2024-2025

Mathematics Course Guides

Middle School Mathematics
High School Mathematics
Special Education Mathematics

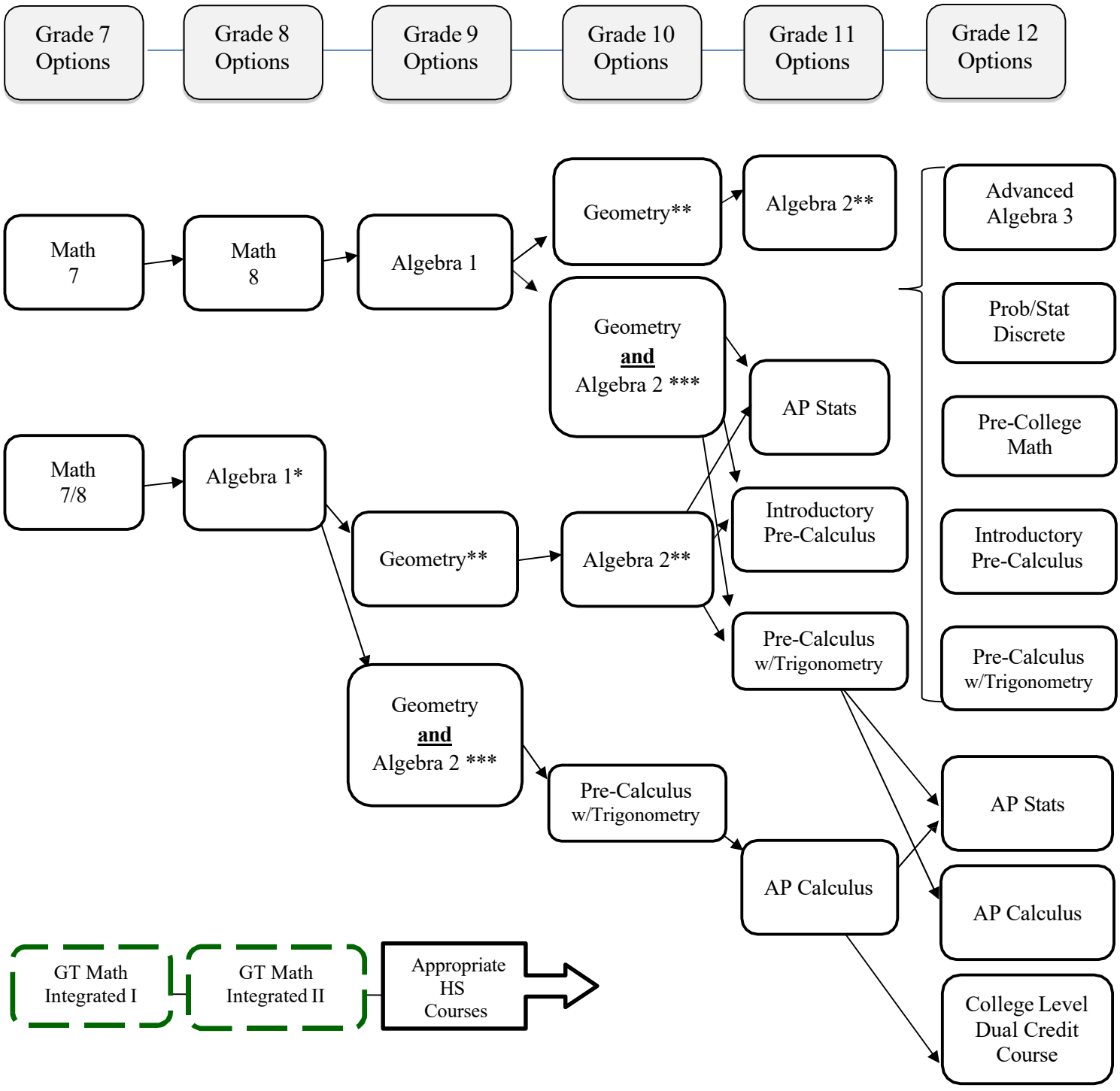
GT Math Education Overview

The Secondary Math Course Guides provide the standards aligned to topics and resources available in the currently adopted text. It is the teacher's professional responsibility to ensure that their students are prepared for the next course in the Pathway. This can only be accomplished when all grade level/course standards are taught with student engagement and an expectation of rigor in mathematics.

Excellence in Education, Every Student, Every Day, to Graduation

Washoe County School District
Every Child, By Name And Face, To Graduation

WCSD Recommended Pathways to Advanced Mathematics



* High School credit is not awarded for high school level courses taken prior to 9th grade.
Middle School students must earn a qualifying grade in Algebra 1 to progress on to the next course in sequence.
** Students choose from two class options to fulfill this requirement – Geometry or Formal Geometry (H) and Algebra 2 or Honors Algebra 2 (H)
***Students can concurrently enroll in Formal Geometry and Honors Algebra 2 for Acceleration.

All students must earn credits in Algebra 1, Geometry and Algebra 2 before enrolling in any of the senior level courses. Some senior level courses have other pre-requisites (see the Course Descriptions).

2024-2025: Recommendations for 6-12 Grading in Mathematics

Grading recommendations were established to provide a starting point for teachers who need more specific direction. ***The importance of the recommendations is that consistency is established at a school site or between a feeder middle school and the high school.*** The PLC group should decide on more specific grading policies for their school but should be in line with the recommendations here.

1. Grading at any level should be **consistent** within the building for like grades levels and courses.
2. **Assignments** are assigned and are completed by the students on their own time or in class with assistance. Individual performance on projects may be included in this category.
3. **Quizzes/In Class Checks** are evaluations of what the students know but could be used to inform instruction or offer additional assistance to a student. Students **may** have multiple attempts to get these points but **each attempt needs to be completed by the individual without assistance**.
4. **Assessments** are to determine what the students have learned and are summative in nature. These are **individual performance measures and should be monitored assessments**. Students **may** have the opportunity to take a retake. Grades recorded in assessment should reflect what the students know. Caution should be given to practices that would inflate test grades.

