,813	$ -	$ 59,813	$ -	$ 59,813
7830210	Pataula Academy 7/10	$ 57,082	$ 502	$ 57,584	$ -	$ 57,584
7830310	Fulton Academy 7/10	$ 35,791	$ -	$ 35,791	$ -	$ 35,791
7830410	Atlanta Heights 7/10	$ 94,895	$ 2,330	$ 97,225	$ -	$ 97,225
7830610	Coweta Academy 7/10	$ 65,366	$ 2,041	$ 67,407	$ -	$ 67,407
	Utopian Academy 7/14	$ -	$ -	$ -	$ 21,192	$ 21,192
890	Dept. of Corrections	$ 73,566	$ -	$ 73,566	$ -	$ 73,566
891	Dept. of Juvenile Justice	$ 717,983	$ -	$ 717,983	$ -	$ 717,983
896	DHR - GA Voc Rehab Ag. 7/13	$ 56,589	$ -	$ 56,589	$ -	$ 56,589
	Amount held for New/Expanding Charters (approved but not allocated balance)	$ 300,000	$ -	$ 300,000	$ (142,953)	$ 157,047
	Total	$ 3,836,425	$ 23,516	$ 3,859,941	$ -	$ 3,859,941

Schools with Changes

All Rights Reserved

Appendix 6

$50,000.01-$250,000 Recurring Contract (January 2015)

1

Vendor	Term	Program Manager	Cost	Objective	Funding Source	Renewal # or number of years recurring	Program Name	Changes from Previous Year
Noble Macon Op Co LLC DBA Macon Marriott City Center Hotel	January 1, 2015 December 31, 2015	Joann Hooper and Paulette Richmond	$245,000.00	To provide meeting space and related services for the Division onf School and District Effectiveness activities. The following activities will take place at the facilities through December 31, 2015. • Instructional Leadership Academies • School Improvement/RESA Professional Learning	State, Federal, Other	Recurring	Division of School and District Effectiveness	None

Last Year Performance Criteria and Results:

Satisfactory performance by the Macon Marriott City Center Hotel and Centreplex was assessed based on terms outlined in the open agency contract and detailed in the banquet events orders for each meeting. Onsite Marriott event staff were assigned to work with the GaDOE planning committee throughout the duration of the meetings tc ensure all the criteria were met satisfactorily. Payment was not made until all deliverables had been met.We received satisfactory services from the Macon Marriott City Center Hotel and Centreplex.

Appendix 7

Georgia Department of Education
State Board Rule 160-3-3-.04 PROFESSIONAL LEARNING
Side by Side

160-3-3-.04 PROFESSIONAL LEARNING Adopted in 2003	**160-3-3-.04 PROFESSIONAL LEARNING Proposed 2015**
Language refers to professional learning as an event or activity	Language refers to professional learning as an on-going process
Requires Professional Advisory Committee	Eliminates requirement of Professional Learning Committee
	Includes language of O. C. G. A. §20-2-201.1 (SB 184) Designates responsibility for providing professional learning to the principal, district, and state leaders.
	Updates definitions to reflect current language and requirements.
	Updates allowable use of professional learning funds.

Georgia Department of Education

State Board of Education Rule: 160-4-3-.13 YOUTH APPRENTICESHIP PROGRAMS.

Summary of Changes	
Current Rule Language	**Recommended Amended Rule Language**
(1) DEFINITIONS. (a) Certificate of Occupational Skills - an industry-recognized credential issued by the Georgia Department of Education that certifies that a student has mastered skills at levels recognized by industry.	(1)DEFINITIONS. (a) Completer Certificate - a credential issued by the Georgia Department of Education that certifies that a student has mastered skills at levels recognized by industry and has completed all the requirements of the Youth Apprenticeship Program.
(b) **School-based learning** – academic and occupational objectives directly linked to skill standards contained in a program of study that leads to a diploma and Certificate of Occupational Skills.	(b) **School-based learning** – academic and occupational objectives directly linked to skill standards contained in a program of study that leads to a Completer Certificate.
(d) **Work-based Learning** – work-site performance objectives linked directly to skill standards.	(d) **Training Plan** – work-site performance objectives linked directly to skill standards.
(f) **Youth apprenticeship** – a program of study that integrates school-based and work-based learning coordinated with business, industry and labor that facilitates the transition from secondary to postsecondary education by providing the apprentice the opportunity to earn a high school diploma, postsecondary credential/diploma and certificate of occupational skills.	(f) **Youth apprenticeship** – a category of Work-Based Learning that integrates school-based learning and a training plan coordinated with business, industry and labor that facilitates the transition from secondary to postsecondary education by providing the apprentice the opportunity to earn a high school diploma, postsecondary credential/diploma and a completer certificate.
(2) **REQUIREMENTS.** (a) Each local board of education or apprenticeship consortium receiving grant funds for a Youth Apprenticeship Program shall have a full time youth apprenticeship coordinator who shall participate in training provided by the Georgia Department of Education.	(2) **REQUIREMENTS.** (a) Each local board of education or apprenticeship consortium receiving grant funds for a Youth Apprenticeship Program shall have a youth apprenticeship coordinator who shall participate in training provided by the Georgia Department of Education.

All Rights Reserved

Summary of Changes (continued)	
Current Rule Language	**Recommended Amended Rule Language**
(b) Each Youth Apprenticeship Program site shall be approved by the department.	(b) Each Youth Apprenticeship Program site shall be approved by the Georgia Department of Education.
(c) Each local board of education or apprenticeship consortium receiving grant funds for a Youth Apprenticeship Program shall provide each apprentice with:	(c) Each local board of education or apprenticeship consortium receiving grant funds for a Youth Apprenticeship Program shall require the following:
1. A detailed training plan that is jointly developed by the school, business/industry, student and parent. This plan shall specify the skill standards to be mastered in the work environment and the progression of skills the apprentice must acquire before earning a Certificate of Occupational Skills. This plan shall also specify the criteria to be used to evaluate apprentice performance.	1. A detailed training agreement and training plan that is jointly developed by the school, business/industry, student and parent. This plan shall specify the skill standards to be mastered in the work environment and the progression of skills the student must acquire to earn credit. This plan shall also specify the criteria to be used to evaluate student performance.
2. An individual career plan that provides articulated school-based and work-based components that lead to a postsecondary credential/diploma and Certificate of Occupational Skills.	2. A minimum of one unit of credit must be earned by the student in a related career pathway prior to student placement on the job site.
3. A detailed plan for the integration of school-based and work-based learning linked to skill standards.	3. A minimum of 720 hours of on-the-job skill training must be completed by students enrolled in the Youth Apprenticeship Program (YAP) for awarding of the Completer Certificate.
4. Assigned work-based and school-based mentors.	4. Assigned mentors both on the job and at the school shall be involved in evaluation of the student's performance.
5. Work-based instruction that links skill standards to all aspects of the occupational industry.	5. Instruction and necessary remediation in the pathway related to the work site placement shall be provided as needed.
6. Progressive compensation linked to demonstrated progressive skill development.	6. A broad range of activities shall be focused on skills related to the student's career pathway.

All Rights Reserved

Summary of Changes (continued)	
Current Rule Language	**Recommended Amended Rule Language**
This section ended with number 6 above.	7. Development and use of recruitment materials shall be developed jointly by the school system and business community.
This section ended with number 6 above.	8. Adherence to the standards shall be required as outlined in the Georgia Work-Based Learning Manual.
(d) 1. Competitive grant applications must be submitted to the department no later than May each year.	(d) 1. Competitive grant applications must be submitted to the Georgia Department of Education no later than May each year.
3. Grant applications must address apprentice criteria cited in paragraph (2)(c).	3. Grant applications must address apprenticeship criteria cited in paragraph (2)(c).

All Rights Reserved

Georgia Department of Education

Georgia Performance Standards in Mathematics Foundations of Algebra

Mathematics Georgia Performance Standards

K-12 Mathematics Introduction

Georgia Mathematics focuses on actively engaging the student in the development of mathematical understanding by working independently and cooperatively to solve problems, estimating and computing efficiently, using appropriate tools, concrete models and a variety of representations, and conducting investigations and recording findings. There is a shift toward applying mathematical concepts and skills in the context of authentic problems and student understanding of concepts rather than merely following a sequence of procedures. In mathematics classrooms, students will learn to think critically in a mathematical way with an understanding that there are many different solution pathways and sometimes more than one right answer in applied mathematics. Mathematics is the economy of information. The central idea of all mathematics is to discover how knowing some things leads, via reasoning, to knowing more—without having to commit the information to memory as a separate fact. It is the reasoned, logical connections that make mathematics manageable. The implementation of Georgia Performance Standards in Mathematics places the expected emphasis on sense-making, problem solving, reasoning, representation, modeling, representation, connections, and communication.

Mathematics Georgia Performance Standards Foundations of Algebra

Foundations of Algebra is a first year high school mathematics course option for students who have completed mathematics in grades 6 – 8 yet will need substantial support to bolster success in high school mathematics. The course is aimed at students who have reported low standardized test performance in prior grades and/or have demonstrated significant difficulties in previous mathematics classes.

Foundations of Algebra will provide many opportunities to revisit and expand the understanding of foundational algebra concepts, will employ diagnostic means to offer focused interventions, and will incorporate varied instructional strategies to prepare students for required high school mathematics courses. The course will emphasize both algebra and numeracy in a variety of contexts including number sense, proportional reasoning, quantitative reasoning with functions, and solving equations and inequalities.

Instruction and assessment should include the appropriate use of manipulatives and technology. Mathematics concepts should be represented in multiple ways, such as concrete/pictorial, verbal/written, numeric/data-based, graphical, and symbolic. Concepts should be introduced and used, where appropriate, in the context of realistic experiences.

The Standards for Mathematical Practice will provide the foundation for instruction and assessment. The content standards are an amalgamation of mathematical standards addressed in grades 3 through high school. The standards from which the course standards are drawn are identified for reference.

All Rights Reserved

Georgia Performance Standards in Mathematics
Foundations of Algebra

Number Sense and Quantity

Students will compare different representations of numbers (i.e. fractions, decimals, radicals, etc.) and perform basic operations using these different representations.

MFANSQ1. Students will analyze number relationships.

a. Solve multi-step real world problems, analyzing the relationships between all four operations. *For example, understand division as an unknown-factor problem in order to solve problems. Knowing that 50 x 40 = 2000 helps students determine how many boxes of cupcakes they will need in order to ship 2000 cupcakes in boxes that hold 40 cupcakes each.* (MCC3.OA.6, MCC4.OA.3)
b. Understand a fraction a/b as a multiple of 1/b. (MCC4.NF.4)
c. Explain patterns in the placement of decimal points when multiplying or dividing by powers of ten. (MCC5.NBT.2)
d. Compare fractions and decimals to the thousandths place. *For fractions, use strategies other than cross multiplication. For example, locating the fractions on a number line or using benchmark fractions to reason about relative size. For decimals, use place value.* (MCC4.NF.2;MCC5.NBT.3,4)

MFANSQ2. Students will conceptualize positive and negative numbers (including decimals and fractions).

a. Explain the meaning of zero. (MCC6.NS.5)
b. Represent numbers on a number line. (MCC6.NS.5,6)
c. Explain meanings of real numbers in a real world context. (MCC6.NS.5)

MFANSQ3. Students will recognize that there are numbers that are not rational, and approximate them with rational numbers.

a. Find an estimated decimal expansion of an irrational number locating the approximations on a number line. *For example, for $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue this pattern in order to obtain better approximations.* (MCC8.NS.1,2)
b. Explain the results of adding and multiplying with rational and irrational numbers. (MCC9-12.N.RN.3)

MFANSQ4. Students will apply and extend previous understanding of addition, subtraction, multiplication, and division.

a. Find sums, differences, products, and quotients of multi-digit decimals using strategies based on place value, the properties of operations, and/or relationships between operations. (MCC5.NBT.7; MCC6.NS.3)
b. Find sums, differences, products, and quotients of all forms of rational numbers, stressing the conceptual understanding of these operations. (MCC7.NS.1,2)
c. Interpret and solve contextual problems involving division of fractions by fractions. *For example, how many 3/4-cup servings are in 2/3 of a cup of yogurt?* (MCC6.NS.1)
d. Illustrate and explain calculations using models and line diagrams. (MCC7.NS.1,2)

All Rights Reserved

e. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using estimation strategies and graphing technology. (MCC7.NS.3, MCC7.E.3, MCC9-12.N.Q.3)

Arithmetic to Algebra

Students will extend arithmetic operations to algebraic modeling.

MFAAA1. Students will generate and interpret equivalent numeric and algebraic expressions.

a. Apply properties of operations emphasizing when the commutative property applies. (MCC7.EE.1)
b. Use area models to represent the distributive property and develop understandings of addition and multiplication (all positive rational numbers should be included in the models). (MCC3.MD.7)
c. Model numerical expressions (arrays) leading to the modeling of algebraic expressions. (MCC7.EE.1,2; MCC9-12.A.SSE.1,3)
d. Add, subtract, and multiply algebraic expressions. (MCC6.EE.3, MCC6.EE.4, MC7.EE.1, MCC9-12.A.SSE.3)
e. Generate equivalent expressions using properties of operations and understand various representations within context. *For example, distinguish multiplicative comparison from additive comparison. Students should be able to explain the difference between "3 more" and "3 times".* (MCC4.0A.2; MCC6.EE.3, MCC7.EE.1,2,MCC9-12.A.SSE.3)
f. Evaluate formulas at specific values for variables. *For example, use formulas such as $A = l \times w$ and find the area given the values for the length and width.* (MCC6.EE.2)

MFAAA2. Students will interpret and use the properties of exponents.

a. Substitute numeric values into formulas containing exponents, interpreting units consistently. (MCC6.EE.2, MCC9-12.N.Q.1, MCC9-12.A.SSE.1, MCC9-12.N.RN.2)
b. Use properties of integer exponents to find equivalent numerical expressions. *For example, $3^2 \times 3^{-5} = 3^{-3} = \frac{1}{3^3} = \frac{1}{27}$.* (MCC8.EE.1)
c. Evaluate square roots of perfect squares and cube roots of perfect cubes (MCC8.EE.2)
d. Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. (MCC8.EE.2)
e. Use the Pythagorean Theorem to solve triangles based on real-world contexts (Limit to finding the hypotenuse given two legs). (MCC8.G.7)

All Rights Reserved

Georgia Performance Standards in Mathematics
Foundations of Algebra

Proportional Reasoning

Students will use ratios to solve real-world and mathematical problems.

MFAPR1. Students will explain equivalent ratios by using a variety of models. *For example, tables of values, tape diagrams, bar models, double number line diagrams, and equations.* (MCC6.RP.3)

MFAPR2. Students will recognize and represent proportional relationships between quantities.

a. Relate proportionality to fraction equivalence and division. *For example,* $\frac{3}{6}$ *is equal to* $\frac{4}{8}$ *because both yield a quotient of ½ and, in both cases, the denominator is double the value of the numerator.* (MCC4.NF.1)
b. Understand real-world rate/ratio/percent problems by finding the whole given a part and find a part given the whole. (MCC6.RP.1,2,3;MCC7.RP.1,2)
c. Use proportional relationships to solve multistep ratio and percent problems. (MCC7.RP.2,3)

MFAPR3. Students will graph proportional relationships.

a. Interpret unit rates as slopes of graphs. (MCC8.EE.5)
b. Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane. (MCC8.EE.6)
c. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.* (MCC8.EE.5)

Equations and Inequalities

Students will solve, interpret, and create linear models using equations and inequalities.

MFAEI1. Students will use units as a way to understand problems and guide the solutions of multi-step problems.

a. Choose and interpret units in formulas. (MCC9-12.N.Q.1)
b. Choose and interpret graphs and data displays, including the scale and comparisons of data. (MCC3.MD.3, MCC9-12.N.Q.1)
c. Graph points in all four quadrants of the coordinate plane. (MCC6.NS.8)

MFAEI2. Students will create and solve equations and inequalities in one variable.

a. Use variables to represent an unknown number in a specified set. (MCC.6.EE2,5,6)
b. Use variables to solve real-world and mathematical problems. (MCC6.EE.7,MCC7.EE.4)
c. Use variables to represent two quantities in a real-world problem that change in relationship to one another (conceptual understanding of a variable). (MCC6.EE.9)
d. Represent and find solutions graphically. (MCC9-12.A.REI.6)
e. Find approximate solutions using technology to graph, construct tables of values, and find successive approximations. (MCC9-12.A.REI.10,11)
f. Explain each step in solving simple equations and inequalities using the equality properties of numbers. (MCC9-12.A.REI.1)
g. Construct viable arguments to justify the solutions and methods of solving equations and inequalities. (MCC9-12.A.REI.1)

All Rights Reserved

Georgia Performance Standards in Mathematics
Foundations of Algebra

MFAEI3. Students will create algebraic models in two variables.

a. Create an algebraic model from a context using two-variable equations and inequalities. (MCC6.EE.6,8; MCC9-12.A.CED.2)
b. Represent solutions to systems of equations and inequalities graphically or by using a table of values. (MCC6.EE.5, MCC7.EE3; MCC9-12.A.CED.2)
c. Analyze the reasonableness of the solutions of systems of equations and inequalities within a given context. (MCC6.EE.5,6,MCC7.EE3)

MFAEI4. Students will solve literal equations.

a. Solve for any variable in a multi-variable equation. (MCC6.EE.9,MCC9-12.A.REI.3)
b. Rearrange formulas to highlight a particular variable using the same reasoning as in solving equations. *For example, solve for the base in* $A = \frac{1}{2} bh$. (MCC9-12.A.CED.4)

Quantitative Reasoning with Functions

Students will create function statements and analyze relationships among pairs of variables using graphs, table, and equations.