6-12 Math Courses Grading Recommendations Math 6,

Math 7, Math 8, Math 7-8

Grading Recommendations:

- Math 6 Final 5% Math 7, Math 7/8 & Math 8 Final 10%

Be sure to have plenty of data in each of the following categories!

- Assignments (independent work, projects, group work) 0%-15%
- Quizzes (monitored in class checks, individual performance) 20%-30%
- Assessments/Exams (individual performance) 40%-55%

Algebra 1, Geometry, Algebra 2, Prob/Stat/DM, and Advanced Algebra 3

Grading Recommendations:

- Final 10% – 15%

Be sure to have plenty of data in each of the following categories!

- Assignments (independent work, projects, group work) 0%-15%
- Quizzes (monitored in class checks, individual performance) 10%-20%
- Assessments/Exams (individual performance) 45%-60%

Honors Mathematics Courses: Formal Geometry, Algebra 2 Honors, and PreCalculus w/Trigonometry

Grading Recommendations:

- Final 15% - 20%

Be sure to have plenty of data in each of the following categories!

- Assignments (independent work, projects, group work) 0%-10%
- Quizzes (monitored in class checks, monitored individual performance) 10%-20%
- Assessments/Exams (monitored individual performance) 60%-70%

Middle School Mathematics Resources

Math 6

Go Math Middle School Grade 6

TE-ISBN 978-0-544-06571-0;

SE-ISBN 978-0-544-70751-1

Math 7

Go Math Middle School Grade 7

TE-ISBN 978-0-544-06631-1;

SE-ISBN 978-0-544-70752-8

Math 7/8

Go Math Middle School Accelerated Grade 7

TE-ISBN 978-0-544-14740-9; SE-ISBN

SE-ISBN 978-0-544-64156-3

Math 8

Go Math Middle School Grade 8

TE-ISBN 978-0-544-06551-2;

SE-ISBN 978-0-544-70753-5

High School Mathematics Resources

Bridge to Algebra
McGraw Hill
copyright 2014 by The McGraw Hill Companies
TE-ISBN Vol 1:978-0-07-664447-6, Vol 2:978-0-07-664461-2; SE-ISBN 978-0-07-663798-0

Algebra 1/Foundations in Algebra 1/Two-Year Algebra 1
Pearson-Envision Algebra 2
copyright 2018 by Pearson Education, Inc.
TE-ISBN Vol 1:978-0-328-93178-1, Vol 2:978-0-328-93179-8; SE-ISBN 978-0-328-93154-5

Geometry/Foundations in Geometry & Formal Geometry
McGraw-Glencoe Geometry
copyright 2018 by McGraw-Hill Education
TE-ISBN Vol 1:978-0-07-898490-7, Vol 2:978-0-07-898493-8; SE-ISBN 978-0-07-903994-1

Algebra 2 & Algebra 2 Honors
Pearson-Envision Algebra 2
copyright 2018 by Pearson Education, Inc.
TE-ISBN Vol 1:978-0-328-93182-8; Vol 2:978-0-32-93183-5; SE-ISBN 978-0-328-93156-9

Pre-Calculus with Trigonometry and Introductory Pre-Calculus
Pearson Blitzer Pre-Calculus,
copyright 2010 by Pearson Education, Inc.
TE-ISBN 978-0-13-447007-8; SE-ISBN 978-0-13-461576-9

Probability/Statistics/Discrete
Pearson Elementary Statistics and Thinking Mathematically
Student Book – Custom Edition

Advanced Algebra 3
Pearson Custom Publishing Advanced Algebra Applications,
copyright 2009 by Pearson Custom Publishing
TE-ISBN 978-0-133-65992-4; SE-ISBN 978-0-558-20908-7

Mathematical Practices

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.
Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. 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. Mathematically proficient 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. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. Reason abstractly and quantitatively.
Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. Construct viable arguments and critique the reasoning of others.
Mathematically proficient 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. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can 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.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. 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. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. 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.

Mathematically proficient 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. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a 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.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about 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. In the elementary grades, students give carefully

formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. Look for and make use of structure.
Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals $7\times5+7\times3$, in preparation for learning about the distributive property. In the expression $x^2+9x+14$, older students can see the 14 as 2×7 and the 9 as $2+7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. 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*.

8. Look for and express regularity in repeated reasoning.
Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through $(1, 2)$ with slope 3, middle school students might abstract the equation $(y-2)/(x-1)=3$. Noticing the regularity in the way terms cancel when expanding $(x-1)(x+1)(x-1)(x^2\ x+1)$, and $(x-1)(x^3+x^2+x+1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient 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 increasingly ought to 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 lack 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.