MFAQR1. Students will understand characteristics of functions.

a. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range.(MCC9-12.F.IF.1)
b. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.* (MCC9-12.F.IF.5)
c. Graph functions using sets of ordered pairs consisting of an input and the corresponding output. (MCC8.F.1, 2)

MFAQR2. Students will compare and graph functions.

a. Calculate rates of change of functions, comparing when rates increase, decrease, or stay constant. *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.* (MCC6.RP.2;MCC7.RP.1,2,3;MCC8.F.2,5; MCC9-12.F.IF.6)
b. Graph by hand simple functions expressed symbolically (use all four quadrants). (MCC9-12.F.IF.7)
c. Interpret the equation $y = mx + b$ as defining a linear function whose graph is a straight line. (MCC8.F.3)
d. Use technology to graph non-linear functions. (MCC8.F.3, MCC9-12.F.IF.7)
e. Analyze graphs of functions for key features (intercepts, intervals of increase/decrease, maximums/minimums, symmetries, and end behavior) based on context. (MCC9-12.F.IF.4,7)
f. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the great rate of change.* (MCC8.F.2)

All Rights Reserved

Georgia Performance Standards in Mathematics Foundations of Algebra

MFAQR3. Students will construct and interpret functions.

a. Write a function that describes a relationship between two quantities. (MCC8.F.4, MCC9-12.F.BF.1)
b. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of context. (MCC9-12.F.IF.2)

Mathematics | Standards for Mathematical Practice

Mathematical Practices are listed with each grade's mathematical content standards to reflect the need to connect the mathematical practices to mathematical content in instruction.

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report Adding It Up: 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).

1. **Make sense of problems and persevere in solving them.** High school students start to examine problems 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. They 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 calculator to get the information they need. By high school, students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. They check their answers to problems using different methods and continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. **Reason abstractly and quantitatively.** High school students seek to make sense of quantities and their relationships in problem situations. They abstract a given situation and represent it symbolically, manipulate the representing symbols, and pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Students use quantitative reasoning to create coherent representations of the problem at hand; consider the units involved; attend to the meaning of quantities, not just how to compute them; and know and flexibly use different properties of operations and objects.

All Rights Reserved

3. **Construct viable arguments and critique the reasoning of others.** High school 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. They 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. High school 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. High school students learn to determine domains to which an argument applies, listen 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.** High school students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. High school students 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. They 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.** High school students consider the 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. High school students should be 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 their limitations. For example, 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. They are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. **Attend to precision.** High school students try to communicate precisely to others by using clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

All Rights Reserved

7. **Look for and make use of structure.** By high school, students look closely to discern a pattern or structure. 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. They also can step back for an overview and shift perspective. They can see complicated things, such as 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 to realize that its value cannot be more than 5 for any real numbers x and y. High school students use these patterns to create equivalent expressions, factor and solve equations, and compose functions, and transform figures.

8. **Look for and express regularity in repeated reasoning.** High school students notice if calculations are repeated, and look both for general methods and for shortcuts. 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 they work to solve a problem, derive formulas or make generalizations, high school students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics should engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word "understand" are often especially good opportunities to connect the practices to the content. **Students who do not have an understanding of a topic may rely on procedures too heavily.** 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, step back for an overview, or deviate from a known procedure to find a shortcut. **In short, 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 Standards for Mathematical Content and the Standards for Mathematical Practice. 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 necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.

All Rights Reserved

Georgia Performance Standards in Mathematics
Algebra I

Mathematics Georgia Performance Standards

K-12 Mathematics Introduction

Georgia Mathematics focuses on actively engaging the student in the development of mathematical understanding by working independently and cooperatively to solve problems, estimating and computing efficiently, using appropriate tools, concrete models, and a variety of representations, and conducting investigations and recording findings. There is a shift toward applying mathematical concepts and skills in the context of authentic problems and student understanding of concepts rather than merely following a sequence of procedures. In mathematics classrooms, students will learn to think critically in a mathematical way with an understanding that there are many different solution pathways and sometimes more than one right answer in applied mathematics. Mathematics is the economy of information. The central idea of all mathematics is to discover how knowing some things leads, via reasoning, to knowing more—without having to commit the information to memory as a separate fact. It is the reasoned, logical connections that make mathematics manageable. The implementation of Georgia Performance Standards in Mathematics places the expected emphasis on sense-making, problem solving, reasoning, modeling, representation, connections, and communication.

Mathematics Georgia Performance Standards
Algebra I

Algebra I is the first course in a sequence of three required high school courses designed to ensure career and college readiness. The course represents a discrete study of algebra with correlated statistics applications.

The standards in the three-course high school sequence specify the mathematics that all students should study in order to be college and career ready. Additional mathematics content is provided in fourth credit courses and advanced courses including pre-calculus, calculus, advanced statistics, discrete mathematics, and mathematics of finance courses. High school course content standards are listed by conceptual categories including Number and Quantity, Algebra, Functions, Geometry, and Statistics and Probability. Conceptual categories portray a coherent view of high school mathematics content; a student's work with functions, for example, crosses a number of traditional course boundaries, potentially up through and including calculus. Standards for Mathematical Practice provide the foundation for instruction and assessment.

Mathematics | Standards for Mathematical Practice

Mathematical Practices are listed with each grade's mathematical content standards to reflect the need to connect the mathematical practices to mathematical content in instruction.

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of

All Rights Reserved

problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report Adding It Up: 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).

1 Make sense of problems and persevere in solving them.
High school students start to examine problems 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. They 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 calculator to get the information they need. By high school, students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. They check their answers to problems using different methods and continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2 Reason abstractly and quantitatively.
High school students seek to make sense of quantities and their relationships in problem situations. They abstract a given situation and represent it symbolically, manipulate the representing symbols, and pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Students use quantitative reasoning to create coherent representations of the problem at hand; consider the units involved; attend to the meaning of quantities, not just how to compute them; and know and flexibly use different properties of operations and objects.

3 Construct viable arguments and critique the reasoning of others.
High school 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. They 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. High school 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. High school students learn to determine domains to which an argument applies, listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

All Rights Reserved

4 Model with mathematics.
High school students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. High school students 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. They 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.
High school students consider the 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. High school students should be 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 their limitations. For example, 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. They are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6 Attend to precision. High school students try to communicate precisely to others by using clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. 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. By high school, students look closely to discern a pattern or structure. 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. They also can step back for an overview and shift perspective. They can see complicated things, such as 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 to realize that its value cannot be more than 5 for any real numbers x and y. High school students use these patterns to create equivalent expressions, factor and solve equations, and compose functions, and transform figures.

8 Look for and express regularity in repeated reasoning.
High school students notice if calculations are repeated, and look both for general methods and for shortcuts.

All Rights Reserved

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 they work to solve a problem, derive formulas or make generalizations, high school students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics should engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word "understand" are often especially good opportunities to connect the practices to the content. **Students who do not have an understanding of a topic may rely on procedures too heavily.** 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, step back for an overview, or deviate from a known procedure to find a shortcut. **In short, 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 Standards for Mathematical Content and the Standards for Mathematical Practice. 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 necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.

All Rights Reserved

Georgia Performance Standards in Mathematics
Algebra I

Mathematics | High School—Number and Quantity

Numbers and Number Systems During the years from kindergarten to eighth grade, students must repeatedly extend their conception of number. At first, "number" means "counting number": 1, 2, 3... Soon after that, 0 is used to represent "none" and the whole numbers are formed by the counting numbers together with zero. The next extension is fractions. At first, fractions are barely numbers and tied strongly to pictorial representations. Yet by the time students understand division of fractions, they have a strong concept of fractions as numbers and have connected them, via their decimal representations, with the base-ten system used to represent the whole numbers. During middle school, fractions are augmented by negative fractions to form the rational numbers. In Grade 8, students extend this system once more, augmenting the rational numbers with the irrational numbers to form the real numbers. In high school, students will be exposed to yet another extension of number, when the real numbers are augmented by the imaginary numbers to form the complex numbers. With each extension of number, the meanings of addition, subtraction, multiplication, and division are extended. In each new number system—integers, rational numbers, real numbers, and complex numbers—the four operations stay the same in two important ways: They have the commutative, associative, and distributive properties and their new meanings are consistent with their previous meanings. Extending the properties of whole-number exponents leads to new and productive notation. For example, properties of whole-number exponents suggest that $(5^{1/3})^3$ should be $5^{(1/3)^3} = 5^1 = 5$ and that $5^{1/3}$ should be the cube root of 5. Calculators, spreadsheets, and computer algebra systems can provide ways for students to become better acquainted with these new number systems and their notation. They can be used to generate data for numerical experiments, to help understand the workings of matrix, vector, and complex number algebra, and to experiment with non-integer exponents.

Quantities In real world problems, the answers are usually not numbers but quantities: numbers with units, which involves measurement. In their work in measurement up through Grade 8, students primarily measure commonly used attributes such as length, area, and volume. In high school, students encounter a wider variety of units in modeling, e.g., acceleration, currency conversions, derived quantities such as person-hours and heating degree days, social science rates such as per-capita income, and rates in everyday life such as points scored per game or batting averages. They also encounter novel situations in which they themselves must conceive the attributes of interest. For example, to find a good measure of overall highway safety, they might propose measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled. Such a conceptual process is sometimes called quantification. Quantification is important for science, as when surface area suddenly "stands out" as an important variable in evaporation. Quantification is also important for companies, which must conceptualize relevant attributes and create or choose suitable measures for them.

The Real Number System N.RN

Use properties of rational and irrational numbers.

MCC9-12.N.RN.3 Explain why the sum or product of rational numbers is rational; why the sum of a rational number and an irrational number is irrational; and why the product of a nonzero rational number and an irrational number is irrational.

All Rights Reserved

Georgia Performance Standards in Mathematics
Algebra I

Quantities **N.Q**

Reason quantitatively and use units to solve problems.

MCC9-12.N.Q.1 Use units of measure (linear, area, capacity, rates, and time) as a way to understand problems:

a. **Identify, use, and record appropriate units of measure within context, within data displays, and on graphs;**
b. **Convert units and rates using dimensional analysis (English-to-English and Metric-to-Metric without conversion factor provided and between English and Metric with conversion factor);**
c. **Use units within multi-step problems and formulas; interpret units of input and resulting units of output.**

MCC9-12.N.Q.2 Define appropriate quantities for the purpose of descriptive modeling. Given a situation, context, or problem, students will determine, identify, and use appropriate quantities for representing the situation.

MCC9-12.N.Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. ***For example, money situations are generally reported to the nearest cent (hundredth). Also, an answers' precision is limited to the precision of the data given.***

Mathematics | High School—Algebra

Expressions

An expression is a record of a computation with numbers, symbols that represent numbers, arithmetic operations, exponentiation, and, at more advanced levels, the operation of evaluating a function. Conventions about the use of parentheses and the order of operations assure that each expression is unambiguous. Creating an expression that describes a computation involving a general quantity requires the ability to express the computation in general terms, abstracting from specific instances.

Reading an expression with comprehension involves analysis of its underlying structure. This may suggest a different but equivalent way of writing the expression that exhibits some different aspect of its meaning. For example, $p + 0.05p$ can be interpreted as the addition of a 5% tax to a price p. Rewriting $p + 0.05p$ as $1.05p$ shows that adding a tax is the same as multiplying the price by a constant factor.

Algebraic manipulations are governed by the properties of operations and exponents, and the conventions of algebraic notation. At times, an expression is the result of applying operations to simpler expressions. For example, $p + 0.05p$ is the sum of the simpler expressions p and $0.05p$. Viewing an expression as the result of operation on simpler expressions can sometimes clarify its underlying structure.

A spreadsheet or a computer algebra system (CAS) can be used to experiment with algebraic expressions, perform complicated algebraic manipulations, and understand how algebraic manipulations behave.

Equations and Inequalities

An equation is a statement of equality between two expressions, often viewed as a question asking for which values of the variables the expressions on either side are in fact equal. These values are the solutions to the equation. An identity, in contrast, is true for all values of the variables; identities are often developed by rewriting an expression in an equivalent form.

All Rights Reserved

Georgia Performance Standards in Mathematics
Algebra I

The solutions of an equation in one variable form a set of numbers; the solutions of an equation in two variables form a set of ordered pairs of numbers, which can be plotted in the coordinate plane. Two or more equations and/or inequalities form a system. A solution for such a system must satisfy every equation and inequality in the system.

An equation can often be solved by successively deducing from it one or more simpler equations. For example, one can add the same constant to both sides without changing the solutions, but squaring both sides might lead to extraneous solutions. Strategic competence in solving includes looking ahead for productive manipulations and anticipating the nature and number of solutions.

Some equations have no solutions in a given number system, but have a solution in a larger system. For example, the solution of $x + 1 = 0$ is an integer, not a whole number; the solution of $2x + 1 = 0$ is a rational number, not an integer; the solutions of $x^2 - 2 = 0$ are real numbers, not rational numbers; and the solutions of $x^2 + 2 = 0$ are complex numbers, not real numbers.

The same solution techniques used to solve equations can be used to rearrange formulas. For example, the formula for the area of a trapezoid, $A = ((b_1+b_2)/2)h$, can be solved for h using the same deductive process. Inequalities can be solved by reasoning about the properties of inequality. Many, but not all, of the properties of equality continue to hold for inequalities and can be useful in solving them.

Connections to Functions and Modeling

Expressions can define functions, and equivalent expressions define the same function. Asking when two functions have the same value for the same input leads to an equation; graphing the two functions allows for finding approximate solutions of the equation. Converting a verbal description to an equation, inequality, or system of these is an essential skill in modeling.

Seeing Structure in Expressions — A.SSE

Interpret the structure of expressions

MCC9-12.A.SSE.1 Interpret expressions that represent a quantity in terms of its context.

MCC9-12.A.SSE.1a Interpret parts of an expression, such as terms, factors, and coefficients, in context.

MCC9-12.A.SSE.1b Given situations which utilize formulas or expressions with multiple terms and/or factors, interpret the meaning (in context) of individual terms or factors.

MCC9-12.A.SSE.2 Use the structure of an expression to rewrite it in different equivalent forms. For example, see $x^4 - y^4$ as $(x^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

Write expressions in equivalent forms to solve problems

MCC9-12.A.SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

MCC9-12.A.SSE.3a Factor any quadratic expression to reveal the zeros of the function defined by the expression.

All Rights Reserved

MCC9-12.A.SSE.3b Complete the square in a quadratic expression to reveal the maximum and minimum value of the function defined by the expression.

Arithmetic with Polynomials and Rational Expressions A.APR

Perform arithmetic operations on polynomials

MCC9-12.A.APR.1 Add, subtract, and multiply polynomials; understand that polynomials form a system analogous to the integers in that they are closed under these operations.

Creating Equations A.CED

Create equations that describe numbers or relationships

MCC9-12.A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear, quadratic, and exponential functions (integer inputs only).

MCC9-12.A.CED.2 Create linear and exponential equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. (The phrase "in two or more variables" refers to formulas like the compound interest formula, in which $A = P(1 + r/n)^{nt}$ has multiple variables.)

MCC9-12.A.CED.3 Represent constraints by equations or inequalities, and by systems of equation and/or inequalities, and interpret data points as possible (i.e. a solution) or not possible (i.e. a non-solution) under the established constraints.

MCC9-12.A.CED.4 Rearrange formulas to highlight a quantity of interest using the same reasoning as in solving equations. ***Examples: Rearrange Ohm's law $V = IR$ to highlight resistance R; Rearrange area of a circle formula $A = \pi r^2$ to highlight the radius r.***

Reasoning with Equations and Inequalities A.REI

Understand solving equations as a process of reasoning and explain the reasoning

MCC9-12.A.REI.1 Using algebraic properties and the properties of real numbers, justify the steps of a simple, one-solution equation. Students should justify their own steps, or if given two or more steps of an equation, explain the progression from one step to the next using properties.

Solve equations and inequalities in one variable

MCC9-12.A.REI.3 Solve linear equations and inequalities in one variable including equations with coefficients represented by letters. ***For example, given $ax + 3 = 7$, solve for x.***

MCC9-12.A.REI.4 Solve quadratic equations in one variable.

All Rights Reserved

MCC9-12.A.REI.4a 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. Derive the quadratic formula from $ax^2 + bx + c = 0$.
MCC9-12.A.REI.4b Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, factoring, completing the square, and the quadratic formula, as appropriate to the initial form of the equation.

Solve systems of equations

MCC9-12.A.REI.5 Show and explain why the elimination method works to solve a system of two-variable equations.

MCC9-12.A.REI.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

Represent and solve equations and inequalities graphically

MCC9-12.A.REI.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane

MCC9-12.A.REI.11 Using graphs, tables, or successive approximations, show that the solution to the equation f(x) = g(x) is the x-value where the y-values of f(x) and g(x) are the same.

MCC9-12.A.REI.12 Graph the solution set to a linear inequality in two variables.

Mathematics | High School—Functions

Functions describe situations where one quantity determines another. For example, the return on $10,000 invested at an annualized percentage rate of 4.25% is a function of the length of time the money is invested. Because we continually make theories about dependencies between quantities in nature and society, functions are important tools in the construction of mathematical models.
In school mathematics, functions usually have numerical inputs and outputs and are often defined by an algebraic expression. For example, the time in hours it takes for a car to drive 100 miles is a function of the car's speed in miles per hour, v; the rule $T(v) = 100/v$ expresses this relationship algebraically and defines a function whose name is T.
The set of inputs to a function is called its domain. We often infer the domain to be all inputs for which the expression defining a function has a value, or for which the function makes sense in a given context.
A function can be described in various ways, such as by a graph (e.g., the trace of a seismograph); by a verbal rule, as in, "I'll give you a state, you give me the capital city;" by an algebraic expression like $f(x) = a + bx$; or by a recursive rule. The graph of a function is often a useful way of visualizing the relationship of the function models, and manipulating a mathematical expression for a function can throw light on the function's properties.
Functions presented as expressions can model many important phenomena. Two important families of functions characterized by laws of growth are linear functions, which grow at a constant rate, and exponential functions, which grow at a constant percent rate. Linear functions with a constant term of zero describe proportional relationships.

All Rights Reserved

A graphing utility or a computer algebra system can be used to experiment with properties of these functions and their graphs and to build computational models of functions, including recursively defined functions.

Connections to Expressions, Equations, Modeling, and Coordinates
Determining an output value for a particular input involves evaluating an expression; finding inputs that yield a given output involves solving an equation. Questions about when two functions have the same value for the same input lead to equations, whose solutions can be visualized from the intersection of their graphs. Because functions describe relationships between quantities, they are frequently used in modeling. Sometimes functions are defined by a recursive process, which can be displayed effectively using a spreadsheet or other technology.

Interpreting Functions F.IF

Understand the concept of a function and use function notation

MCC9-12.F.IF.1 Understand that a function from one set (the input, called the domain) to another set (the output, called the range) assigns to each element of the domain exactly one element of the range, i.e. each input value maps to exactly one output value. If f is a function, x is the input (an element of the domain), and f(x) is the output (an element of the range). Graphically, the graph is y = f(x).

MCC9-12.F.IF.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

MCC9-12.F.IF.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. (Generally, the scope of high school math defines this subset as the set of natural numbers 1,2,3,4...) By graphing or calculating terms, students should be able to show how the recursive sequence $a_1=7$, $a_n=a_{n-1}+2$; the sequence $s_n = 2(n-1) + 7$; and the function $f(x) = 2x + 5$ (when x is a natural number) all define the same sequence.

Interpret functions that arise in applications in terms of the context

MCC9-12.F.IF.4 Using tables, graphs, and verbal descriptions, interpret the key characteristics of a function which models the relationship between two quantities. Sketch a graph showing key features including: intercepts; interval where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.

MCC9-12.F.IF.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*

MCC9-12.F.IF.6 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.

Analyze functions using different representations

MCC9-12.F.IF.7 Graph functions expressed algebraically and show key features of the graph both by hand and by using technology.

All Rights Reserved

Georgia Performance Standards in Mathematics
Algebra I

MCC9-12.F.IF.7a Graph linear and quadratic functions and show intercepts, maxima, and minima (as determined by the function or by context).

MCC9-12.F.IF.7e Graph exponential functions, showing intercepts and end behavior.

MCC9-12.F.IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

MCC9-12.F.IF.8a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. ***For example, compare and contrast quadratic functions in standard, vertex, and intercept forms.***

MCC9-12.F.IF.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). ***For example, given a graph of one function and an algebraic expression for another, say which has the larger maximum.***

Building Functions F-BF

Build a function that models a relationship between two quantities

MCC9-12.F.BF.1 Write a function that describes a relationship between two quantities.

MCC9-12.F.BF.1a Determine an explicit expression and the recursive process (steps for calculation) from context. ***For example, if Jimmy starts out with $15 and earns $2 a day, the explicit expression "2x+15" can be described recursively (either in writing or verbally) as "to find out how much money Jimmy will have tomorrow, you add $2 to his total today."*** $J_n = J_{n-1} + 2, J_0 = 15$

Build new functions from existing functions

MCC9-12.F.BF.3 Identify the effect on the graph of replacing f(x) by f(x) + k, k 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 illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

Linear, Quadratic, and Exponential Models F.LE

Construct and compare linear, quadratic, and exponential models and solve problems

MCC9-12.F.LE.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.

MCC9-12.F.LE.1a Show that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals. (This can be shown by algebraic proof, with a table showing differences, or by calculating average rates of change over equal intervals).

All Rights Reserved

MCC9-12.F.LE.1b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

MCC9-12.F.LE.1c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.

MCC9-12.F.LE.2 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).

MCC9-12.F.LE.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.

Interpret expressions for functions in terms of the situation they model

MCC9-12.F.LE.5 Interpret the parameters in a linear ($f(x) = mx + b$) and exponential ($f(x) = a \cdot d^x$) function in terms of context. (In the functions above, "m" and "b" are the parameters of the linear function, and "a" and "d" are the parameters of the exponential function.) In context, students should describe what these parameters mean in terms of change and starting value.

Mathematics | High School—Statistics and Probability

Decisions or predictions are often based on data—numbers in context. These decisions or predictions would be easy if the data always sent a clear message, but the message is often obscured by variability. Statistics provides tools for describing variability in data and for making informed decisions that take it into account. Data are gathered, displayed, summarized, examined, and interpreted to discover patterns and deviations from patterns. Quantitative data can be described in terms of key characteristics: measures of shape, center, and spread. The shape of a data distribution might be described as symmetric, skewed, flat, or bell shaped, and it might be summarized by a statistic measuring center (such as mean or median) and a statistic measuring spread (such as standard deviation or interquartile range). Different distributions can be compared numerically using these statistics or compared visually using plots. Knowledge of center and spread are not enough to describe a distribution. Which statistics to compare, which plots to use, and what the results of a comparison might mean, depend on the question to be investigated and the real-life actions to be taken.

Randomization has two important uses in drawing statistical conclusions. First, collecting data from a random sample of a population makes it possible to draw valid conclusions about the whole population, taking variability into account. Second, randomly assigning individuals to different treatments allows a fair comparison of the effectiveness of those treatments. A statistically significant outcome is one that is unlikely to be due to chance alone, and this can be evaluated only under the condition of randomness. The conditions under which data are collected are important in drawing conclusions from the data; in critically reviewing uses of statistics in public media and other reports, it is important to consider the study design, how the data were gathered, and the analyses employed as well as the data summaries and the conclusions drawn.

Random processes can be described mathematically by using a probability model: a list or description of the possible outcomes (the sample space), each of which is assigned a probability. In situations such as flipping a coin, rolling a number cube, or drawing a card, it might be reasonable to assume various outcomes are equally likely. In a probability model, sample points represent outcomes and combine to make up events; probabilities of events can be computed by applying the Addition and Multiplication Rules. Interpreting these probabilities

All Rights Reserved

relies on an understanding of independence and conditional probability, which can be approached through the analysis of two way tables.
Technology plays an important role in statistics and probability by making it possible to generate plots, regression functions, and correlation coefficients, and to simulate many possible outcomes in a short amount of time.

Connections to Functions and Modeling
Functions may be used to describe data; if the data suggest a linear relationship, the relationship can be modeled with a regression line, and its strength and direction can be expressed through a correlation coefficient.

Interpreting Categorical and Quantitative Data S.ID

Summarize, represent, and interpret data on a single count or measurement variable

MCC9-12.S.ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).

MCC9-12.S.ID.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, mean absolute deviation) of two or more different data sets.

MCC9-12.S.ID.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

Summarize, represent, and interpret data on two categorical and quantitative variables

MCC9-12.S.ID.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

MCC9-12.S.ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

MCC9-12.S.ID.6a Decide which type of function is most appropriate by observing graphed data, charted data, or by analysis of context to generate a viable (rough) function of best fit. Use this function to solve problems in context. Emphasize linear, quadratic and exponential models.

MCC9-12.S.ID.6c Using given or collected bivariate data, fit a linear function for a scatter plot that suggests a linear association.

All Rights Reserved

Georgia Performance Standards in Mathematics
Algebra I

Interpret linear models

MCC9-12.S.ID.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

MCC9-12.S.ID.8 Compute (using technology) and interpret the correlation coefficient "r" of a linear fit. (For instance, by looking at a scatterplot, students should be able to tell if the correlation coefficient is positive or negative and give a reasonable estimate of the "r" value.) After calculating the line of best fit using technology, students should be able to describe how strong the goodness of fit of the regression is, using "r".

MCC9-12.S.ID.9 Distinguish between correlation and causation.

DRAFT

All Rights Reserved

Georgia Performance Standards in Mathematics
Geometry

Mathematics Georgia Performance Standards

K-12 Mathematics Introduction

Georgia Mathematics focuses on actively engaging the student in the development of mathematical understanding by working independently and cooperatively to solve problems, estimating and computing efficiently, using appropriate tools, concrete models, and a variety of representations, and conducting investigations and recording findings. There is a shift toward applying mathematical concepts and skills in the context of authentic problems and student understanding of concepts rather than merely following a sequence of procedures. In mathematics classrooms, students will learn to think critically in a mathematical way with an understanding that there are many different solution pathways and sometimes more than one right answer in applied mathematics. Mathematics is the economy of information. The central idea of all mathematics is to discover how knowing some things leads, via reasoning, to knowing more—without having to commit the information to memory as a separate fact. It is the reasoned, logical connections that make mathematics manageable. The implementation of Georgia Performance Standards in Mathematics places the expected emphasis on sense-making, problem solving, reasoning, modeling, representation, connections, and communication.

Mathematics Georgia Performance Standards

Geometry

Geometry is the second course in a sequence of three required high school courses designed to ensure career and college readiness. The course represents a discrete study of geometry with correlated statistics applications.

The standards in the three-course high school sequence specify the mathematics that all students should study in order to be college and career ready. Additional mathematics content is provided in fourth credit courses and advanced courses including pre-calculus, calculus, advanced statistics, discrete mathematics, and mathematics of finance courses. High school course content standards are listed by conceptual categories including Number and Quantity, Algebra, Functions, Geometry, and Statistics and Probability. Conceptual categories portray a coherent view of high school mathematics content; a student's work with functions, for example, crosses a number of traditional course boundaries, potentially up through and including calculus. Standards for Mathematical Practice provide the foundation for instruction and assessment.

Mathematics | Standards for Mathematical Practice

Mathematical Practices are listed with each grade's mathematical content standards to reflect the need to connect the mathematical practices to mathematical content in instruction.

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the

All Rights Reserved

strands of mathematical proficiency specified in the National Research Council's report Adding It Up: 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).

1 Make sense of problems and persevere in solving them.
High school students start to examine problems 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. They 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 calculator to get the information they need. By high school, students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. They check their answers to problems using different methods and continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2 Reason abstractly and quantitatively.
High school students seek to make sense of quantities and their relationships in problem situations. They abstract a given situation and represent it symbolically, manipulate the representing symbols, and pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Students use quantitative reasoning to create coherent representations of the problem at hand; consider the units involved; attend to the meaning of quantities, not just how to compute them; and know and flexibly use different properties of operations and objects.

3 Construct viable arguments and critique the reasoning of others.
High school 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. They 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. High school 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. High school students learn to determine domains to which an argument applies, listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

All Rights Reserved

Georgia Performance Standards in Mathematics
Geometry

4 Model with mathematics.
High school students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. High school students 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. They 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.
High school students consider the 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. High school students should be 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 their limitations. For example, 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. They are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6 Attend to precision. High school students try to communicate precisely to others by using clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. 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. By high school, students look closely to discern a pattern or structure. 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. They also can step back for an overview and shift perspective. They can see complicated things, such as 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 to realize that its value cannot be more than 5 for any real numbers x and y. High school students use these patterns to create equivalent expressions, factor and solve equations, and compose functions, and transform figures.

8 Look for and express regularity in repeated reasoning.
High school students notice if calculations are repeated, and look both for general methods and for shortcuts.

All Rights Reserved

Georgia Performance Standards in Mathematics
Geometry

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 they work to solve a problem, derive formulas or make generalizations, high school students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics should engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word "understand" are often especially good opportunities to connect the practices to the content. **Students who do not have an understanding of a topic may rely on procedures too heavily.** 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, step back for an overview, or deviate from a known procedure to find a shortcut. **In short, 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 Standards for Mathematical Content and the Standards for Mathematical Practice. 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 necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.

DRAFT

All Rights Reserved

Georgia Performance Standards in Mathematics
Geometry

Mathematics | High School—Geometry

An understanding of the attributes and relationships of geometric objects can be applied in diverse contexts—interpreting a schematic drawing, estimating the amount of wood needed to frame a sloping roof, rendering computer graphics, or designing a sewing pattern for the most efficient use of material.

Although there are many types of geometry, school mathematics is devoted primarily to plane Euclidean geometry, studied both synthetically (without coordinates) and analytically (with coordinates). Euclidean geometry is characterized most importantly by the Parallel Postulate that states that through a point not on a given line there is exactly one parallel line. (Spherical geometry, in contrast, has no parallel lines.) During high school, students begin to formalize their geometry experiences from elementary and middle school, using more precise definitions and developing careful proofs. Later in college some students develop Euclidean and other geometries carefully from a small set of axioms.

The concepts of congruence, similarity, and symmetry can be understood from the perspective of geometric transformation. Fundamental are the rigid motions: translations, rotations, reflections, and combinations of these, all of which are here assumed to preserve distance and angles (and therefore shape in general). Reflections and rotations each explain a particular type of symmetry, and the symmetries of an object offer insight into its attributes—as when the reflective symmetry of an isosceles triangle assures that its base angles are congruent.

In the approach taken here, two geometric figures are defined to be congruent if there is a sequence of rigid motions that carries one onto the other. This is the principle of superposition. For triangles, congruence means the equality of all corresponding pairs of sides and all corresponding pairs of angles. During the middle grades, through experiences drawing triangles from given conditions, students notice ways to specify enough measures in a triangle to ensure that all triangles drawn with those measures are congruent. Once these triangle congruence criteria (ASA, SAS, and SSS) are established using rigid motions, they can be used to prove theorems about triangles, quadrilaterals, and other geometric figures.

Similarity transformations (rigid motions followed by dilations) define similarity in the same way that rigid motions define congruence, thereby formalizing the similarity ideas of "same shape" and "scale factor" developed in the middle grades. These transformations lead to the criterion for triangle similarity that two pairs of corresponding angles are congruent.

The definitions of sine, cosine, and tangent for acute angles are founded on right triangles and similarity, and, with the Pythagorean Theorem, are fundamental in many real-world and theoretical situations. The Pythagorean Theorem is generalized to non-right triangles by the Law of Cosines. Together, the Laws of Sines and Cosines embody the triangle congruence criteria for the cases where three pieces of information suffice to completely solve a triangle. Furthermore, these laws yield two possible solutions in the ambiguous case, illustrating that Side-Side-Angle is not a congruence criterion.

Analytic geometry connects algebra and geometry, resulting in powerful methods of analysis and problem solving. Just as the number line associates numbers with locations in one dimension, a pair of perpendicular axes associates pairs of numbers with locations in two dimensions. This correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling, and proof. Geometric transformations of the graphs of equations correspond to algebraic changes in their equations.

Dynamic geometry environments provide students with experimental and modeling tools that allow them to investigate geometric phenomena in much the same way as computer algebra systems allow them to experiment with algebraic phenomena.

DRAFT

All Rights Reserved

Georgia Performance Standards in Mathematics
Geometry

Connections to Equations
The correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling, and proof.

Congruence G.CO

Experiment with transformations in the plane

MCC9-12.G.CO.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

MCC9-12.G.CO.2 Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).

MCC9-12.G.CO.3 Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.

MCC9-12.G.CO.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

MCC9-12.G.CO.5 Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

Understand congruence in terms of rigid motions

MCC9-12.G.CO.6 Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.

MCC9-12.G.CO.7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.

MCC9-12.G.CO.8 Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions. (Extend to include HL and AAS.)

Prove geometric theorems

MCC9-12.G.CO.9 Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and

All Rights Reserved

corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.

MCC9-12.G.CO.10 Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.

MCC9-12.G.CO.11 Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.

Make geometric constructions

MCC9-12.G.CO.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.

MCC9-12.G.CO.13 Construct an equilateral triangle, a square, and a regular hexagon, each inscribed in a circle.

Similarity, Right Triangles, and Trigonometry G.SRT

Understand similarity in terms of similarity transformations

MCC9-12.G.SRT.1 Verify experimentally the properties of dilations given by a center and a scale factor.

- **a. The dilation of a line not passing through the center of the dilation results in a parallel line and leaves a line passing through the center unchanged.**
- **b. The dilation of a line segment is longer or shorter according to the ratio given by the scale factor.**

MCC9-12.G.SRT.2 Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain, using similarity transformations, the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.

MCC9-12.G.SRT.3 Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.

Prove theorems involving similarity

MCC9-12.G.SRT.4 Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, (and its converse); the Pythagorean Theorem using triangle similarity.
MCC9-12.G.SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

All Rights Reserved

Georgia Performance Standards in Mathematics
Geometry

Define trigonometric ratios and solve problems involving right triangles

MCC9-12.G.SRT.6 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.

MCC9-12.G.SRT.7 Explain and use the relationship between the sine and cosine of complementary angles.

MCC9-12.G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

Circles G.C

Understand and apply theorems about circles

MCC9-12.G.C.1 Understand that all circles are similar.

MCC9-12.G.C.2 Identify and describe relationships among inscribed angles, radii, chords, tangents, and secants. Include 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.

MCC9-12.G.C.3 Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.

MCC9-12.G.C.4 Construct a tangent line from a point outside a given circle to the circle.

Find arc lengths and areas of sectors of circles

MCC9-12.G.C.5 Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

Expressing Geometric Properties with Equations G.GPE

Translate between the geometric description and the equation for a conic section

MCC9-12.G.GPE.1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

MCC9-12.G.GPE.2 Derive the equation of a parabola given a focus and directrix.

All Rights Reserved

Georgia Performance Standards in Mathematics
Geometry

Use coordinates to prove simple geometric theorems algebraically

MCC9-12.G.GPE.4 Use coordinates to prove simple geometric theorems algebraically. ***For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0,2).*** **(Focus on quadrilaterals, circles, right triangles, and parabolas.)**

MCC9-12.G.GPE.5 Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

MCC9-12.G.GPE.6 Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

MCC9-12.G.GPE.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.

Geometric Measurement and Dimension G.GMD

Explain volume formulas and use them to solve problems

MCC9-12.G.GMD.1 Give informal arguments for geometric formulas.

a. **Give informal arguments for the formulas of the circumference of a circle and area of a circle using dissection arguments and informal limit arguments.**
b. **Give informal arguments for the formula of the volume of a cylinder, pyramid, and cone using Cavalieri's principle.**

MCC9-12.G.GMD.2 Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.

MCC9-12.G.GMD.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.

Visualize relationships between two-dimensional and three-dimensional objects

MCC9-12.G.GMD.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

Modeling with Geometry G.MG

Apply geometric concepts in modeling situations

MCC9-12.G.MG.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).

MCC9-12.G.MG.2 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).

All Rights Reserved

Georgia Performance Standards in Mathematics
Geometry

MCC9-12.G.MG.3 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Mathematics | High School—Statistics and Probability

Decisions or predictions are often based on data—numbers in context. These decisions or predictions would be easy if the data always sent a clear message, but the message is often obscured by variability. Statistics provides tools for describing variability in data and for making informed decisions that take it into account. Data are gathered, displayed, summarized, examined, and interpreted to discover patterns and deviations from patterns. Quantitative data can be described in terms of key characteristics: measures of shape, center, and spread. The shape of a data distribution might be described as symmetric, skewed, flat, or bell shaped, and it might be summarized by a statistic measuring center (such as mean or median) and a statistic measuring spread (such as standard deviation or interquartile range). Different distributions can be compared numerically using these statistics or compared visually using plots. Knowledge of center and spread are not enough to describe a distribution. Which statistics to compare, which plots to use, and what the results of a comparison might mean, depend on the question to be investigated and the real-life actions to be taken.