Fall 2024

August					1	2	3
	4	5	6 Teacher PD Day	7 Teacher PD Day	8 Teacher PD Day	9 Teacher Work Day	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
September	1	2 Labor Day	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
October	29	30	1	2	3	4	5
	6	7 Fall Break	8 Fall Break	9 Fall Break	10 Fall Break	11 Fall Break	12
	13	14 Teacher PD Day	15	16	17	18	19
	20	21	22	23	24	25 Nevada Day	26
	27	28	29	30	31	1	2
November	3	4	5 Teacher PD Day	6	7	8	9
	10	11 Veteran's Day	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27 Thanksgiving Break	28 Thanksgiving Break	29 Thanksgiving Break	30
December	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16 HS Finals	17 HS Finals	18 HS Finals	19 HS Finals	20 Teacher Work Day	21
	22	23	24	25	26	27	28
	29	30	31				

Spring 2025

January				1	2	3	4
	5	6 Teacher PD Day	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20 MLK Day	21	22	23	24	25
	26	27	28	29	30	31	1
February	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17 President's Day	18	19	20	21	22
	23	24	25	26	27	28	1
March	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17 Spring Break	18 Spring Break	19 Spring Break	20 Spring Break	21 Spring Break	22
	23	24 Spring Break	25 Spring Break	26 Spring Break	27 Spring Break	28 Spring Break	29
April	30	31	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
May	27	28	29	30	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26 Memorial Day	27	28	29	30	31
June	1	2	3 HS Finals	4 HS Finals	5 HS Finals	6 HS Finals	7
	8	9 Contingency Day	10 Contingency Day	11 Contingency Day	12	13	14

Middle School Mathematics Course Guides

The Secondary Math Course Guides provide the standards aligned to topics and resources available in the currently adopted text. It is the teacher's professional responsibility to ensure that their students are prepared for the next course in the Pathway. This can only be accomplished when all grade level/course standards are taught with student engagement and an expectation of rigor in mathematics.

Excellence in Education, Every Student, Every Day, to Graduation

COURSE DESCRIPTIONS FOR MIDDLE SCHOOL MATHEMATICS

Math 6 **Course #204, 204A/204B, 721, 258**

This is a one year course for students in the 6th grade to focus on active engagement with numbers by focusing on conceptual understanding, computational and procedural skills, and problem solving. The 6th grade standards require students to study the following areas: operations with positive rational numbers, understanding of signed numbers on the number line, expressions and equations, proportional reasoning, data analysis in statistics, and plane and solid shapes. Students will increase their understanding of the course material by participating in homework, class work, quizzes, tests, group and individual tasks, and independent problem solving.

Math 7 **Course #214, 215A/215B, 212**

This is a one year course for students in 7th grade to focus on real-world scenarios and mathematical problems involving numerical and algebraic expressions and equations. Students begin to apply their understanding of rational numbers with increased complexity to add, subtract, multiply and divide. Students develop and apply understandings of proportional relationships. Students explore concepts of angle measure, area, surface area and volume. Data analysis with multiple sets of data are examined in statistics and students investigate the chance process with probability models. Students will increase their understanding of the course material by participating in homework, class work, quizzes, tests, group and individual tasks, and independent problem solving.

Math 7/8 **Course #220, 227A/227B, 755**

This is a one year course for students in 7th grade to focus on real-world scenarios and mathematical problems involving numerical and algebraic expressions and equations. Students begin to apply their understanding of rational numbers with increased complexity to add, subtract, multiply and divide. Students develop and apply understandings of proportional relationships and become comfortable using a linear equation to describe the relationship between two values in the (x,y) plane. Students will learn to assess two- and three-dimensional shapes using distance, angle, and similarity using ideas about distance and angles and how they behave. The students will understand the Pythagorean Theorem and be able to explain why it is true. The students will complete their study of volume by learning to solve for the area, surface area, and volume of cones, cylinders, and spheres. Data analysis with multiple sets of data are examined in statistics and students investigate chance process with probability models. Students will increase their understanding of the course material by participating in homework, class work, quizzes, tests, group and individual tasks, and independent problem solving.

Math 8 **Course #224, 225A/225B, 222**

This is a one year course for students in 8th grade to focus on how to formulate expressions and equations, show the association of data with a linear equation, and to solve linear equations. The students become comfortable using a linear equation to describe the relationship between two values in the (x,y) plane. They will also be able to solve problems with one linear equation and systems with two linear equations. Students will learn to understand functions and to use a function to describe quantitative relationships. Students learn to assess two- and three-dimensional shapes using distance, angle, and similarity using ideas about distance and angles. The students will understand the Pythagorean Theorem and be able to explain why it is true. The students will complete their study of volume by learning to solve for the volume of cones, cylinders, and spheres. Students will increase their understanding of the course material by participating in homework, class work, quizzes, tests, group and individual tasks, and independent problem solving.

Successful completion of Math 6, Math 7 and Math 8 OR
Math 6 and Math 7/8 prepares a student for Algebra 1.

Essential Standards

Washoe County School District is committed to the vision that all students will meet or exceed academic expectations as defined in the Nevada Academic Content Standards (NVACS) and as detailed in WCSD course guide. To achieve this vision, teachers are expected to teach all standards aligned to a course/grade level. To ensure the highest level of learning for all students, teachers engage in the work of continuous improvement through the Professional Learning Community (PLC) process. To support the work of collaborative teams within the PLC process, educators from across the district identified essential standards, defined as:

> **". . . a carefully selected subset of the total list of the grade-specific and course-specific standards within each content area that students must know and be able to do by the end of each school year in order to be prepared for the standards at the next grade level or course" (Ainsworth, 2015 p. 55).**

In WCSD, PLC teams guarantee success for all students by focusing their collaborative time, common assessments, and team-provided interventions on identified essential standards first (Adapted from Taking Action, 2018, p.86). The WCSD focus on essential standards does not relieve a teacher of the responsibility for teaching and assessing all standards identified by the NVACS for each grade/course.

Essential standards in the course guide are bolded and highlighted. Note: if a standard is essential in one Module it is labeled essential throughout all Modules of the guide.

Essential Standards Reteaching and Intervention

An additional day is included in the guide to provide time for reteaching and intervention as needed for the essential standards items.

Assessment Resources

A digital version of Middle School Course guides will be provided and available in the MathResources folder. The digital course guides will be organized by module and contain direct links to Smarter Balanced resources and sample items. These resources can aid in lesson planning and PLC conversations. Sample items included in these resources are public and can be integrated into classroom assessments and activities.