Randomization has two important uses in drawing statistical conclusions. First, collecting data from a random sample of a population makes it possible to draw valid conclusions about the whole population, taking variability into account. Second, randomly assigning individuals to different treatments allows a fair comparison of the effectiveness of those treatments. A statistically significant outcome is one that is unlikely to be due to chance alone, and this can be evaluated only under the condition of randomness. The conditions under which data are collected are important in drawing conclusions from the data; in critically reviewing uses of statistics in public media and other reports, it is important to consider the study design, how the data were gathered, and the analyses employed as well as the data summaries and the conclusions drawn.

Random processes can be described mathematically by using a probability model: a list or description of the possible outcomes (the sample space), each of which is assigned a probability. In situations such as flipping a coin, rolling a number cube, or drawing a card, it might be reasonable to assume various outcomes are equally likely. In a probability model, sample points represent outcomes and combine to make up events; probabilities of events can be computed by applying the Addition and Multiplication Rules. Interpreting these probabilities relies on an understanding of independence and conditional probability, which can be approached through the analysis of two way tables.

Technology plays an important role in statistics and probability by making it possible to generate plots, regression functions, and correlation coefficients, and to simulate many possible outcomes in a short amount of time.

Connections to Functions and Modeling

Functions may be used to describe data; if the data suggest a linear relationship, the relationship can be modeled with a regression line, and its strength and direction can be expressed through a correlation coefficient.

All Rights Reserved

Georgia Performance Standards in Mathematics
Geometry

Conditional Probability and the Rules of Probability S.CP

Understand independence and conditional probability and use them to interpret data

MCC9-12.S.CP.1 Describe categories of events as subsets of a sample space using unions, intersections, or complements of other events (*or, and, not*).

MCC9-12.S.CP.2 Understand that if two events A and B are independent, the probability of A and B occurring together is the product of their probabilities, and that if the probability of two events A and B occurring together is the product of their probabilities, the two events are independent.

MCC9-12.S.CP.3 Understand the conditional probability of A given B as P (A and B)/P(B). Interpret independence of A and B in terms of conditional probability; that is the conditional probability of A given B is the same as the probability of A and the conditional probability of B given A is the same as the probability of B.

MCC9-12.S.CP.4 Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, use collected data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*

MCC9-12.S.CP.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*

Use the rules of probability to compute probabilities of compound events in a uniform probability model

MCC9-12.S.CP.6 Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in context.

MCC9-12.S.CP.7 Apply the Addition Rule, P(A or B) = P(A) + P(B) – P(A and B), and interpret the answers in context.

DRAFT

All Rights Reserved

Georgia Department of Education

2015-2016 State Board of Education Local Class Size Flexibility Considerations

In limited situations where the State Board of Education approves class size flexibility for the 2015-2016 school year, local school districts must consider the needs of the students and other program requirements that may impact class size. Among the considerations for all students are:

(1) The delivery of instruction in an effective manner so that the needs of the learner can be met in the classroom;
(2) The safety of the students in larger classrooms;
(3) The possibility for increased discipline issues if classrooms are too large; and
(4) Adequate equipment or materials for the entire class. Moreover, there are many subgroups or special populations with learning challenges that require additional considerations.

Additional considerations and guidance regarding how to utilize the flexibility authorized by the State Board are addressed below.

Class Size Considerations

Federal requirements: The State Board will not waive any federal requirements. School districts must adhere to all federal requirements that impact any school setting or group. This will include accountability requirements to meet state and federal performance targets for all students and subgroups, including students eligible under the IDEA and Title III (ESOL and Immigrant programs). In addition to the accountability requirements for meeting performance targets, school districts are expected to meet the performance requirements of Title III for ESOL students and the IDEA performance requirements for special education students. Any penalties for not meeting federal accountability and performance targets will still apply. As always, school districts are expected to improve the performance of all populations. Further, school districts must meet all federal requirements for the delivery of services. In short, that means that programs must be designed to meet the needs of the students for whom they are intended, that instruction must be delivered in an appropriate and timely manner, and no program discriminates on the basis of race/ethnicity, religion, disability or economic status. Additionally, school districts must continue to provide a free appropriate public education to all students eligible for special education services under IDEA.

Models of delivery: Although the State Board may grant flexibility for class size requirements, other program requirements were not waived. Districts provided a waiver for the 2015-2016 school year should review all program requirements very carefully as they adjust class sizes.

1. Special populations or programs such as English language learners (ELL), special education, gifted education, alterative education programs, remedial education program (REP), or early intervention program (EIP) have models of delivery for the services or programs. Even though the specific class sizes may be increased, the school system must adhere to all model delivery requirements. For example, the Augmented model for REP will still require additional teaching staff although the class size may be larger than the class size permitted under the current State Board rule. A model that calls for a reduced class size must be smaller than the district's regular class size although the class size may be larger than the class size permitted under the current State Board rule.
2. If certain models of delivery contain requirements for paraprofessionals as part of the class, the school district must adhere to those requirements. For example, a special education class for

students with profound intellectual disabilities must have a paraprofessional and a teacher. Although the number of students can increase beyond the class size permitted under the current State Board rule, the requirement to have paraprofessional in the classroom was not waived.

Eligibility limits: Some programs limit enrollment in the special program to a percentage of the school or district population. These enrollment limits were not waived. For example, EIP limits enrollment for services to 3% of the population in grades 2 - 5, this limit is still in place although more students may be served in a class.

Facility requirements: Facilities and some special programs require minimum space or other safety criteria. These space and safety requirements were not waived. For example, a special education classroom must contain 38 square feet per student. Classrooms for students with hearing impairments must have appropriate sound treatment or acoustical accommodations. Further, in career technical courses, national standards for industry certification and/or Occupational Safety and Health Administration (OSHA) standards will apply with their specific ratios of equipment/square footage to students.

Caseload requirements for special education: State Board Rule 160-4-7-.14 *Personnel, Facilities, and Caseloads,* limits the caseload for personnel providing services to students with disabilities. These caseload requirements were not waived, and school districts are expected to adhere to the caseload requirements of rule 160-4-7-.14.

Class Size Reporting during FTE: For local school districts that are approved for a class size waiver for the 2015-2016 school year, the GaDOE's Data Collections Division is suppressing class size overage errors during the 2015-2016 school year Class Size data collection. Any further updates will be communicated to your FTE Coordinators during the Data Collections.

Georgia Department of Education

Proposed Revisions to English Language Arts Standards Grades K-12

Executive Summary
Revision of English Language Arts and Mathematics CCGPS

The Common Core Georgia Performance Standards (CCGPS) in English Language Arts (ELA) and Mathematics have been revised based on a formal review and evaluation process as directed by an Executive Order from the Governor. The review and evaluation process included several survey opportunities as well as legislative and Georgia State Board of Education listening sessions. Survey feedback was collected and analyzed by the University System of Georgia. The University System of Georgia provided survey results and recommendations for revisions to the standards to the State Board of Education on September 24, 2014. A Working Committee representing K-12 Georgia public school teachers, post-secondary staff, parents, and instructional leaders from across the state made revisions to the standards based on public feedback and recommendations from survey results for standards with less than 90% approval. ELA and Mathematics Advisory Committees then reviewed the recommended changes made by the Working Committees and provided additional suggestions for clarity and change based on feedback and survey recommendations. Business and Industry partners that include the Georgia Chamber of Commerce, Metro Atlanta Chamber of Commerce, Georgia Partnership for Excellence in Education, Georgia Public Broadcasting, and Georgia Power have been involved in the review and evaluation process. An Academic Review Committee consisting of representatives from the writing and advisory committees; the Governor's Office of Student Achievement; and the Georgia Department of Education leadership staff reviewed and finalized the draft revised standards for presentation to the State Board of Education for permission to post for 60 days of public review and comment.

Note: There were some recommendations made by survey respondents that committee members felt would be more appropriate for inclusion in the Teacher Guidance documents developed by the Georgia Department of Education for each grade/course and subject. Other recommendations to be emphasized in Guidance and Professional Learning include: **phonics instruction, cursive writing, literature and informational text, traditional computing methods, and the memorization of addition, subtraction, and multiplication facts.**

Grade	English Language Arts	Mathematics
K-5	• Clarification of standards language and terminology (multiple standards, grades K – 5) [full explanation appears in Teacher Guidance documents to be linked to standards] • *Fluency skills* shifted from the phonics standards to the appropriate fluency standard in grades K, 1, 2 and 3 (Reading Foundational Standards) to maintain vertical alignment • Reference to grade-level reading standards embedded in writing standards in grades 4 and 5 were removed to maintain vertical alignment and reduce redundancy	• Clarification of standards language and terminology (multiple standards, grades K-5) • Fluency expectations made explicit, grades K-5 • Vertical alignment in geometry made explicit, grades K-5 • Addition of money standards to Kindergarten and 1st grade • *Area of rectilinear figures* moved from 3rd to 4th grade
6-8	• Clarification of standards language and terminology (multiple standards, grades 6 – 8) [full explanation appears in Teacher Guidance documents to be linked to standards] • Keyboarding skills appear in the 3 – 5 ELA standards; however, these skills are more appropriate in technical subjects at this grade level • Reference to grade-level reading standards embedded in writing standards in grades 6 and 8 were removed to maintain vertical alignment and reduce redundancy	• Clarification of standards language and terminology (multiple standards, grades 6-8) • Fluency expectations made explicit, grades 6-8 • *Mean absolute deviation* moved from 6th grade to High School
High School	• Clarification of standards language and terminology (multiple standards, grades 9 – 12) [full explanation appears in Teacher Guidance documents to be linked to standards] • Reference to grade-level reading standards embedded in writing standards in grades 9 – 10 and 11 – 12 were removed to maintain vertical alignment and reduce redundancy	• Clarification of standards language and terminology (multiple standards, High School) • Algebra and geometry standards were discretely sorted • Sequencing of standards still under discussion/yet to be determined

Gray highlighted standards denote one or more of the following:

- Standard as currently written received greater than or equal to 90% approval
- Standard as currently written was changed due to vertical alignment
- Standard as currently written was deleted to eliminate duplication
- Standard as currently written was reviewed and modifications were recommended for inclusion in Teacher Guidance documents
- Standard as currently written was reviewed and no change was recommended

Revision of CCGPS English Language Arts Standards

Summary of Changes

GRADE	NUMBER of STANDARDS			
	Current	Revised	Added	Moved
Kindergarten	41	11	0	1
1	41	5	0	1
2	40	5	0	1
3	42	3	0	1
4	43	2	0	0
5	43	0	0	0
6	41	3	0	0
7	41	2	0	0
8	41	2	0	0
9-10	41	8	0	0
11-12	41	2	0	0

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
KINDERGARTEN	
ELACCKRL1: With prompting and support, ask and answer questions about key details in a text.	
ELACCKRL2: With prompting and support, retell familiar stories, including key details.	
ELACCKRL3: With prompting and support, identify characters, settings, and major events in a story.	
ELACCKRL4: Ask and answer questions about unknown words in a text.	With prompting and support, ask and answer questions about unknown words in a text.
ELACCKRL5: Recognize common types of texts (e.g., storybooks, poems).	
ELACCKRL6: With prompting and support, name the author and illustrator of a story and define the role of each in telling the story.	
ELACCKRL7: With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).	With prompting and support, describe the relationship between illustrations and the story (how illustrations support the text).
ELACCKRL8: (Not applicable to literature).	
ELACCKRL9: With prompting and support, compare and contrast the adventures and experiences of characters in familiar stories.	
ELACCKRL10: Actively engage in group reading activities with purpose and understanding.	
ELACCKRI1: With prompting and support, ask and answer questions about key details in a text.	
ELACCKRI2: With prompting and support, identify the main topic and retell key details of a text.	With prompting and support, identify the main topic (main idea) and retell key details of a text (supporting details).
ELACCKRI3: With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.	
ELACCKRI4: With prompting and support, ask and answer questions about unknown words in a text.	
ELACCKRI5: Identify the front cover, back cover, and title page of a book.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCKRI6: Name the author and illustrator of a text and define the role of each in presenting the ideas or information in a text.	
ELACCKRI7: With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).	With prompting and support, describe the relationship between illustrations and the text (how the illustrations support the text).
ELACCKRI8: With prompting and support, identify the reasons an author gives to support points in a text.	
ELACCKRI9: With prompting and support, identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).	
ELACCKRI10: Actively engage in group reading activities with purpose and understanding.	Actively engage in group reading of informational text with purpose and understanding.
ELACCKRF1: Demonstrate understanding of the organization and basic features of print. a. Follow words from left to right, top to bottom, and page-by-page. b. Recognize that spoken words are represented in written language by specific sequences of letters. c. Understand that words are separated by spaces in print. d. Recognize and name all upper- and lowercase letters of the alphabet.	
ELACCKRF2: Demonstrate understanding of spoken words, syllables, and sounds (phonemes). a. Recognize and produce rhyming words. b. Count, pronounce, blend, and segment syllables in spoken words. c. Blend and segment onsets and rimes of single-syllable spoken words. d. Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (consonant-vowel-consonant, or CVC) words. (This does not include CVCs ending with /l/, /r/, or /x/.) e. Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCKRF3: Know and apply grade-level phonics and word analysis skills in decoding words. a. Demonstrate basic knowledge of one-to-one letter-sound correspondences by producing the primary or many of most frequent sounds for each consonant. b. Associate the long and short sounds with the common spellings (graphemes) for the five major vowels. c. Read common high-frequency words by sight. (e.g., the, of, to, you, she, my, is, are, do, does). d. Distinguish between similarly spelled words by identifying the sounds of the letters that differ.	Know and apply grade-level phonics and word analysis skills in decoding words. a. Demonstrate basic knowledge of one to one letter-sound correspondences for each consonant. b. Demonstrate basic knowledge of long and short sounds for the five major vowels. c. Distinguish between similarly spelled words by identifying the sounds of the letters that differ.
ELACCKRF4: Read emergent-reader texts with purpose and understanding.	Read common high-frequency words by sight. (e.g., the, of, to, you, she, my, is, are, do, does); read emergent-reader texts with purpose and understanding.
ELACCKW1: Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are "writing" about and state an opinion or preference about the topic or book (e.g., *My favorite book is...).*	
ELACCKW2: Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.	
ELACCKW3: Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.	
ELACCKW4: *(Begins in grade 3).*	
ELACCKW5: With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed.	
ELACCKW6: With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.	With guidance and support from adults, use a variety of tools to produce and publish writing, including digital tools in collaboration with peers.
ELACCKW7: Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).	With guidance and support, participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCKW8: With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	
ELACCKW9: *(Begins in grade 4).*	
ELACCKW10: *(Begins in grade 3).*	
ELACCKSL1: Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion). b. Continue a conversation through multiple exchanges.	
ELACCKSL2: Confirm understanding of written texts read aloud or information presented orally or through media by asking and answering questions about key details and requesting clarification if something is not understood.	
ELACCKSL3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.	
ELACCKSL4: Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.	
ELACCKSL5: Add drawings or other visual displays to descriptions as desired to provide additional detail.	
ELACCKSL6: Speak audibly and express thoughts, feelings, and ideas clearly.	
ELACCKL1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Print many upper- and lowercase letters. b. Use frequently occurring nouns and verbs. c. Form regular plural nouns orally by adding /s/ or /es/ (e.g., *dog, dogs; wish, wishes*) when speaking. d. Understand and use question words (interrogatives) (e.g., *who, what, where, when, why, how*). e. Use the most frequently occurring prepositions (e.g., *to, from, in, out, on, off, for, of, by, with*). f. Produce and expand complete sentences in shared language activities.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCKL2: Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Capitalize the first word in a sentence and the pronoun I. b. Recognize and name end punctuation. c. Write a letter or letters for most consonant and short-vowel sounds (phonemes). d. Spell simple words phonetically, drawing on knowledge of sound-letter relationships.	
ELACCKL3: *(begins in grade 2).*	
ELACCKL4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *kindergarten reading and content*. a. Identify new meanings for familiar words and apply them accurately (e.g., knowing *duck* as a bird and learning the verb *to duck*). b. Use the most frequently occurring inflections and affixes (e.g., *-ed, -s, re-, un-, pre-, -ful, -less*) as a clue to the meaning of an unknown word.	With guidance and support, determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content. a. Identify new meanings for familiar words and apply them accurately (e.g., knowing *duck* as a bird and learning the verb *to duck*). b. Use the most frequently occurring inflections and affixes (e.g., *-ed, -s, re-, un-, pre-, -ful, -less*) as a clue to the meaning of an unknown word.
ELACCKL5: With guidance and support from adults, explore word relationships and nuances in word meanings. a. Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent. b. Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms). c. Identify real-life connections between words and their use (e.g., note places at school that are *colorful*). d. Distinguish shades of meaning among verbs describing the same general action (e.g., *walk, march, strut, prance*) by acting out the meanings.	With guidance and support from adults, explore word relationships and nuances in word meanings. a. Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent. b. Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms). c. Identify real-life connections between words and their use (e.g., note places at school that are *colorful*). d. Begin to distinguish shades of meaning among verbs describing the same general action (e.g., walk, march, strut, prance) by acting out the meanings.
ELACCKL6: Use words and phrases acquired through conversations, reading and being read to, and responding to texts.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 1	
ELACC1RL1: Ask and answer questions about key details in a text.	
ELACC1RL2: Retell stories, including key details, and demonstrate understanding of their central message or lesson.	
ELACC1RL3: Describe characters, settings, and major events in a story, using key details.	
ELACC1RL4: Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.	
ELACC1RL5: Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.	Explain major difference between texts that tell stories and texts that give information.
ELACC1RL6: Identify who is telling the story at various points in a text.	
ELACC1RL7: Use illustrations and details in a story to describe its characters, setting, or events.	
ELACC1RL8: (Not applicable to literature).	
ELACC1RL9: Compare and contrast the adventures and experiences of characters in stories.	
ELACC1RL10: With prompting and support, read prose and poetry of appropriate complexity for grade 1.	
ELACC1RI1: Ask and answer questions about key details in a text.	
ELACC1RI2: Identify the main topic and retell key details of a text.	
ELACC1RI3: Describe the connection between two individuals, events, ideas, or pieces of information in a text.	
ELACC1RI4: Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.	
ELACC1RI5: Know and use various text features (e.g., headings, tables of content, glossaries, electronic menus, icons) to locate key facts or information in a text.	
ELACC1RI6: Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC1RI7: Use illustrations and details in a text to describe its key ideas.	
ELACC1RI8: Identify the reasons an author gives to support points in a text.	
ELACC1RI9: Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).	
ELACC1RI10: With prompting and support, read informational texts appropriately complex for grade 1.	
ELACC1RF1: Demonstrate understanding of the organization and basic features of print. a. Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).	
ELACC1RF2: Demonstrate understanding of spoken words, syllables, and sounds (phonemes). a. Distinguish long from short vowel sounds in spoken single-syllable words. b. Orally produce single-syllable words by blending sounds (phonemes), including consonant blends. c. Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words. d. Segment spoken single-syllable words into their complete sequence of individual sounds (phonemes).	
ELACC1RF3: Know and apply grade-level phonics and word analysis skills in decoding words. a. Know the spelling-sound correspondences for common consonant digraphs. b. Decode regularly spelled one-syllable words. c. Know final -e and common vowel team conventions for representing long vowel sounds. d. Use knowledge that every syllable must have a vowel sound to determine the number of syllables in a printed word. e. Decode two-syllable words following basic patterns by breaking the words into syllables. f. Read words with inflectional endings. g. Recognize and read grade-appropriate irregularly spelled words.	Know and apply grade-level phonics and word analysis skills in decoding words. a. Know the spelling-sound correspondences for common consonant digraphs. b. Decode regularly spelled one-syllable words. c. Know final -e and common vowel team conventions for representing long vowel sounds. d. Use knowledge that every syllable must have a vowel sound to determine the number of syllables in a printed word. e. Decode two-syllable words following basic patterns by breaking the words into syllables. f. Read words with inflectional endings.