Middle School Course Minutes

The course guide assumes that math students are taught for an average of 50 minutes a day or an average of 250 minutes a week.

2024-2025

Math 6
Course Guide

#204 Math 6
#204A/204B MYP Math 6
#771 Accel Math 6
#258 Basic Math 6

Math 6 Pacing (Days in Q1-44, Q2-39, Q3-48, Q4-49)

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
Module	Days	Module	Days
1 – Integers	4	8 – Percent	8
3 – Rational Numbers	8	9 – Generating Equivalent Numerical Expressions	9
2 – Factors & Multiples	4	10 – Generating Equivalent Algebraic Expressions	11
4 – Operations with Fractions	20	11 – Equations & Relationships	12
5 – Operations with Decimals	9	12 – Relationships in Two Variables	7
6 – Representing Ratios & Rates	13	12 – Relationships in Two Variables	3-opt
7 – Applying Ratios & Rates	12	14 – Distance & Area in Coordinate Plane	8
Semester Flex/Review Days	10	13 – Area & Polygons	11
		15 – Surface Area & Volume of Solids	11
		16 - Displaying, Analyzing and Summarizing Data	10
		Semester Flex/Review Days	6
Be here by 12/19, the end of Q2		Be here by 6/6, the end of Q4	

Math 6 – Go Math Resource and Standards

Module 1: Integers

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
1.1 Identifying Integers and Their Opposites	1	**6.NS.C.5**	**6.NS.C.6** **6.NS.C.6a** **6.NS.C.6c**
1.2 Comparing and Ordering Integers	1	6.NS.C.7b	6.NS.C.7 6.NS.C.7a
1.3 Absolute Value	1	6.NS.C.7c	6.NS.C.7 6.NS.C.7d
Module 1 Quiz (Test Mod 1 & 3 at end of Mod 3)	1		

Suggested Module Pacing

August 2024

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Module 3: Rational Numbers

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
3.1 Classifying Rational Numbers	2	6.NS.C.6	
3.2 Identifying Opposites and Absolute Value of Rational Numbers	1	**6.NS.C.6c**	**6.NS.C.6** **6.NS.C.6a** 6.NS.C.7 6.NS.C.7c
3.3 Comparing and Ordering Rational Numbers	2	6.NS.C.7a	6.NS.C.7 6.NS.C.7b
Review and Assess (Module 1 & 3)	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

August 2024

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Number Sense Standards for Modules 1 & 3

Apply and extend previous understandings of numbers to the system of rational numbers. (major cluster)

6.NS.C.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, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

Apply and extend previous understandings of numbers to the system of rational numbers. (major cluster)

6.NS.C.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. **a.** 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. **c.** Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers & other rational numbers on a coordinate plane.
6.NS.C.7	Understand ordering and absolute value of rational numbers. a. 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. b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write –3°C>–7°C to express that –3°C is warmer than –7°C. c. 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. d. Distinguish comparisons of absolute value from statements about order. For ex, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.

Math 6 – Go Math Resource and Standards

Module 2: Factors and Multiples

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
2.1 Greatest Common Factor	1	6.NS.B.4	
2.2 Least Common Multiple	1	6.NS.B.4	
Module 2 Quiz (Test Mod 2 & 4 at end of Mod 4)	1		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

September 2024

S	M	T	W	TH	F	S
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Module 4: Operations with Fractions

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
4.1 Applying GCF & LCM to Fraction Operations -add, subtract, and multiply fractions	6	6.NS.B.4	
4.2 Dividing Fractions	4	**6.NS.A.1**	
4.3 Dividing Mixed Numbers	4	**6.NS.A.1**	
4.4 Solving Multistep Problems with Fractions and Mixed Numbers	3	**6.NS.A.1**	
Module 2 Quiz (Test Mod 2 & 4 at end of Mod 4)	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

September/October 2024

S	M	T	W	TH	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12

Number Sense Standards for Modules 2 & 4

Apply and extend previous understandings of multiplication and division to divide fractions by fractions. (major cluster)

6.NS.A.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) ÷(3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (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 mile and area 1/2 square mile?

Compute fluently with multi-digit numbers and find common factors and multiples. (additional cluster)

6.NS.B.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).

Math 6 – Go Math Resource and Standards

Module 5: Operations with Decimals

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
5.1 Dividing Whole Numbers	1	6.NS.B.2	
5.2 Adding and Subtracting Decimals	1	6.NS.B.3	
5.3 Multiplying Decimals	1	6.NS.B.3	
5.4 Dividing Decimals	2	6.NS.B.3	
5.5 Applying Operations with Rational Numbers	2	6.NS.B.3	
Review and Assess	2		

Suggested Module Pacing

October 2024

S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Compute fluently with multi-digit numbers and find common factors and multiples. (additional cluster)	
6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.
6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Module 6: Representing Ratios and Rates

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
6.1 Ratios	3	**6.RP. A.1**	**6.RP.A.3 6.RP.A.3a**
6.2 Rates	2	**6.RP. A.2**	**6.RP.A.3 6.RP.A.3b**
6.3 Using Ratios & Rates to Solve Problems	5	**6.RP.A.3**	**6.RP.A.3a**
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

October/November 2024

S	M	T	W	TH	F	S
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Understand ratio concepts and use ratio reasoning to solve problems. (major cluster)	
6.RP.A.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."
6.RP.A.2	Understand the concept of a unit rate a/b associated with a ratio a:b with $b \neq 0$, 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."
6.RP.A.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. **a.** 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. **b.** 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?