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC1RF4: Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary. d. Read grade-appropriate irregularly spelled words.
ELACC1W1: Write opinion pieces in which they introduce the topic or the name of the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.	
ELACC1W2: Write informative/ explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.	
ELACC1W3: Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.	
ELACC1W4: *(Begins in grade 3).*	
ELACC1W5: With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed. a. May include oral or written prewriting (graphic organizers).	
ELACC1W6: With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.	With guidance and support from adults, use a variety of tools to produce and publish writing, including digital tools and collaboration with peers.
ELACC1W7: Participate in shared research and writing projects (e.g., exploring a number of "how-to" books on a given topic and use them to write a sequence of instructions).	
ELACC1W8: With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	
ELACC1W9: *(Begins in grade 4).*	
ELACC1W10: *(Begins in grade 3).*	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC1SL1: Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by responding to the comments of others through multiple exchanges. c. Ask questions to clear up any confusion about the topics and texts under discussion.	
ELACC1SL2: Ask and answer questions about key details in a text read aloud or information presented orally or through other media.	
ELACC1SL3: Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.	
ELACC1SL4: Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.	
ELACC1SL5: Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.	
ELACC1SL6: Produce complete sentences when appropriate to task and situation. (See grade 1 Language standards 1 and 3 for specific expectations.)	
ELACC1L1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Print all upper- and lowercase letters. b. Use common, proper, and possessive nouns. c. Use singular and plural nouns with matching verbs in basic sentences (e.g., *He hops; We hop*). d. Use personal, possessive, and indefinite pronouns (e.g., *I, me, my; they, them, their, anyone, everything*). e. Use verbs to convey a sense of past, present, and future (e.g., *Yesterday I walked home; Today I walk home; Tomorrow I will walk home*). f. Use frequently occurring adjectives. g. Use frequently occurring conjunctions (e.g., *and, but, or, so, because*). h. Use determiners (e.g., articles, demonstratives). i. Use frequently occurring prepositions (e.g., *during, beyond, toward*). j. Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to questions and prompts. K. Print with appropriate spacing between words and sentences.	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Print all upper- and lowercase letters. b. Use common, proper, and possessive nouns. c. Use singular and plural nouns with matching verbs in basic sentences (e.g., *He hops; We hop*). d. Use personal, possessive, and indefinite pronouns (e.g., *I, me, my; they, them, their, anyone, everything*). e. Use verbs to convey a sense of past, present, and future (e.g., *Yesterday I walked home; Today I walk home; Tomorrow I will walk home*). f. Use frequently occurring adjectives. g. Use frequently occurring conjunctions (e.g., *and, but, or, so, because*). h. Use determiners (e.g., articles, demonstratives). i. Use frequently occurring prepositions (e.g., *during, beyond, toward*). J. Produce and expand complete simple and compound sentences in response to questions and prompts (declarative, interrogative, imperative, and exclamatory). K. Print with appropriate spacing between words and sentences.

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC1L2: Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Capitalize dates and names of people. b. Use end punctuation for sentences. c. Use commas in dates and to separate single words in a series. d. Use conventional spelling for words with common spelling patterns and for frequently occurring irregular words. e. Spell untaught words phonetically, drawing on phonemic awareness and spelling conventions.	
ELACC1L3: *(begins in grade 2).*	
ELACC1L4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 1 reading and content*, choosing flexibly from an array of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. b. Use frequently occurring affixes as a clue to the meaning of a word. c. Identify frequently occurring root words (e.g., *look*) and their inflectional forms (e.g., *looks, looked, looking*).	
ELACC1L5: With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings. a. Sort words into categories (e.g., colors, clothing) to gain a sense of the concepts the categories represent. b. Define words by category and by one or more key attributes (e.g., a *duck* is a bird that swims; a *tiger* is a large cat with stripes). c. Identify real-life connections between words and their use (e.g., note places at home that are *cozy*). d. Distinguish shades of meaning among verbs differing in manner (e.g., *look, peek, glance, stare, glare, scowl*) and adjectives differing in intensity (e.g., *large, gigantic*) by defining or choosing them or by acting out the meanings.	
ELACC1L6: Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using frequently occurring conjunctions to signal simple relationships (e.g., *I named my hamster Nibblet because she nibbles too much because she likes that*).	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC4W3: Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use dialogue and description to develop experiences and events or show the responses of characters to situations. c. Use a variety of transitional words and phrases to manage the sequence of events. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events.	
ELACC4W4: Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)	
ELACC4W5: With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language Standards 1–3 up to and including grade 4.)	
ELACC4W6: With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.	
ELACC4W7: Conduct short research projects that build knowledge through investigation of different aspects of a topic.	
ELACC4W8: Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.	
ELACC4W9: Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply grade 4 Reading Standards to literature (e.g., "Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text [e.g., a character's thoughts, words, or actions]"). b. Apply grade 4 Reading Standards to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text").	
ELACC4W10: 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.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC4SL1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others. d. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.	
ELACC4SL2: Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	
ELACC4SL3: Identify the reasons and evidence a speaker provides to support particular points.	
ELACC4SL4: 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; speak clearly at an understandable pace.	
ELACC4SL5: Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.	
ELACC4SL6: Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation. (See grade 4 Language Standard 1 for specific expectations.)	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC4L1: Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking. a. Use relative pronouns (*who, whose, whom, which, that*) and relative adverbs (*where, when, why*). b. Form and use the progressive (e.g., *I was walking; I am walking; I will be walking*) verb aspects. c. Use modal auxiliaries (e.g., *can, may, must*) to convey various conditions. d. Order adjectives within sentences according to conventional patterns (e.g., *a small red bag* rather than *a red small bag*). e. Form and use prepositional phrases. f. Produce complete sentences, recognizing and correcting rhetorically poor fragments and run-ons. g. Correctly use frequently confused words (e.g., *to, too, two; there, their*). h. Write legibly in cursive, leaving spaces between letters in a word and between words in a sentence.	Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking. a. Use relative pronouns (*who, whose, whom, which, that*) and relative adverbs (*where, when, why*). b. Form and use the progressive (e.g., *I was walking; I am walking; I will be walking*) verb aspects. c. Use helping/linking verbs to convey various conditions. d. Order adjectives within sentences according to conventional patterns (e.g., *a small red bag* rather than *a red small bag*). e. Form and use prepositional phrases. f. Produce complete sentences, recognizing and correcting rhetorically poor fragments and run-ons. g. Correctly use frequently confused words (e.g., *to, too, two; there, their*). h. Write legibly in cursive, leaving spaces between letters in a word and between words in a sentence.
ELACC4L2: Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing. a. Use correct capitalization. b. Use commas and quotation marks to mark direct speech and quotations from a text. c. Use a comma before a coordinating conjunction in a compound sentence. d. Spell grade-appropriate words correctly, consulting references as needed.	
ELACC4L3: Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Choose words and phrases to convey ideas precisely. b. Choose punctuation for effect. c. Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion).	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC4L4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 4 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., *telegraph, photograph, autograph*). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.	
ELACC4L5: Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Explain the meaning of simple similes and metaphors (e.g., *as pretty as a picture*) in context. b. Recognize and explain the meaning of common idioms, adages, and proverbs. c. Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).	
ELACC4L6: Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary, including words and phrases that signal precise actions, emotions, or states of being (e.g., *quizzed, whined, stammered*) and words and phrases basic to a particular topic (e.g., *wildlife, conservation*, and *endangered* when discussing animal preservation).	

DRAFT

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 5	
ELACC5RL1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	
ELACC5RL2: Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.	
ELACC5RL3: Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).	
ELACC5RL4: Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.	
ELACC5RL5: Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, drama, or poem.	
ELACC5RL6: Describe how a narrator's or speaker's point of view influences how events are described.	
ELACC5RL7: Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).	
ELACC5RL8: (Not applicable to literature).	
ELACC5RL9: Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.	
ELACC5RL10: By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 4-5 text complexity band independently and proficiently.	
ELACC5RI1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	
ELACC5RI2: Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.	
ELACC5RI3: Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC5RI4: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.	
ELACC5RI5: Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.	
ELACC5RI6: Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.	
ELACC5RI7: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.	
ELACC5RI8: Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence supports which point(s).	
ELACC5RI9: Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.	
ELACC5RI10: By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4-5 text complexity band independently and proficiently.	
ELACC5RF1: Kindergarten and 1st grade only.	
ELACC5RF2: Kindergarten and 1st grade only.	
ELACC5RF3: Know and apply grade-level phonics and word analysis skills in decoding words. a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multi-syllabic words in context and out of context.	
ELACC5RF4: Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC5W1: Write opinion pieces on topics or texts, supporting a point of view with reasons. a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose. b. Provide logically ordered reasons that are supported by facts and details. c. Link opinion and reasons using words, phrases, and clauses (e.g., *consequently*, *specifically*). d. Provide a concluding statement or section related to the opinion presented.	
ELACC5W2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. c. Link ideas within and across categories of information using words, phrases, and clauses (e.g., *in contrast*, *especially*). d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Provide a concluding statement or section related to the information or explanation presented.	
ELACC5W3: Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations. c. Use a variety of transitional words, phrases, and clauses to manage the sequence of events. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events.	
ELACC5W4: Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC5W5: With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language Standards 1–3 up to and including grade 5.)	
ELACC5W6: With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.	
ELACC5W7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.	
ELACC5W8: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.	
ELACC5W9: Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply grade 5 Reading Standards to literature (e.g., "Compare and contrast two or more characters, settings, or events in a story or a drama, drawing on specific details in the text [e.g., how characters interact]"). b. Apply *grade 5 Reading Standards* to informational texts (e.g., Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence supports which point[s]).	
ELACC5W10: 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.	
ELACC5SL1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others. d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC5SL2: Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	
ELACC5SL3: Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.	
ELACC5SL4: Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.	
ELACC5SL5: Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.	
ELACC5SL6: Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation. (See grade 5 Language Standards 1 and 3 for specific expectations.)	
ELACC5L1: Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking. a. Explain the function of conjunctions, prepositions, and interjections in general and their function in particular sentences. b. Form and use the perfect (e.g., *I had walked; I have walked; I will have walked*) verb aspects. c. Use verb tense and aspect to convey various times, sequences, states, and conditions. d. Recognize and correct inappropriate shifts in verb tense and aspect. e. Use correlative conjunctions (e.g., *either/or, neither/nor*).	
ELACC5L2: Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing. a. Use punctuation to separate items in a series. b. Use a comma to separate an introductory element from the rest of the sentence. c. Use a comma to set off the words *yes* and *no* (e.g., *Yes, thank you*), to set off a tag question from the rest of the sentence (e.g., *It's true, isn't it?*), and to indicate direct address (e.g., *Is that you, Steve?*). d. Use underlining, quotation marks, or italics to indicate titles of works. e. Spell grade-appropriate words correctly, consulting references as needed.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC5L3: Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Expand, combine, and reduce sentences for meaning, reader/listener interest, and style. b. Compare and contrast the varieties of English (e.g., dialects, registers) used in stories, dramas, or poems.	
ELACC5L4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 5 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., *photograph, photosynthesis*). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.	
ELACC5L5: Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figurative language, including similes and metaphors, in context. b. Recognize and explain the meaning of common idioms, adages, and proverbs. c. Use the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.	
ELACC5L6: Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary, including words and phrases that signal contrast, addition, and other logical relationships (e.g., *however, although, nevertheless, similarly, moreover, in addition*).	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 6	
ELACC6RL1: Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	
ELACC6RL2: Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.	Determine a theme and/or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
ELACC6RL3: Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves towards a resolution.	
ELACC6RL4: Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.	
ELACC6RL5: Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.	
ELACC6RL6: Explain how an author develops the point of view of the narrator or speaker in a text.	
ELACC6RL7: Compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including contrasting what they "see" and "hear" when reading the text to what they perceive when they listen or watch.	
ELACC6RL8: (Not applicable to literature).	
ELACC6RL9: Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.	
ELACC6RL10: By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	
ELACC6RI1: Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC6RI2: Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.	
ELACC6RI3: Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).	
ELACC6RI4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.	
ELACC6RI5: Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.	
ELACC6RI6: Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.	
ELACC6RI7: Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.	
ELACC6RI8: Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.	
ELACC6RI9: Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).	
ELACC6RI10: By the end of the year, read and comprehend literary nonfiction in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	
ELACC6W1: Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s) and organize the reasons and evidence clearly. b. Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from the argument presented.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC6W2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to 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. f. Provide a concluding statement or section that follows from the information or explanation presented.	
ELACC6W3: Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. d. Use precise words and phrases, relevant descriptive details, and sensory language to convey experiences and events. e. Provide a conclusion that follows from the narrated experiences or events.	
ELACC6W4: 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.)	
ELACC6W5: 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. (Editing for conventions should demonstrate command of Language Standards 1–3 up to and including grade 6.)	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC6W6: Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.	Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others.
ELACC6W7: Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.	
ELACC6W8: Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.	
ELACC6W9: Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 6 Reading Standards* to literature (e.g., "Compare and contrast texts in different forms or genres [e.g., stories and poems; historical novels and fantasy stories] in terms of their approaches to similar themes and topics"). b. Apply grade 6 Reading Standards to literary nonfiction (e.g., "Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not").	
ELACC6W10: 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.	
ELACC6SL1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 6 topics, texts, and issues*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed. c. Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion. d. Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC6SL2: Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.	
ELACC6SL3: Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.	
ELACC6SL4: Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.	
ELACC6SL5: Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.	
ELACC6SL6: Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language Standards 1 and 3 for specific expectations.)	
ELACC6L1: Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking. a. Ensure that pronouns are in the proper case (subjective, objective, possessive). b. Use intensive pronouns (e.g., *myself, ourselves*). c. Recognize and correct inappropriate shifts in pronoun number and person. d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents). e. Recognize variations from Standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.	
ELACC6L2: Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing. a. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements. b. Spell correctly.	
ELACC6L3: Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Vary sentence patterns for meaning, reader/listener interest, and style. b. Maintain consistency in style and tone.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC6L4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 6 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *audience, auditory, audible*). c. Consult 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 or its part of speech. 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).	
ELACC6L5: Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., personification) in context. b. Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *stingy, scrimping, economical, unwasteful, thrifty*).	
ELACC6L6: 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.	Acquire and accurately use grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