Math 6 – Go Math Resource and Standards

Module 7: Representing Ratios and Rates

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
7.1 Ratios, Rates, Tables and Graphs	3	6.RP. A.3a	6.RP.A.3 6.RP.A.3b
7.2 Solving Problems with Proportions	3	6.RP. A.3	6.RP.A.3b
7.3 Converting within Measurement Systems	2	6.RP.A.3d	6.RP.A.3
7.4 Converting between Measurement Systems	1	6.RP.A.3d	6.RP.A.3 6.RP.A.3b
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

November/December 2024

S	M	T	W	TH	F	S
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	**20**	21
22	23	24	25	26	**27**	28

Understand ratio concepts and use ratio reasoning to solve problems. (major cluster)	
6.RP.A.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. **a.** 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. **b.** 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? d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

End Of Quarter Two

Math 6 – Go Math Resource and Standards

Module 8: Percent

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
8.1 Understanding Percent	2	6.RP. A.3c	
8.2 Percent, Fractions and Decimals	2	6.RP. A.3	6.NS.B.3
8.3 Solving Percent Problems	2	6.RP.A.3c	6.RP.A.3
Review and Assess	2		

Suggested Module Pacing

January 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Understand ratio concepts and use ratio reasoning to solve problems. (major cluster)	
6.RP.A.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. c. 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.
Compute fluently with multi-digit numbers and find common factors and multiples. (additional cluster)	
6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Module 9: Generating Equivalent Numerical Expressions

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
9.1 Exponents	2	**6.EE.A.1**	
9.2 Prime Factorization	1	**6.EE.A.1**	
9.3 Order of Operations	3	**6.EE.A.1**	
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

January 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Apply and extend previous understandings of arithmetic to algebraic expressions. (major cluster)	
6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.

Math 6 – Go Math Resource and Standards

Module 10: Generating Equivalent Algebraic Expressions

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
10.1 Modeling and Writing Expressions	3	**6.EE.A.2a**	**6.EE.A.2b** **6.EE.A.4** **6.EE.B.6**
10.2 Evaluating Expressions	2	**6.EE.A.2c**	
10.3 Generating Equivalent Expressions	3	6.EE.A.3	**6.EE.A.2b** **6.EE.A.4**
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

February 2025

S	M	T	W	TH	F	S
26	27	28	29	30	31	**1**
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

Apply and extend previous understandings of arithmetic to algebraic expressions. (major cluster)	
6.EE.A.2	Write, read, and evaluate expressions in which letters stand for numbers. **a.** 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. **b.** 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. **c.** Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used 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.
6.EE.A.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.
6.EE.A.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 the number y.
Reason about and solve one-variable equations and inequalities. (major cluster)	
6.EE.B.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.

Math 6 – Go Math Resource and Standards

Module 11: Equations and Relationships

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
11.1 Writing Equations to Represent Situations	3	**6.EE.B.7**	6.EE.B.5 **6.EE.B.6**
11.2 Addition Equations (*Only teach: $x + p = q$)* • Complete Explore Activity p. 303 • Addition Equations- p. 304 Ex. 1 & p. 307 Ex. 4 (optional Ex. 2 and Ex. 3) • Assign-Guided Practice #1-6, 10, 12, 13, 14, 17-21	2	**6.EE.B.7**	6.EE.B.5 **6.EE.B.6**
11.3 Multiplication Equations (*Only teach: $px = q$)* • Complete Explore Activity p. 311 • Addition Equations- p. 312 Ex. 1 & p. 315 Ex. 4 (optional Ex. 2 and Ex. 3) • Assign-Guided Practice #1, 3-5, 9-12, 14, 17-19	2	6.EE.B.5	**6.EE.B.6** **6.EE.B.7**
11.4 Writing Inequalities	2	6.EE.B.8	6.EE.B.5 **6.EE.B.6**
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

February /March 2025

S	M	T	W	TH	F	S
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	**1**
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22

Reason about and solve one-variable equations and inequalities. (major cluster)	
6.EE.B.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.
6.EE.B.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.
6.EE.B.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.
6.EE.B.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.

Math 6 – Go Math Resource and Standards

Module 12: Relationships in Two Variables

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
12.1 Graphing in the Coordinate Plane	1	6.NS.C.6c	6.NS.C.6 6.NS.C.6b 6.NS.C.8
12.2 Independent and Dependent Variables in Tables and Graphs	2	6.EE.C.9	
12.3 Wring Equations from Tables -simple equations $d = 56t, y = 2x, m = 3 + d$	2	6.EE.C.9	
Review and Assess	2		
12.4 Representing Algebraic Relationships in Tables and Graphs	2-optional	6.EE.C.9	
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

March/April 2025

S	M	T	W	TH	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5
6	7	8	9	10	11	12

Apply and extend previous understandings of numbers to the system of rational numbers. (major cluster)	
6.NS.C.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. **b.** 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. **c.** 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.
6.NS.C.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.
Represent and analyze quantitative relationships between dependent and independent variables. (major cluster)	
6.EE.C.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.

Math 6 – Go Math Resource and Standards

Module 14: Distance and Area in the Coordinate Plane

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
Supplement: Review Integer-Module 1	1		
14.1 Distance in the Coordinate Plane	2	6.NS.C.8	6.NS.C.6b
14.2 Polygons in the Coordinate Plane	2	6.G.A.3	
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Apply and extend previous understandings of numbers to the system of rational numbers. (major cluster)	
6.NS.C.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. b. 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.
6.NS.C.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.
Solve real-world and mathematical problems involving area, surface area, and volume. (supporting cluster)	
6.G.A.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.

Module 13: Areas and Polygons

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
13.1 Area of Quadrilaterals	1	6.G.A.1	
13.2 Area of Triangles	2	6.G.A.1	
13.3 Solving Area Equations	2	6.G.A.1	6.EE.B.7
13.4 Area of Polygons	3	6.G.A.1	
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Solve real-world and mathematical problems involving area, surface area, and volume. (supporting cluster)	
6.G.A.1	Find the 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.
Reason about and solve one-variable equations and inequalities. (major cluster)	
6.EE.B.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.

Math 6 – Go Math Resource and Standards

Module 15: Surface Area and Volume of Solids

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
15.1 Nets and Surface Area	3	6.G.A.4	6.EE.A.2c
15.2 Volume of Rectangular Prisms	2	6.G.A.2	
15.3 Solving Volume Equations	3	6.G.A.2	6.EE.B.7
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

May 2025

S	M	T	W	TH	F	S
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Solve real-world and mathematical problems involving area, surface area, and volume. (supporting cluster)	
6.G.A.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 = l w h and V = b h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
6.G.A.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
Apply and extend previous understandings of arithmetic to algebraic expressions. (major cluster)	
6.EE.A.2	Write, read, and evaluate expressions in which letters stand for numbers. **c.** Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used 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.
Reason about and solve one-variable equations and inequalities. (major cluster)	
6.EE.B.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.

Math 6 – Go Math Resource and Standards

Module 16: Displaying, Analyzing and Summarizing Data

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
16.1 Measures of Center	2	6.SP.B.5	6.SP.A.3 6.SP.B.5a-d
16.2 Mean Absolute Deviation	1	6.SP.B.5c	
16.3 Box Plots	1	6.SP.B.4	6.SP.B.5c
16.4 Dot Plots and Data Distribution	2	6.SP.B.4	6.SP.A.1 6.SP.A.2 6.SP.B.5c, d
16.5 Histograms	2	6.SP.B.4	6.SP.B.5
Review and Assess	2		

Suggested Module Pacing

May 2025

S	M	T	W	TH	F	S
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Develop understanding of statistical variability. (additional cluster)	
6.SP.A.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.
6.SP.A.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.
6.SP.A.3	Recognize that a measure of center for a numerical data set summarizes all its values with a single number, while a measure of variation describes how its values vary with a single number.
Summarize and describe distributions. (additional cluster)	
6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
6.SP.B.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 were 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 were gathered.

End Of Quarter Four

2024-2025

Math 7
Course Guide

#214 Math 7
#215A/215B MYP Math 7
#212 Basic Math 7

Math 7 Pacing (Days in Q1-44, Q2-39, Q3-48, Q4-49)

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
Module	Days	Module	Days
1 – Adding & Subtracting Integers	12	6 – Review Expressions & Equations	7
2 – Multiplying & Dividing Integers	8	7 – Inequalities	9
3 – Rational Numbers	14	8 – Modeling Geometric Figures	14
4 – Rates & Proportionally	14	9 – Circumference, Area & Volume	17
5 – Proportion & Percent	10	4 – Review Rates & Proportionally	7
6 – Expressions & Equations	17	10 – Random Samples & Populations	10
Semester Flex/Review Days	6	11 – Analyzing & Comparing Data	8
		12 – Experimental Probability	4
		13 – Theoretical Probability & Simulations	6
		Semester Flex/Review Days	10
Be here by 12/19 end of Q2		Be here by 6/6 end of Q4	

Math 7 – Go Math Resources and Standards

Module 1: Adding and Subtracting Integers

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
1.1 Adding Integers with the Same Sign	2	7.NS.A.1	7.NS.A.1b 7.NS.A.1d
1.2 Adding Integers with Different Signs	2	7.NS.A.1	7.NS.A.1b
1.3 Subtracting Integers	3	7.NS.A.1c	7.NS.A.1
1.4 Applying Addition and Subtraction of Integers	2	7.NS.A.3	7.NS.A.1 7.NS.A.1d 7.EE.B.3
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

August 2024

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Module 2: Multiplying and Dividing Integers

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
2.1 Multiplying Integers	1	7.NS.A.2	7.NS.A.2a
2.2 Dividing Integers	2	7.NS.A.2	7.NS.A.2b 7.NS.A.3
2.3 Applying Integer Operations	2	7.NS.A.3	7.NS.A.2a 7.NS.A.2c 7.EE.B.3
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

September 2024

S	M	T	W	TH	F	S
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Module 3: Rational Numbers

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
3.1 Rational Numbers	2	7.NS.A.2d	7.NS.A.2b
3.2 Adding Rational Numbers	2	7.NS.A.1d	7.NS.A.1a 7.NS.A.1b 7.NS.A.3
3.3 Subtracting Rational Numbers	2	7.NS.A.1c	7.NS.A.1
3.4 Multiplying Rational Numbers	1	7.NS.A.2	7.NS.A.2a 7.NS.A.2c 7.NS.A.3
3.5 Dividing Rational Numbers	2	7.NS.A.2	7.NS.A.2b 7.NS.A.2c 7.NS.A.3
3.6 Applying Rational Number Operations	2	7.EE.B.3	7.NS.A.3
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

September 2024

S	M	T	W	TH	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

Math 7 – Go Math Resources and Standards

Number Sense Standards for Modules 1, 2 & 3	
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. (major cluster)	
7.NS.A.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. **a.** 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. **b.** 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. **c.** 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 in real-world contexts. **d.** Apply properties of operations as strategies to add and subtract rational numbers.
7.NS.A.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. **a.** 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. **b.** 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 $-\left(\frac{p}{q}\right) = \frac{-p}{q} = \frac{p}{-q}$. Interpret quotients of rational numbers by describing real world contexts. **c.** Apply properties of operations as strategies to multiply and divide rational numbers. **d.** 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.
7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.

Math 7 – Go Math Resources and Standards

Module 4: Rates and Proportionality

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
4.1 Unit Rates	3	7.RP.A.1	
4.2 Constant Rate of Change	4	7.RP.A.2	7.RP.A.2a 7.RP.A.2b 7.RP.A.2c
4.3 Proportional Relationships and Graphs	4	7.RP.A.2a	7.RP.A.2b 7.RP.A.2c 7.RP.A.2d
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

October 2024

S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Analyze proportional relationships and use them to solve real-world and mathematical problems. (major cluster)	
7.RP.A.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.
7.RP.A.2	Recognize and represent proportional relationships between quantities. **a.** 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. **b.** Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. **c.** 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. **d.** 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.