DRAFT

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 7	
ELACC7RL1: Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	
ELACC7RL2: Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.	Determine a theme and/or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.
ELACC7RL3: Analyze how particular elements of a story or drama interact (e.g., how settings shape the characters or plot).	
ELACC7RL4: Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.	
ELACC7RL5: Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.	
ELACC7RL6: Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.	
ELACC7RL7: Compare and contrast a written story, drama, or poem to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).	
ELACC7RL8: (Not applicable to literature).	
ELACC7RL9: Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means or understanding how authors of fiction use or alter history.	
ELACC7RL10: By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	
ELACC7RI1: Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	
ELACC7RI2: Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC7RI3: Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).	
ELACC7RI4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.	
ELACC7RI5: Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas.	
ELACC7RI6: Determine an author's point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others.	
ELACC7RI7: Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium's portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words).	
ELACC7RI8: Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.	
ELACC7RI9: Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing the different evidence or advancing different interpretations of facts.	
ELACC7RI10: By the end of the year, read and comprehend literary nonfiction in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	
ELACC7W1: Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), 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.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC7W2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate 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. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.	
ELACC7W3: Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.	
ELACC7W4: 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.)	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC7W5: 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. (Editing for conventions should demonstrate command of Language Standards 1–3 up to and including grade 7.)	
ELACC7W6: Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.	
ELACC7W7: Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.	
ELACC7W8: 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.	
ELACC7W9: Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 7 Reading Standards* to literature (e.g., "Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history"). b. Apply grade 7 Reading Standards to literary nonfiction (e.g. "Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims").	
ELACC7W10: 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.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC7SL1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 7 topics, texts, and issues,* building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed. c. Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed. d. Acknowledge new information expressed by others and, when warranted, modify their own views and understanding.	
ELACC7SL2: Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.	
ELACC7SL3: Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence.	
ELACC7SL4: Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.	
ELACC7SL5: Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.	
ELACC7SL6: Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 7 Language Standards 1 and 3 for specific expectations.)	
ELACC7L1: Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking. a. Explain the function of phrases and clauses in general and their function in specific sentences. b. Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas. c. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC7L2: Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing. a. Use a comma to separate coordinate adjectives (e.g., *It was a fascinating, enjoyable movie* but not *He wore an old[,] green shirt*). b. Spell correctly.	
ELACC7L3: Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.	
ELACC7L4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 7 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *belligerent, bellicose, rebel*). 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 or its part of speech. 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).	
ELACC7L5: Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context. b. Use the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *refined, respectful, polite, diplomatic, condescending*).	
ELACC7L6: 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.	Acquire and accurately use grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 8	
ELACC8RL1: Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.	
ELACC8RL2: Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.	Determine a theme and/or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
ELACC8RL3: Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.	
ELACC8RL4: Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.	
ELACC8RL5: Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.	
ELACC8RL6: Analyze how differences in the points of view of characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.	
ELACC8RL7: Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.	
ELACC8RL8: (Not applicable to literature).	
ELACC8RL9: Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.	
ELACC8RL10: By the end of the year, read and comprehend literature, including stories, dramas, and poems, at the high end of grades 6-8 text complexity band independently and proficiently.	
ELACC8RI1: Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.	
ELACC8RI2: Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC8RI3: Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).	
ELACC8RI4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.	
ELACC8RI5: Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.	
ELACC8RI6: Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.	
ELACC8RI7: Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.	
ELACC8RI8: Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.	
ELACC8RI9: Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.	
ELACC8RI10: By the end of the year, read and comprehend literary nonfiction at the high end of the grades 6-8 text complexity band independently and proficiently.	
ELACC8W1: Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), 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 evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. 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.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC8W2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; 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. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.	
ELACC8W3: Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, description, and reflection, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence, signal shifts from one time frame or setting to another, and show the relationships among experiences and events. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.	
ELACC8W4: 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.)	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC8W5: 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. (Editing for conventions should demonstrate command of Language Standards 1–3 up to and including grade 8.)	
ELACC8W6: Use technology, including the Internet, to produce and publish writing & present the relationships between info and ideas efficiently as well as to interact and collaborate with others.	
ELACC8W7: 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.	
ELACC8W8: 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.	
ELACC8W9: Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 8 Reading Standards* to literature (e.g., "Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new"). b. Apply *grade 8 Reading Standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced").	
ELACC8W10: 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.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC8SL1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 8 topics and texts*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed. c. Pose questions that connect the ideas of several speakers and elicit elaboration and respond to others' questions and comments with relevant evidence, observations, and ideas. d. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views and understanding in light of the evidence presented.	
ELACC8SL2: Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.	
ELACC8SL3: Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.	
ELACC8SL4: Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.	
ELACC8SL5: Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.	
ELACC8SL6: Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 8 Language Standards 1 and 3 for specific expectations.)	
ELACC8L1: Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking. a. Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences. b. Form and use verbs in the active and passive voice. c. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood. d. Recognize and correct inappropriate shifts in verb voice and mood.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACC8L2: Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing. a. Use punctuation (comma, ellipsis, dash) to indicate a pause or break. b. Use an ellipsis to indicate an omission. c. Spell correctly.	
ELACC8L3: Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).	
ELACC8L4: Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on *grade 8 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *precede, recede, secede*). 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 or its part of speech. 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).	
ELACC8L5: Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g. verbal irony, puns) in context. b. Use the relationship between particular words to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *bullheaded, willful, firm, persistent, resolute*).	
ELACC8L6: 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.	Acquire and accurately use grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 9 – 10	
ELACCL9-10RL1: Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	
ELACCL9-10RL2: Determine a theme or central idea of 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.	Determine a theme or central idea of text and closely 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.
ELACCL9-10RL3: 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.	
ELACCL9-10RL4: 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.)	
ELACCL9-10RL5: 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.	
ELACCL9-10RL6: 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.	
ELACCL9-10RL7: 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 de Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).	Analyze the representation of a subject or a key scene in two different artistic mediums (e.g., Auden's poem "Musée de Beaux Arts" and Breughel's painting *Landscape with the Fall of Icarus*), including what is emphasized or absent in each treatment
ELACCL9-10RL8: (Not applicable to literature).	
ELACCL9-10RL9: 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).	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL9-10RL10: 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. By the end of grade 10, 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.	
ELACCL9-10RI1: Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	
ELACCL9-10RI2: 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.	
ELACCL9-10RI3: 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.	
ELACCL9-10RI4: 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).	
ELACCL9-10RI5: 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).	
ELACCL9-10RI6: 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.	
ELACCL9-10RI7: Analyze various accounts of a subject told in different mediums (e.g., a person's life story in print and multimedia), determining which details are emphasized in each account.	
ELACCL9-10RI8: 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.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL9-10RI9: Analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail"), including how they address related themes and concepts.	Analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail", Nelson Mandela's Nobel Peace Prize Speech, The Universal Declaration of Human Rights), including how they address related themes and concepts.
ELACCL9-10RI10: 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. By the end of grade 10, read and comprehend literary nonfiction in the grades 9-10 text complexity band independently and proficiently.	
ELACCL9-10W1: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. 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. 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. 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 and supports the argument presented.	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. 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. 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. 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 an appropriate style and objective tone. e. Provide a concluding statement or section that follows from and supports the argument presented.

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL9-10W2: 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. 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. 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 appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic. 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).	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. 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. 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 appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic. e. Establish and maintain an appropriate style and objective tone. 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).
ELACCL9-10W3: Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. 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 and/or characters; create a smooth progression of experiences or events. b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters. c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole. d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters. e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.	
ELACCL9-10W4: 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.)	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL9-10W5: 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 Language Standards 1–3 up to and including grades 9–10.)	
ELACCL9-10W6: 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.	
ELACCL9-10W7: Conduct short as well as more sustained research projects to answer a question (including a self-generate 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.	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.
ELACCL9-10W8: 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.	
ELACCL9-10W9: Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grades 9–10 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]"). b. Apply *grades 9–10 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").	
ELACCL9-10W10: 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.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL9-10SL1: 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. 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. 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. 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. 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.	
ELACCL9-10SL2: Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.	
ELACCL9-10SL3: Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.	Evaluate and/or reflect on a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
ELACCL9-10SL4: 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.	
ELACCL9-10SL5: 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.	
ELACCL9-10SL6: Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grades 9–10 Language Standards 1 and 3 for specific expectations.)	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL9-10L1: Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking. a. Use parallel structure. b. 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.	
ELACCL9-10L2: Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing. a. Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses. b. Use a colon to introduce a list or quotation. c. Spell correctly. d. Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization.	
ELACCL9-10L3: 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. a. 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, and to write and to edit so that it conforms to the guidelines in a style manual (e.g., *MLA Handbook*, APA Handbook, Turabian's *Manual for Writers*) appropriate for the discipline and writing type.
ELACCL9-10L4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies. 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. b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *analyze, analysis, analytical; advocate, advocacy*). 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. 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).	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL9-10L5: Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., euphemism, oxymoron) in context and analyze their role in the text. b. Analyze nuances in the meaning of words with similar denotations.	
ELACCL9-10L6: 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.	

DRAFT

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 11 – 12	
ELACCL11-12RL1: 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.	
ELACCL11-12RL2: Determine two or more themes or central ideas of text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.	
ELACCL11-12RL3: 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).	
ELACCL11-12RL4: Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)	
ELACCL11-12RL5: 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.	
ELACCL11-12RL6: Analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).	
ELACCL11-12RL7: 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 as well as one play by an American dramatist.)	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL11-12RL8: (Not applicable to literature).	
ELACCL11-12RL9: 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.	Demonstrate knowledge of eighteenth-, nineteenth- and early twentieth-century foundational works (of American Literature, British Literature, World Literature, or Multicultural Literature), including how two or more texts from the same period treat similar themes or topics.
ELACCL11-12RL10: By the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11-CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, in the grades 11-CCR text complexity band independently and proficiently.	
ELACCL11-12RI1: 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.	
ELACCL11-12RI2: Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.	
ELACCL11-12RI3: Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.	
ELACCL11-12RI4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).	
ELACCL11-12RI5: Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.	
ELACCL11-12RI6: Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.	
ELACCL11-12RI7: Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL11-12RI8: Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., *The Federalist*, presidential addresses.)	
ELACCL11-12RI9: Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features.	Analyze foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features. For British Literature, American Literature, and Multicultural Literature use comparable documents of historical significance.
ELACCL11-12RI10: By the end of grade 11, read and comprehend literary nonfiction in the grades 11-CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literary nonfiction in the grades 11-CCR text complexity band independently and proficiently.	
ELACCL11-12W1: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient 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 claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner 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 and supports the argument presented.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL11-12W2: 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. a. Introduce a topic; 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 appropriate and varied transitions and syntax 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. 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).	
ELACCL11-12W3: Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. a. Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events. b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters. c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution). d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters. e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL11-12W4: 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.)	
ELACCL11-12W5: 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 Language Standards 1–3 up to and including grades 11-12.)	
ELACCL11-12W6: 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.	
ELACCL11-12W7: 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.	
ELACCL11-12W8: 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 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.	
ELACCL11-12W9: Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grades 11–12 Reading Standards* to literature (e.g., "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"). b. Apply grades 11–12 Reading Standards to literary nonfiction (e.g., "Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court Case majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., *The Federalist*, presidential addresses]").	
ELACC11-12W10: 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.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL11-12SL1: Initiate and participate effectively in a range of collaborative discussions(one-on-one, in groups, and teacher-led) with diverse partners on *grades 11-12 topics, texts, and issues,* building on others' ideas and expressing their own clearly and persuasively. 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. b. Work with peers to set rules for collegial discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed. c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.	
ELACCL11-12SL2: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.	
ELACCL11-12SL3: Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.	
ELACCL11-12SL4: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range or formal and informal tasks.	
ELACCL11-12SL5: 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.	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL11-12SL6: Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See grades 11–12 Language Standards 1 and 3 for specific expectations.)	
ELACCL11-12L1: Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking. a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested. b. Resolve issues of complex or contested usage, consulting references (e.g., *Merriam-Webster's Dictionary of English Usage*, *Garner's Modern American English*) as needed.	
ELACCL11-12L2: Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing. a. Observe hyphenation conventions. b. Spell correctly. c. Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization.	
ELACCL11-12L3: 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. a. Vary syntax for effect, consulting references (e.g., Tufte's *Artful Sentences*) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.	
ELACCL11-12L4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 11-12 reading and content*, choosing flexibly from a range of strategies. 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. b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *conceive, conception, conceivable*). 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, or its standard usage. 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).	

English Language Arts Standards: Kindergarten – High School

Current Standard	Proposed Standard
ELACCL11-12L5: Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text. b. Analyze nuances in the meaning of words with similar denotations.	
ELACCL11-12L6: 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.	

DRAFT

Georgia Department of Education

Proposed Revisions to Mathematics Standards Grades K-High School

Executive Summary
Revision of English Language Arts and Mathematics CCGPS

The Common Core Georgia Performance Standards (CCGPS) in English Language Arts (ELA) and Mathematics have been revised based on a formal review and evaluation process as directed by an Executive Order from the Governor. The review and evaluation process included several survey opportunities as well as legislative and Georgia State Board of Education listening sessions. Survey feedback was collected and analyzed by the University System of Georgia. The University System of Georgia provided survey results and recommendations for revisions to the standards to the State Board of Education on September 24, 2014. A Working Committee representing K-12 Georgia public school teachers, post-secondary staff, parents, and instructional leaders from across the state made revisions to the standards based on public feedback and recommendations from survey results for standards with less than 90% approval. ELA and Mathematics Advisory Committees then reviewed the recommended changes made by the Working Committees and provided additional suggestions for clarity and change based on feedback and survey recommendations. Business and Industry partners that include the Georgia Chamber of Commerce, Metro Atlanta Chamber of Commerce, Georgia Partnership for Excellence in Education, Georgia Public Broadcasting, and Georgia Power have been involved in the review and evaluation process. An Academic Review Committee consisting of representatives from the writing and advisory committees; the Governor's Office of Student Achievement; and the Georgia Department of Education leadership staff reviewed and finalized the draft revised standards for presentation to the State Board of Education for permission to post for 60 days of public review and comment.

Note: There were some recommendations made by survey respondents that committee members felt would be more appropriate for inclusion in the Teacher Guidance documents developed by the Georgia Department of Education for each grade/course and subject. Other recommendations to be emphasized in Guidance and Professional Learning include: **phonics instruction, cursive writing, literature and informational text, traditional computing methods, and the memorization of addition, subtraction, and multiplication facts.**

Grade	English Language Arts	Mathematics
K-5	• Clarification of standards language and terminology (multiple standards, grades K – 5) [full explanation appears in Teacher Guidance documents to be linked to standards] • *Fluency skills* shifted from the phonics standards to the appropriate fluency standard in grades K, 1, 2 and 3 (Reading Foundational Standards) to maintain vertical alignment • Reference to grade-level reading standards embedded in writing standards in grades 4 and 5 were removed to maintain vertical alignment and reduce redundancy	• Clarification of standards language and terminology (multiple standards, grades K-5) • Fluency expectations (including the memorization of basic math facts and multiplication tables) made explicit, grades K-5 • Vertical alignment in geometry made explicit, grades K-5 • Addition of money standards to Kindergarten and 1st grade • *Area of rectilinear figures* moved from 3rd to 4th grade
6-8	• Clarification of standards language and terminology (multiple standards, grades 6 – 8) [full explanation appears in Teacher Guidance documents to be linked to standards] • Keyboarding skills appear in the 3 – 5 ELA standards; however, these skills are more appropriate in technical subjects at this grade level • Reference to grade-level reading standards embedded in writing standards in grades 6 and 8 were removed to maintain vertical alignment and reduce redundancy	• Clarification of standards language and terminology (multiple standards, grades 6-8) • Fluency expectations (including efficiently solving multiple-digit division problems and simple equations) made explicit, grades 6-8 • *Mean absolute deviation* moved from 6th grade to High School
High School	• Clarification of standards language and terminology (multiple standards, grades 9 – 12) [full explanation appears in Teacher Guidance documents to be linked to standards] • Reference to grade-level reading standards embedded in writing standards in grades 9 – 10 and 11 – 12 were removed to maintain vertical alignment and reduce redundancy	• Clarification of standards language and terminology (multiple standards, High School) • Algebra and geometry standards were discretely sorted • Sequencing of standards still under discussion/yet to be determined

Gray highlighted standards denote one or more of the following:

- Standard as currently written received greater than or equal to 90% approval
- Standard as currently written was changed due to vertical alignment
- Standard as currently written was deleted to eliminate duplication
- Standard as currently written was reviewed and modifications were recommended for inclusion in Teacher Guidance documents
- Standard as currently written was reviewed and no change was recommended

Revision of CCGPS Mathematics Standards

Summary of Changes

GRADE	NUMBER of STANDARDS			
	Current	Revised	Added	Moved
Kindergarten	22	5	1	0
1	21	5	1	0
2	26	3	0	0
3	25	10	0	1
4	28	12	0	0
5	26	11	0	0
6	29	9	0	0
7	24	12	1	0
8	28	8	0	0
9	46	28	1	9 Geometry Standards
10	60	30	0	25 Algebra Standards

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
KINDERGARTEN	
MCCK.CC.1 Count to 100 by ones and by tens.	
MCCK.CC.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	
MCCK.CC.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	
MCCK.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality. a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. c. Understand that each successive number name refers to a quantity that is one larger.	Understand the relationship between numbers and quantities; connect counting to cardinality. a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. (one-to-one correspondence) b. Understand that the last number said tells the number of objects counted (cardinality). The number of objects is the same regardless of their arrangement or the order in which they were counted. c. Understand that each successive number name refers to a quantity that is one larger.
MCCK.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.	Count to answer 'how many?" questions. a. Count to answer "how many?" questions about as many as 20 things arranged in a variety of ways (a line, a rectangular array, or a circle), or as many as 10 things in a scattered configuration. b. Given a number from 1-20, count out that many objects. c. Identify and be able to count pennies within 20. (Use pennies as manipulatives in multiple mathematical contexts.)
MCCK.CC.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.[1]	
MCCK.CC.7 Compare two numbers between 1 and 10 presented as written numerals.	
MCCK.OA.1 Represent addition and subtraction with objects, fingers, mental images, drawings[2], sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.	

[1] Include groups with up to ten objects.
[2] Drawings need not show details, but should show the mathematics in the problem.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCCK.OA.2 Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	
MCCK.OA.3 Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).	Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation. (drawings need not include an equation)
MCCK.OA.4 For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.	
MCCK.OA.5 Fluently add and subtract within 5.	
MCCK.NBT.1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.	Compose and decompose numbers from 11 to 19 into ten ones and some further ones to understand that these numbers are composed of ten ones and one, two, three, four, five, six , seven, eight, or nine ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8)
MCCK.MD.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	Describe several measurable attributes of an object, such as length or weight. *For example, a student may describe a shoe as, "This shoe is heavy! It is also really long!"*
MCCK.MD.2 Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*	
MCCK.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.[3]	
MCCK.G.1 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.*	
MCCK.G.2 Correctly name shapes regardless of their orientations or overall size.	
MCCK.G.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").	

[3] *Limit category counts to be less than or equal to 10.*

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCCK.G. 4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).	
MCCK.G. 5 Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.	
MCCK.G. 6 Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*	

DRAFT

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 1	
MCC1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.[4]	
MCC1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	
MCC1.OA.3 Apply properties of operations as strategies to add and subtract.[5] 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 two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)	
MCC1.OA.4 Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.	
MCC1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	
MCC1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).	MCC1.OA.6 Add and subtract within 20. a. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). b. Fluently add and subtract within 10.
MCC1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.	
MCC1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ – 3, 6 + 6 = Δ.	