Math 7 – Go Math Resources and Standards

Module 5: Proportions and Percent

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
5.1 Percent Increase and Decrease	2	7.RP.A.3	
5.2 Rewriting Percent Expressions	2	7.EE.A.2	7.RP.A.3 7.EE.B.3
5.3 Applications of Percent	3	7.RP.A.3	7.EE.B.3
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

November 2024

S	M	T	W	TH	F	S
27	28	29	30	31	**1**	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	**22**	23
24	25	26	27	28	**29**	30

Analyze proportional relationships and use them to solve real-world and mathematical problems. (major cluster)	
7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.
Use properties of operations to generate equivalent expressions. (major cluster)	
7.EE.A.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."
Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (major cluster)	
7.EE.B.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.

Math 7 – Go Math Resources and Standards

Module 6: Expressions and Equations

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
6.1 Algebraic Expressions	4	7.EE.A.1	7.EE.A.2
6.2 One-Step Equations with Rational Coefficients Math 6 worked with $x + p = q$ and $px = q$ for positive rational numbers. Math 7 will need to solve these with negative rational numbers, and work with the equations $x - p = q$ and $\frac{x}{p} = q$.	4	7.EE.B.4	
6.3 Writing Two-Step Equations	3	7.EE.B.4	7.EE.B.3
6.4 Solving Two-Step Equations	3	7.EE.B.4a	7.EE.B.4
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

November/December 2024

S	M	T	W	TH	F	S
17	18	19	20	21	**22**	23
24	25	26	27	28	**29**	30
1	2	3	4	5	**6**	7
8	9	10	11	12	**13**	14
15	16	17	18	19	**20**	21
22	23	24	25	26	**27**	28

Use properties of operations to generate equivalent expressions. (major cluster)	
7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
7.EE.A.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."
Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (major cluster)	
7.EE.B.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.
7.EE.B.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. **a.** Solve word problems leading to equations of the form $px+q=r$, and $p(x+q)=r$, where p, q and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

End Of Quarter Two

Math 7 – Go Math Resources and Standards

Review Module 6: Expressions and Equations

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
Pre-assess concepts	1		
6.1 Algebraic Expressions	2	**7.EE.A.1**	**7.EE.A.2**
6.2 One-Step Equations with Rational Coefficients	1	**7.EE.B.4**	
6.3 Writing Two-Step Equations	1	**7.EE.B.4**	
6.4 Solving Two-Step Equations	1	**7.EE.B.4a**	**7.EE.B.4**
Assess	1		

Suggested Module Pacing

January 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Module 7: Inequalities

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
7.1 Writing and Solving One-Step Inequalities	2	7.EE.B.4b	**7.EE.B.4**
7.2 Writing Two-Step Inequalities	2	**7.EE.B.4**	
7.3 Solving Two-Step Inequalities	2	7.EE.B.4b	
Review and Assess	3		

Suggested Module Pacing

January 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (major cluster)	
7.EE.B.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. b. Solve word problems leading to inequalities of the form $px+q>r, px+q<r$ 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.

Math 7 – Go Math Resources and Standards

Module 8: Modeling Geometric Figures

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
8.1 Similar Shapes and Scale Drawings	3	7.G.A.1	
8.2 Geometric Drawings	3	7.G.A.2	
8.3 Cross Sections	2	7.G.A.3	
8.4 Angle Relationships	3	7.G.B.5	
Review and Assess	3		

Suggested Module Pacing

February 2025

S	M	T	W	TH	F	S
26	27	28	29	30	31	**1**
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

Draw, construct, describe geometrical figures & describe relationships between them. (additional cluster)	
7.G.A.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.
7.G.A.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.
7.G.A.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.
Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. (additional cluster)	
7.G.B.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.

Math 7 – Go Math Resources and Standards

Module 9: Circumference, Area, and Volume

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
9.1 Circumference	2	7.G.B.4	
9.2 Area of Circles	2	7.G.B.4	
9.3 Area of Composite Figures	3	7.G.B.6	
9.4 Solving Surface Area Problems	3	7.G.B.6	7.EE.B.4a
9.5 Solving Volume Problems	3	7.G.B.6	7.EE.B.4a
Review and Assess	3		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

February /March 2025						
S	M	T	W	TH	F	S
16	17	18	19	20	21	22
23	24	25	26	27	28	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. (additional cluster)	
7.G.B.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.
7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- & three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, & right prisms.
Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (major cluster)	
7.EE.B.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. **a.** Solve word problems leading to equations of the form $px+q=r$, and $p(x+q)=r$, where p, q and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Review Module 4: Rates and Proportionality

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
Pre-assess concepts	1		
4.1 Unit Rates	1	7.RP.A.1	
4.2 Constant Rate of Change	2	7.RP.A.2	7.RP.A.2a 7.RP.A.2b 7.RP.A.2c
4.3 Proportional Relationships and Graphs	2	7.RP.A.2a	7.RP.A.2b 7.RP.A.2c 7.RP.A.2d
Assess	1		

Suggested Module Pacing

March/April 2025						
S	M	T	W	TH	F	S
23	24	25	26	27	28	29
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26

Math 7 – Go Math Resources and Standards

Module 10: Random Samples and Populations

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
10.1 Populations and Samples	2	7.SP.A.1	
10.2 Making Inferences	3	7.SP.A.2	7.RP.A.2c 7.SP.A.1
10.3 Generating Random Samples	3	7.SP.A.2	
Review and Assess	3		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Use random sampling to draw inferences about a population. (supporting cluster)	
7.SP.A.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.
7.SP.A.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.
Analyze proportional relationships and use them to solve real-world and mathematical problems. (major cluster)	
7.RP.A.2	Recognize and represent proportional relationships between quantities. **c.** 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.