[4] *See Glossary, Table 1*

[5] *Students need not use formal terms for these properties. Problems should be within 20.*

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	
MCC1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones — called a "ten." b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).	
MCC1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	
MCC1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	Add within 100, including adding a two-digit number and a one-digit number and adding a two-digit number and a multiple of ten (e.g., 24 + 9, 13 + 10, 27 + 40), using concrete models or drawings and strategies based on place value, properties of operations, and/or relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
MCC1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	
MCC1.NBT.6 Subtract multiples of 10 in the range 10-90 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.	Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range of 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. (e.g.,70 – 30, 30 – 10, 60 – 60)
	NOTE: *This standard was added.* Identify dimes, and understand ten pennies can be thought of as a dime. (Use dimes as manipulatives in multiple mathematical contexts.)
MCC1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.	
MCC1.MD.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (Iteration)
MCC1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	
MCC1.G.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.	
MCC1.G.2 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.[6]	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.[6] *This is important for the future development of spatial relations which later connects to developing understanding of area, volume, and fractions.*
MCC1.G.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.	

[6] Students do not need to learn formal names such as "right rectangular prism."

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 2	
MCC2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[7]	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. Problems include contexts that involve adding to, taking from, putting together/taking apart (part/part/whole) and comparing with unknowns in all positions.[7]
MCC2.OA.2 Fluently add and subtract within 20 using mental strategies.[8] By end of Grade 2, know from memory all sums of two one-digit numbers.	
MCC2.OA.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	
MCC2.OA.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	
MCC2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens — called a "hundred." b. 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).	
MCC2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s.	
MCC2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	
MCC2.NBT.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	
MCC2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	
MCC2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.	

[7] See Glossary, Table 1.

[8] See standard 1.OA.6 for a list of mental strategies.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC2.NBT.7 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. Understand 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.	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.
MCC2.NBT.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	
MCC2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.[9]	
MCC2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	
MCC2.MD.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.	Measure the length of an object twice, using length units of different measurements; describe how the two measurements relate to the size of the unit chosen. Understand the relative size of units in different systems of measurement. *For example, an inch is longer than a centimeter.* (Students are not expected to convert between systems of measurements.
MCC2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.	
MCC2.MD.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.	
MCC2.MD.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.	
MCC2.MD.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.	
MCC2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	
MCC2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*	

[9] Explanations may be supported by drawings or objects.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC2.MD.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.	
MCC2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems[10] using information presented in a bar graph.	
MCC2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.[11] Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	
MCC2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	
MCC2.G.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape	

DRAFT

[10] See Glossary, Table 1.

[11] Sizes are compared directly or visually, not compared by measuring.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 3	
MCC3.OA.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7.*	
MCC3.OA.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*	Interpret whole number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares (How many in each group?), or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each (How many groups can you make?). *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*
MCC3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[12]	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities,[‡] e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[12] [‡]See Glossary: *Multiplication and Division Within 100.*
MCC3.OA.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = □ ÷ 3, 6 × 6 = ?.*	Determine the unknown whole number in a multiplication or division equation relating three whole numbers using the inverse relationship of multiplication and division. *For example, determine the unknown number that makes the equation true in each of the equations, 8 × ? = 48, 5 = □ ÷ 3, 6 × 6 = ?.*
MCC3.OA.5 Apply properties of operations as strategies to multiply and divide.[13] *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*	
MCC3.OA.6 Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*	
MCC3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	

[12] See Glossary, Table 2.

[13] Students need not use formal terms for these properties.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC3.OA.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.[14]	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.[‡] [‡]See Glossary, Table 2
MCC3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.[‡] *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.* [‡] See Glossary, Table 3
MCC3.NBT.1 Use place value understanding to round whole numbers to the nearest 10 or 100.	
MCC3.NBT.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	
MCC3.NBT.3 Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.	
MCC3.NF.1 Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*.	Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into *b* equal parts (unit fraction); understand a fraction $\frac{a}{b}$ as the quantity formed by *a* parts of size $\frac{1}{b}$. *For example,* $\frac{3}{4}$ *means there are three* $\frac{1}{4}$ *parts, so* $\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$.

[14] This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order where there are no parentheses to specify a particular order (Order of Operations).

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC3.NF.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line. b. Represent a fraction *a*/*b* on a number line diagram by marking off *a* lengths 1/*b* from 0. Recognize that the resulting interval has size *a*/*b* and that its endpoint locates the number *a*/*b* on the number line.	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction $\frac{1}{b}$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size $\frac{1}{b}$. Recognize that a unit fraction $\frac{1}{b}$ is located $\frac{1}{b}$ whole unit from 0 on the number line. b. Represent a non-unit fraction $\frac{a}{b}$ on a number line diagram by marking off *a* lengths of $\frac{1}{b}$ (unit fractions) from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the non-unit fraction $\frac{a}{b}$ on the number line.
MCC3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.* d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	Explain equivalence of fractions through reasoning with visual fraction models. Compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. Recognize and generate simple equivalent fractions with denominators of 2, 3, 4, 6, and 8, e.g., $\frac{1}{2} = \frac{2}{4}$, $\frac{4}{6} = \frac{2}{3}$. Explain why the fractions are equivalent, e.g., by using a visual fraction model. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form* $3 = \frac{6}{2}$ *(3 wholes is equal to six halves); recognize that* $\frac{3}{1} = 3$*; locate* $\frac{4}{4}$ *and 1 at the same point of a number line diagram.* d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
MCC3.MD.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	Tell and write time to the nearest minute and measure elapsed time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram, drawing a pictorial representation of a clock face, etc.

DRAFT

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC3.MD.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).[15] Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.[16]	
MCC3.MD.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*	
MCC3.MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.	
MCC3.MD.5 Recognize area as an attribute of plane figures and understand concepts of area measurement. a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of *n* square units.	
MCC3.MD.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	

[15] Excludes compound units such as cm^3 and finding the geometric volume of a container.

[16] Excludes multiplicative comparison problems (problems involving notions of "times as much"; see Glossary, Table 2).

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC3.MD.7 Relate area to the operations of multiplication and addition. a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning. d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.	Relate area to the operations of multiplication and addition. a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning. NOTE: *Moved MCC3.MD.7d to 4th grade*
MCC3.MD.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	
MCC3.G.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	
MCC3.G.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 4	
MCC4.OA.1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.	Understand that a multiplicative comparison is a situation in which one quantity is multiplied by a specified number to get another quantity. a. Interpret a multiplication equation as a comparison e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. b. Represent verbal statements of multiplicative comparisons as multiplication equations.
MCC4.OA.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.[17]	Multiply or divide to solve word problems involving multiplicative comparison. Use drawings and equations with a symbol or letter for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.[17]
MCC4.OA.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	Solve multistep word problems with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a symbol or letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
MCC4.OA.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.	
MCC4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. Explain informally why the pattern will continue to develop in this way. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers.*
MCC4.NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*	Recognize that in a multi-digit whole number, a digit in any one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*
MCC4.NBT.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	
MCC4.NBT.3 Use place value understanding to round multi-digit whole numbers to any place.	

[17] See Glossary, Table 2.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC4.NBT.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.	
MCC4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	
MCC4.NBT.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	
MCC4.NF.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the ~~two~~ fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	Explain why two or more fractions are equivalent $\frac{a}{b} = \frac{n \times a}{n \times b}$ ex: $\frac{1}{4} = \frac{3 \times 1}{3 \times 4}$ by using usual fraction models. Focus attention on how the number and size of the parts differ even though the fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
MCC4.NF.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	Compare two fractions with different numerators and different denominators, e.g., by using visual fraction models, by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions.
MCC4.NF.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.* c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	Understand a fraction $\frac{a}{b}$ with a numerator >1 as a sum of unit fractions $\frac{1}{b}$. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.* c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC4.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction *a/b* as a multiple of 1/*b*. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).* b. Understand a multiple of *a/b* as a multiple of 1/*b*, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)* c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number e.g., by using a visual such as a number line or area model. a. Understand a fraction *a/b* as a multiple of 1/*b*. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).* b. Understand a multiple of *a/b* as a multiple of 1/*b*, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)* c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*
MCC4.NF.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.[18] *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*	
MCC4.NF.6 Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*	

[18] Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But, addition and subtraction with unlike denominators in general is not a requirement at this grade.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC4.NF.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	
MCC4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*	Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. a. Understand the relationship between gallons, cups, quarts, and pints. b. Express larger units in terms of smaller units within the same measurement system. c. Record measurement equivalents in a two column table.
MCC4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	
MCC4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.	
MCC4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*	Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$). Solve problems involving addition and subtraction of fractions with common denominators by using information presented in line plots. *For example, from a line plot, find and interpret the difference in length between the longest and shortest specimens in an insect collection.*
MCC4.MD.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.	
MCC4.MD.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC4.MD.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol or letter for the unknown angle measure.
MCC4.G.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	
MCC4.G.2 Classify 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. Recognize right triangles as a category, and identify right triangles.	
MCC4.G.3 Recognize 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. Identify line-symmetric figures and draw lines of symmetry.	

DRAFT

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 5	
MCC5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	
MCC5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.	
MCC5.OA.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*	Generate two numerical patterns using a given rule. Identify apparent relationships between corresponding terms by completing a function table or input/output table. Using the terms created, form and graph ordered pairs on a coordinate plane.
MCC5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	
MCC5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	
MCC5.NBT.3 Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000). b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	
MCC5.NBT.4 Use place value understanding to round decimals to any place.	Use place value understanding to round decimals up to the hundredths place.
MCC5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.	Fluently multiply multi-digit whole numbers using the standard algorithm (or other strategies demonstrating understanding of multiplication) up to a 3 digit by 2 digit factor.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	Fluently divide up to 4-digit dividends and 2-digit divisors by using at least one of the following methods: strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations or concrete models. (e.g., rectangular arrays, area models)
MCC5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, 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.	
MCC5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*	Add and subtract fractions and mixed numbers with unlike denominators by finding a common denominator and equivalent fractions to produce like denominators.
MCC5.NF.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by 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. For example, recognize an incorrect result 2/5 + ½ = 3/7, by observing that 3/7 < ½.	Solve word problems involving addition and subtraction of fractions, including cases of unlike denominators (e.g., by 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. For example, recognize an incorrect result 2/5 + ½ = 3/7, by observing that 3/7 < ½.
MCC5.NF.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret ¾ as the result of dividing 3 by 4, noting that ¾ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size ¾. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *Example: $\frac{3}{5}$ can be interpreted as "3 divided by 5 and as 3 shared by 5".*

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product *(a/b) × q* as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) =8/15. (In general, *(a/b) × (c/d) = ac/bd.)* b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Apply and use understanding of multiplication to multiply a fraction or whole number by a fraction. *Examples:* $\frac{a}{b} \times q$ *as* $\frac{a}{b} \times \frac{q}{1}$ *and* $\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$ b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths.
MCC5.NF.5 Interpret multiplication as scaling (resizing), by: a. Comparing 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. b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence *a/b = (n×a)/(n×b)* to the effect of multiplying *a/b* by 1.	Interpret multiplication as scaling (resizing), by: a. Comparing 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: 4 x 10 is twice as large as 2 x 10.* b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence *a/b = (n×a)/(n×b)* to the effect of multiplying *a/b* by 1.
MCC5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	

DRAFT

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[19] a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3. b. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4. c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual *fraction* models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?	
MCC5.MD.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	Convert among different-sized standard measurement units (mass, weight, length, time, etc.) within a given measurement system (customary and metric) (e.g., convert 5cm to 0.05m), and use these conversions in solving multi-step, real word problems.
MCC5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*	
MCC5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.	

[19] Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	
MCC5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. 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. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	
MCC5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).	
MCC5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	
MCC5.G.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*	
MCC5.G.4 Classify two-dimensional figures in a hierarchy based on properties.	Classify two-dimensional figures in a hierarchy based on properties (*polygons, triangles, and quadrilaterals*).

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 6	
MCC6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*	
MCC6.RP.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$ (b not equal to zero), and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*	
MCC6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	Use ratio and rate reasoning to solve real-world and mathematical problems utilizing strategies such as tables of equivalent ratios, tape diagrams (bar models), double number line diagrams, and/or equations.
MCC6.RP.3a Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	
MCC6.RP.3b Solve unit rate problems including those involving unit pricing and constant speed. *For example, If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*	
MCC6.RP.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole given a part and the percent.	Find a percent of a quantity as a rate per 100 (e.g. 30% of a quantity means 30/100 times the quantity); given a percent, solve problems involving finding the whole given a part and the part given the whole.
MCC6.RP.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	Given a conversion factor, use ratio reasoning to convert measurement units within one system of measurement and between two systems of measurements (customary and metric); manipulate and transform units appropriately when multiplying or dividing quantities. *For example, given 1 in. = 2.54 cm, how many centimeters are in 6 inches?*

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for* $(2/3) \div (3/4)$ *and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that* $(2/3) \div (3/4) = 8/9$ *because* $3/4$ *of* $8/9$ *is* $2/3$. *(In general,* $(a/b) \div (c/d) = ad/bc$.*) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, including reasoning strategies such as using visual fraction models and equations to represent the problem. *For example,* • *create a story context for* $(2/3) \div (3/4)$ *and use a visual fraction model to show the quotient;* • *use the relationship between multiplication and division to explain that* $(2/3) \div (3/4) = 8/9$ *because* $3/4$ *of* $8/9$ *is* $2/3$. *(In general,* $(a/b) \div (c/d) = ad/bc$.*)* • *How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally?* • *How many 3/4-cup servings are in 2/3 of a cup of yogurt?* • *How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*
MCC6.NS.2 Fluently divide multi-digit numbers using the standard algorithm.	
MCC6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	
MCC6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).*	Find the common multiples of two whole numbers less than or equal to 12 and the common factors of two whole numbers less than or equal to 100. a. Find the greatest common factor of 2 whole numbers and use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factors. (GCF) *Example: 36 + 8 = 4(9 + 2)* b. Apply the least common multiple of two whole numbers less than or equal to 12 to solve real-world problems.
MCC6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, debits/credits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	
MCC6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC6.NS.6a Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.	
MCC6.NS.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	
MCC6.NS.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	
MCC6.NS.7 Understand ordering and absolute value of rational numbers.	
MCC6.NS.7a Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.*	
MCC6.NS.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3°C > –7°C to express the fact that –3°C is warmer than –7°C.*	
MCC6.NS.7c Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.*	
MCC6.NS.7d Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.*	
MCC6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	
MCC6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.	
MCC6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC6.EE.2a Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as* $5-y$.	
MCC6.EE.2b Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression* $2(8+7)$ *as a product of two factors; view* $(8+7)$ *as both a single entity and a sum of two terms.*	
MCC6.EE.2c Evaluate expressions at specific values for their variables. Include expressions that arise from formulas in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas* $V = s^3$ *and* $A = 6s^2$ *to find the volume and surface area of a cube with sides of length* $s = 1/2$.	
MCC6.EE.3 Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression* $3(2+x)$ *to produce the equivalent expression* $6+3x$*; apply the distributive property to the expression* $24x+18y$ *to produce the equivalent expression* $6(4x+3y)$*; apply properties of operations to* $y+y+y$ *to produce the equivalent expression* $3y$.	
MCC6.EE.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions* $y+y+y$ *and* $3y$ *are equivalent because they name the same number regardless of which number* y *stands for.*	
MCC6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	
MCC6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	
MCC6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x+p=q$ and $px=q$ for cases in which p, q and x are all nonnegative rational numbers.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC6.EE.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	
MCC6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.*	Use variables to represent two quantities in a real-world problem that change in relationship to another. a. Write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. b. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.*
MCC6.G.1 Find area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	Find area of right triangles, other triangles, quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
MCC6.G.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths (1/2 u), and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = (length) x (width) x (height) and V= (area of base) x (height) to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
MCC6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	
MCC6.G.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	
MCC6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*	
MCC6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC6.SP.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	
MCC6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	
MCC6.SP.5 Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data was gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data was gathered.	Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range). d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data was gathered.

DRAFT

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 7	
MCC7.RP.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction (1/2)/(1/4) miles per hour, equivalently 2 miles per hour.	
MCC7.RP.2 Recognize and represent proportional relationships between quantities.	
MCC7.RP.2a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	
MCC7.RP.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	
MCC7.RP.2c Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.	
MCC7.RP.2d Explain what a point (x,y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0,0)$ and $(1,r)$ where r is the unit rate.	
MCC7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, and fees.
MCC7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	
MCC7.NS.1a Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*	Show that a number and its opposite have a sum of 0 (are additive inverses). Describe situations in which opposite quantities combine to make 0. *For example, your bank account balance is -$25.00. You deposit $25.00 into your account. The net balance is $0.00.*
MCC7.NS.1b Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	Understand p + q as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Interpret sums of rational numbers by describing real world contexts.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC7.NS.1c Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show 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.	
MCC7.NS.1d Apply properties of operations as strategies to add and subtract rational numbers.	
MCC7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	
MCC7.NS.2a Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	
MCC7.NS.2b Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.	
MCC7.NS.2c Apply properties of operations as strategies to multiply and divide rational numbers.	
MCC7.NS.2d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	
MCC7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.	
MCC7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	
MCC7.EE.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."*	Understand that rewriting an expression in different forms in a problem context can clarify the problem and how the quantities in it are related. *For example $a + 0.05a = 1.05a$ means that adding a 5% tax to a total is the same as multiplying the total by 1.05.*

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations as strategies to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*	Solve multistep real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals) by applying properties of operations as strategies to calculate with numbers, converting between forms as appropriate, and assessing the reasonableness of answers using mental computation and estimation strategies. *For example:* • *If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50.* • *If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*
MCC7.EE.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	
	NOTE: *This standard was added.* Solve real-world and mathematical problems by writing and solving equations of the form x+p = q and px = q in which p and q are rational numbers.
MCC7.EE.4a 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. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*	
MCC7.EE.4b 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. *For example, as a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*	
MCC7.G.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC7.G.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus 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.	Explore various geometric shapes with given conditions. Focus on creating triangles from three measures of angles and/or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
MCC7.G.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	Describe the two-dimensional figures (cross sections) that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms, right rectangular pyramids, cones, cylinders, and spheres.
MCC7.G.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	Given the formulas for the area and circumference of a circle, use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
MCC7.G.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	
MCC7.G.6 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 prisms.	
MCC7.SP.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	
MCC7.SP.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*	
MCC7.SP.3 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. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.*	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the medians by expressing it as a multiple of the interquartile range.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.*	
MCC7.SP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	
MCC7.SP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency. Predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*
MCC7.SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	Develop a probability model and use it to find probabilities of events. Compare experimental and theoretical probabilities of events. If the probabilities are not close, explain possible sources of the discrepancy.
MCC7.SP.7a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*	
MCC7.SP.7b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*	
MCC7.SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	
MCC7.SP.8a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC7.SP.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.	
MCC7.SP.8c Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*	Explain ways to set up a simulation and use the simulation to generate frequencies for compound events. *For example, if 40% of donors have type A blood, create a simulation to predict the probability that it will take at least 4 donors to find one with type A blood?*

DRAFT

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
GRADE 8	
MCC8.NS.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	
MCC8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of √2 (square root of 2), show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*	Use rational approximation of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions (e.g., estimate π^2 *to the nearest tenth). For example, by truncating the decimal expansion of √2 (square root of 2), show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*
MCC8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{(-5)} = 3^{(-3)} = 1/(3^3) = 1/27$.	
MCC8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.	Use square root and cube root symbols to represent solutions to equations. Recognize that $x^2 = p$ (where p is a positive rational number and $\lvert x \rvert \leq 25$) has 2 solutions and $x^3 = p$ (where p is a negative or positive rational number and $\lvert x \rvert \leq 10$) has one solution. Evaluate square roots of perfect squares ≤ 625 and cube roots of perfect cubes ≥ -1000 and ≤ 1000.
MCC8.EE.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9, and determine that the world population is more than 20 times larger.*	Use numbers expressed in scientific notation to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9, and determine that the world population is more than 20 times larger.*
MCC8.EE.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	Add, subtract, multiply and divide numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Understand scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g. use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology (e.g. calculators).
MCC8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*	
MCC8.EE.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC8.EE.7 Solve linear equations in one variable.	
MCC8.EE.7a Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).	
MCC8.EE.7b Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	
MCC8.EE.8 Analyze and solve pairs of simultaneous linear equations.	Analyze and solve pairs of simultaneous linear equations (systems of linear equations).
MCC8.EE.8a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	
MCC8.EE.8b Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example,* $3x + 2y = 5$ *and* $3x + 2y = 6$ *have no solution because* $3x + 2y$ *cannot simultaneously be 5 and 6.*	
MCC8.EE.8c Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*	
MCC8.F.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	
MCC8.F.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*	
MCC8.F.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function* $A = s^2$ *giving the area of a square as a function of its side length is not linear because its graph contains the points* $(1,1)$, $(2,4)$ *and* $(3,9)$, *which are not on a straight line.*	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC8.F.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x,y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	
MCC8.F.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	
MCC8.G.1 Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines.	Verify experimentally the congruence properties of rotations, reflections, and translations: lines are taken to lines and line segments to line segments of the same length; angles are taken to angles of the same measure; parallel lines are taken to parallel lines.
MCC8.G.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	
MCC8.G.3 Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.	
MCC8.G.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	
MCC8.G.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the three angles appear to form a line, and give an argument in terms of transversals why this is so.*	
MCC8.G.6 Explain a proof of the Pythagorean Theorem and its converse.	
MCC8.G.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	
MCC8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	
MCC8.G.9 Know the formulas for the volume of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	Apply the formulas for the volume of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC8.SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	
MCC8.SP.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	
MCC8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*	
MCC8.SP.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. a. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. b. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

DRAFT

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
HIGH SCHOOL NINTH GRADE COURSE	
MCC9-12.N.RN.1 Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define $5^{(1/3)}$ to be the cube root of 5 because we want $[5^{(1/3)}]^3 = 5^{[(1/3)\times 3]}$ to hold, so $[5^{(1/3)}]^3$ must equal 5.*	Explain how the meaning of rational exponents follows from extending the properties of integer exponents to rational numbers, allowing for a notation for radicals in terms of rational exponents. For example, we define $5^{(1/3)}$ to be the cube root of 5 because we want $[5^{(1/3)}]^3 = 5^{[(1/3)\times 3]}$ to hold so $[5^{(1/3)}]^3$ must equal 5.
MCC9-12.N.RN.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.	
MCC9-12.N.RN.3 Explain why the sum or product of rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Explain why the sum or product of rational numbers is rational, why the sum of a rational number and an irrational number is irrational, and why the product of a nonzero rational number and an irrational number is irrational.
MCC9-12.N.Q.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; choose and interpret the scale and the origin in graphs and data displays.	Use units of measure (linear, area, capacity, rates, and time) as a way to understand problems: a. Identify, use, and record appropriate units of measure within context, within data displays, and on graphs; b. Convert units and rates using dimensional analysis (English-to-English and Metric-to-Metric without conversion factor provided and between English and Metric with conversion factor); c. Use units within multi-step problems and formulas; interpret units of input and resulting units of output.
MCC9-12.N.Q.2 Define appropriate quantities for the purpose of descriptive modeling.	Define appropriate quantities for the purpose of descriptive modeling. Given a situation, context, or problem, students will determine, identify, and use appropriate quantities for representing the situation.
MCC9-12.N.Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. *For example, money situations are generally reported to the nearest cent (hundredth). Also, an answers' precision is limited to the precision of the data given.*
MCC9-12.A.SSE.1 Interpret expressions that represent a quantity in terms of its context.	
MCC9-12.A.SSE.1a Interpret parts of an expression, such as terms, factors, and coefficients.	Interpret parts of an expression, such as terms, factors, and coefficients in context.
MCC9-12.A.SSE.1b Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.	Given situations which utilize formulas or expressions with multiple terms and/or factors, interpret the meaning (in context) of individual terms or factors.
MCC9-12.A.SSE.2 Use the structure of an expression to identify ways to rewrite it. For 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 $(x^2 - y^2)(x^2 + y^2)$.	Use the structure of an expression to rewrite it in different equivalent forms. For example, see $x^4 - y^4$ as $(x^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC9-12.A.SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	
MCC9-12.A.SSE.3a Factor a quadratic expression to reveal the zeros of the function it defines.	Factor any quadratic expression to reveal the zeros of the function defined by the expression.
MCC9-12.A.SSE.3b Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	Complete the square in a quadratic expression to reveal the maximum and minimum value of the function defined by the expression.
MCC9-12.A.SSE.3c Use the properties of exponents to transform expressions for exponential functions. *For example the expression* 1.15^t *can be rewritten as* $[1.15^{(1/12)}]^{(12t)} \approx 1.012^{(12t)}$ *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*	
MCC9-12.A.APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Add, subtract, and multiply polynomials; understand that polynomials form a system analogous to the integers in that they are closed under these operations.
MCC9-12.A.APR.3 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	
MCC9-12.A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions and exponential functions (integer inputs only).
MCC9-12.A.CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Create linear and exponential equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. (The phrase "in two or more variables" refers to formulas like the compound interest formula, in which $A = P(1 + r/n)^{nt}$ has multiple variables.)
MCC9-12.A.CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.	Represent constraints by equations or inequalities, and by systems of equation and/or inequalities, and interpret data points as possible (i.e. a solution) or not possible (i.e. a non-solution) under the established constraints.
MCC9-12.A.CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R.*	Rearrange formulas to highlight a quantity of interest using the same reasoning as in solving equations. *Examples: Rearrange Ohm's law V = IR to highlight resistance R; Rearrange area of a circle formula* $A = \pi r^2$ *to highlight the radius r.*
MCC9-12.A.REI.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Using algebraic properties and the properties of real numbers, justify the steps of a simple, one-solution equation. Students should justify their own steps, or if given two or more steps of an equation, explain the progression from one step to the next using properties.
MCC9-12.A.REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Solve linear equations and inequalities in one variable including equations with coefficients represented by letters. *For example, given ax + 3 = 7, solve for x.*

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC9-12.A.REI.4 Solve quadratic equations in one variable.	
MCC9-12.A.REI.4a 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. Derive the quadratic formula from this form.	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. Derive the quadratic formula from $ax^2 + bx + c = 0$.
MCC9-12.A.REI.4b Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.	Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, factoring, completing the square, and the quadratic formula, as appropriate to the initial form of the equation.
MCC9-12.A.REI.5 Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Show and explain why the elimination method works to solve a system of two-variable equations.
MCC9-12.A.REI.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	
MCC9-12.A.REI.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane.
MCC9-12.A.REI.11 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 $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, ~~polynomial, rational, absolute value~~, exponential, ~~and logarithmic~~ functions.	Using graphs, tables, or successive approximations, show that the solution to the equation $f(x) = g(x)$ is the x-value where the y-values of f(x) and g(x) are the same.
MCC9-12.A.REI.12 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.	Graph the solution set to a linear inequality in two variables.
MCC9-12.F.IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. 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. The graph of f is the graph of the equation $y = f(x)$.	Understand that a function from one set (the input, called the domain) to another set (the output, called the range) assigns to each element of the domain exactly one element of the range, i.e. each input value maps to exactly one output value. If f is a function, x is the input (an element of the domain), and f(x) is the output (an element of the range). Graphically, the graph is $y = f(x)$.
MCC9-12.F.IF.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC9-12.F.IF.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for n ≥ 1 (n is greater than or equal to 1).*	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. (Generally, the scope of high school math defines this subset as the set of natural numbers 1,2,3,4…) By graphing or calculating terms, students should be able to show how the recursive sequence $a_1=7$, $a_n=a_{n-1}+2$; the sequence $s_n = 2(n-1) + 7$; and the function $f(x) = 2x + 5$ (when x is a natural number) all define the same sequence.
MCC9-12.F.IF.4 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. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; ~~and periodicity~~.	Using tables, graphs, and verbal descriptions, interpret the key characteristics of a function which models the relationship between two quantities. Sketch a graph showing key features including: intercepts; interval where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.
MCC9-12.F.IF.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*	
MCC9-12.F.IF.6 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.	
MCC9-12.F.IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	Graph functions expressed algebraically and show key features of the graph both by hand and by using technology.
MCC9-12.F.IF.7a Graph linear and quadratic functions and show intercepts, maxima, and minima.	Graph linear and quadratic functions and show intercepts, maxima, and minima (as determined by the function or by context).
MCC9-12.F.IF.7e Graph exponential ~~and logarithmic~~ functions, showing intercepts and end behavior, ~~and trigonometric functions, showing period, midline, and amplitude~~.	
MCC9-12.F.IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	
MCC9-12.F.IF.8a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. *For example, compare and contrast quadratic functions in standard, vertex, and intercept forms.*
MCC9-12.F.IF.8b Use the properties of exponents to interpret expressions for exponential functions. *For 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 and decay.*	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC9-12.F.IF.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.*	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one function and an algebraic expression for another, say which has the larger maximum.*
MCC9-12.F.BF.1 Write a function that describes a relationship between two quantities.	
MCC9-12.F.BF.1a Determine an explicit expression, a recursive process, or steps for calculation from a context.	Determine an explicit expression, a recursive process (steps for calculation) from a context. *For example, if Jimmy starts out with $15 and earns $2 a day, the explicit expression "2x+15" can be described recursively (either in writing or verbally) as "to find out how much money Jimmy will have tomorrow, you add $2 to his total today."* $J_n = J_{n-1} + 2, J_0 = 15$
MCC9-12.F.BF.1b Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.*	Combine standard function types using arithmetic operations in contextual situations. (Adding, subtracting, and multiplying functions of different types)
MCC9-12.F.BF.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	Write arithmetic and geometric sequences recursively and explicitly, use them to model situations, and translate between the two forms. Connect arithmetic sequences to linear functions and geometric sequences to exponential functions.
MCC9-12.F.BF.3 Identify the effect on the graph of replacing f(x) by f(x) + k, k 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 illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.	Identify the effect on the graph of replacing f(x) by f(x) + k, k 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 illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.
MCC9-12.F.LE.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.	
MCC9-12.F.LE.1a Prove that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.	Show that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals. (This can be shown by algebraic proof, with a table showing differences, or by calculating average rates of change over equal intervals).
MCC9-12.F.LE.1b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	
MCC9-12.F.LE.1c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	
MCC9-12.F.LE.2 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).	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC9-12.F.LE.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	
MCC9-12.F.LE.5 Interpret the parameters in a linear or exponential function in terms of a context.	Interpret the parameters in a linear ($f(x) = mx + b$) and exponential ($f(x) = a \cdot d^x$) function in terms of context. (In the functions above, "m" and "b" are the parameters of the linear function, and "a" and "d" are the parameters of the exponential function.) In context, students should describe what these parameters mean in terms of change and starting value.
MCC9-12.S.ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).	
MCC9-12.S.ID.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	
MCC9-12.S.ID.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	
MCC9-12.S.ID.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	
MCC9-12.S.ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	
MCC9-12.S.ID.6a Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.	Decide which type of function is most appropriate by observing graphed data, charted data, or by analysis of context to generate a viable (rough) function of best fit. Use this function to solve problems in context. Emphasize linear, quadratic and exponential models.
MCC9-12.S.ID.6b Informally assess the fit of a function by plotting and analyzing residuals.	NOTE: *This element was deleted.*
MCC9-12.S.ID.6c Fit a linear function for a scatter plot that suggests a linear association.	Using given or collected bivariate data, fit a linear function for a scatter plot that suggests a linear association.
MCC9-12.S.ID.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	
MCC9-12.S.ID.8 Compute (using technology) and interpret the correlation coefficient of a linear fit.	Compute (using technology) and interpret the correlation coefficient "r" of a linear fit. (For instance, by looking at a scatterplot, students should be able to tell if the correlation coefficient is positive or negative and give a reasonable estimate of the "r" value.) After calculating the line of best fit using technology, students should be able to describe how strong the goodness of fit the regression is, using "r".

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC9-12.S.ID.9 Distinguish between correlation and causation.	
	NOTE: *This standard was added.* Summarize numerical data sets in relation to their context by giving quantitative measures of variability (Mean Absolute Deviation)

DRAFT

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard

HIGH SCHOOL TENTH GRADE COURSE

MCC9-12.G.CO.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	
MCC9-12.G.CO.2 Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	
MCC9-12.G.CO.3 Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	
MCC9-12.G.CO.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	
MCC9-12.G.CO.5 Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	
MCC9-12.G.CO.6 Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	
MCC9-12.G.CO.7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	
MCC9-12.G.CO.8 Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	Explain how the criteria for triangle congruence (ASA, SAS and SSS) follow from the definition of congruence in terms of rigid motions. (Extend to include HL and AAS).
MCC9-12.G.CO.9 Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.	
MCC9-12.G.CO.10 Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC9-12.G.CO.11 Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.	
MCC9-12.G.CO.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.	
MCC9-12.G.CO.13 Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	Construct an equilateral triangle, a square and a regular hexagon each inscribed in a circle.
MCC9-12.G.SRT.1 Verify experimentally the properties of dilations given by a center and a scale factor: a. 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. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	Verify experimentally the properties of dilations given by a center and a scale factor. a. The dilation of a line not passing through the center of the dilation results in a parallel line and leaves a line passing through the center unchanged. b. The dilation of a line segment is longer or shorter according to the ratio given by the scale factor.
MCC9-12.G.SRT.2 Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.
MCC9-12.G.SRT.3 Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	
MCC9-12.G.SRT.4 Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.	Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, (and its converse); the Pythagorean Theorem using triangle similarity.
MCC9-12.G.SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	
MCC9-12.G.SRT.6 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	
MCC9-12.G.SRT.7 Explain and use the relationship between the sine and cosine of complementary angles.	
MCC9-12.G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	
MCC9-12.G.SRT.9 (+) Derive the formula A = (1/2)ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC9-12.G.SRT.10 (+) Prove the Laws of Sines and Cosines and use them to solve problems.	
MCC9-12.G.SRT.11 (+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	
MCC9-12.G.C.1 Prove that all circles are similar.	Understand that all circles are similar.
MCC9-12.G.C.2 Identify and describe relationships among inscribed angles, radii, and chords. Include 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.	Identify and describe relationships among inscribed angles, radii, chords, tangents, and secants. Include 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.
MCC9-12.G.C.3 Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	
MCC9-12.G.C.4 (+) Construct a tangent line from a point outside a given circle to the circle.	
MCC9-12.G.C.5 Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	
MCC9-12.G.GPE.1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	
MCC9-12.G.GPE.2 Derive the equation of a parabola given a focus and directrix.	
MCC9-12.G.GPE.4 Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).*	Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0,2).* (Focus on quadrilaterals, circles, right triangles, and parabolas).
MCC9-12.G.GPE.5 Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	
MCC9-12.G.GPE.6 Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	
MCC9-12.G.GPE.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC9-12.G.GMD.1 Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.	Give informal arguments for geometric formulas. a. Give informal arguments for the formulas of the circumference of a circle and area of a circle using dissection arguments and informal limit arguments. b. Give informal arguments for the formula of the volume of a cylinder, pyramid, and cone using Cavalieri's principle.
MCC9-12.G.GMD.2 (+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.	
MCC9-12.G.GMD.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	
MCC9-12.G.GMD.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	
MCC9-12.G.MG.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).	
MCC9-12.G.MG.2 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).	
MCC9-12.G.MG.3 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).	
MCC9-12.S.CP.1 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").	Describe categories of events as subsets of a sample space using unions, intersections, or complements of other events ("or", "and", "not").
MCC9-12.S.CP.2 Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	Understand that if two events A and B are independent, the probability of A and B occurring together is the product of their probabilities, and that if the probability of two events A and B occurring together is the product of their probabilities, the two events are independent.
MCC9-12.S.CP.3 Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.	Understand the conditional probability of A given B as P(A and B)/P(B). Interpret independence of A and B in terms of conditional probability; that is the conditional probability of A and B is the same as the probability of A and the conditional probability of B given A is the same as the probability of B.

Mathematics Standards: Kindergarten – High School

Current Standard	Proposed Standard
MCC9-12.S.CP.4 Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, use collected data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*
MCC9-12.S.CP.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a.smoker with the chance of being a smoker if you have lung cancer.*	
MCC9-12.S.CP.6 Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.	Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in context.
MCC9-12.S.CP.7 Apply the Addition Rule, P(A or B) = P(A) + P(B) – P(A and B), and interpret the answer in terms of the model.	Apply the Addition Rule, P(A or B) = P(A) + P(B) – P(A and B), and interpret the answers in context.
MCC9-12.S.CP.8 (+) Apply the general Multiplication Rule in a uniform probability model, P(A and B) = [P(A)]x[P(B|A)] =[P(B)]x[P(A|B)], and interpret the answer in terms of the model.	

DRAFT