Module 11: Analyzing and Comparing Data

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
11.1 Comparing Data Displayed in Dot Plots	2	7.SP.B.4	7.SP.B.3
11.2 Comparing Data Displayed in Box Plots	2	7.SP.B.3	7.SP.B.4
11.3 Using Statistical Measures to Compare Populations	2	7.SP.B.3	7.SP.B.4
Review and Assess	3		

Suggested Module Pacing

April/May 2025

S	M	T	W	TH	F	S
20	21	22	23	24	25	26
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17

Draw informal comparative inferences about two populations. (additional cluster)	
7.SP.B.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variability, 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.
7.SP.B.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

Math 7 – Go Math Resources and Standards

Module 12: Experimental Probability

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
12.1 Probability	1	7.SP.C.5	7.SP.C.7a
12.2 Experimental Probability of Simple Events	1	7.SP.C.6	7.SP.C.7b
12.3 Experimental Probability of Compound Events	1	7.SP.C.8	7.SP.C.8a 7.SP.C.8b 7.SP.C.8c
12.4 Making Predictions with Experimental Probability	1	7.SP.C.6	
(Assess Module 12 & 13 at the end of Module 13)			

Suggested Module Pacing

May 2025

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Investigate chance processes and develop, use, and evaluate probability models. (supporting cluster)	
7.SP.C.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.
7.SP.C.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.
7.SP.C.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. a. 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. b. 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?
7.SP.C.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. 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. b. 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. c. Design and use a simulation to generate frequencies for compound events.

Math 7 – Go Math Resources and Standards

Module 13: Theoretical Probability and Standards

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
13.1 Theoretical Probability of Simple Events	1	7.SP.C.7a	7.SP.C.6 7.SP.C.7
13.2 Theoretical Probability of Compound Events	1	7.SP.C.8	7.SP.C.8a 7.SP.C.8b
13.3 Making Predictions with Theoretical Probability	1	7.SP.C.6	7.SP.C.7a
13.4 Using Technology to Conduct a Simulation	1	7.SP.C.8c	7.SP.C.8
Review and Assess Module 12 & 13	4		

Suggested Module Pacing

May 2025

S	M	T	W	TH	F	S
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Investigate chance processes and develop, use, and evaluate probability models. (supporting cluster)	
7.SP.C.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.
7.SP.C.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. a. 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.
7.SP.C.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. 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. b. 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. c. Design and use a simulation to generate frequencies for compound events.

End Of Quarter Four

2024-2025

Math 7-8 Course Guide

#220 Math 7-8
#227A/227B MYP Math 7-8
#755 ACCEL Math 7-8: GATE

Math 7/8 Pacing (Days in Q1-44, Q2-39, Q3-48, Q4-49)

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
Module	Days	Module	Days
1 – Add/Subtract Integers	8	11 – Random Samples & Populations	6
2 – Multiply/Divide Integers	6	10 – Analyzing & Comparing Data	6
3 – Rational Numbers	14	12 – Experimental Probability	4
4 – Rates/Proportions 16 – Proportional Relationships	11	13 – Theoretical Probability & Simulations	6
17 – Nonproportional Relationships	9	8 – Modeling Geometry	6
5 – Proportions & Percentages	6	9 – Circumference, Area & Volume	8
6 – Expression & Equations	5	22 – Volume	7
18 – Solving Linear Equations	12	19 – Transformations & Congruence	8
7 – Inequalities	3	20 – Transformations & Similarity	8
Semester Flex/Review	7	21 – Angles, Parallel Lines & Triangles	10
		15 – Exponents & Scientific Notation	9
		14 – Real Numbers	7
		Grade 8: 12 – Pythagorean Theorem	8
		Semester Flex/Review	3
Be here by 12/19 end of Q2		Be here by 6/6 end of Q4	

Math 7/8 - Go Math Resource and Standards

Module 1: Adding and Subtracting Integers

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
1.1 Adding Integers with the Same Sign	1	7.NS.A.1	7.NS.A.1b 7.NS.A.1d
1.2 Adding Integers with Different Signs	2	7.NS.A.1	7.NS.A.1b
1.3 Subtracting Integers	2	7.NS.A.1c	7.NS.A.1
1.4 Applying Addition and Subtraction of Integers	2	7.NS.A.3	7.NS.A.1 7.NS.A.1d 7.EE.B.3
Quiz Module 1	1		

Suggested Module Pacing

August 2024

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Module 2: Multiplying and Dividing Integers

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
2.1 Multiplying Integers	1	7.NS.A.2	7.NS.A.2a
2.2 Dividing Integers	1	7.NS.A.2	7.NS.A.2b 7.NS.A.3
2.3 Applying Integer Operations	1	7.NS.A.3	7.NS.A.2a 7.NS.A.2c 7.EE.B.3
Review and Assess Module 1 and Module 2	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

August/September 2024

S	M	T	W	TH	F	S
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14

Module 3: Rational Numbers

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
3.1 Rational Numbers	2	7.NS.A.2d	7.NS.A.2b
3.2 Adding Rational Numbers	2	7.NS.A.1d	7.NS.A.1a 7.NS.A.1b 7.NS.A.3
3.3 Subtracting Rational Numbers	2	7.NS.A.1c	7.NS.A.1
3.4 Multiplying Rational Numbers	1	7.NS.A.2	7.NS.A.2a 7.NS.A.2c 7.NS.A.3
3.5 Dividing Rational Numbers	2	7.NS.A.2	7.NS.A.2b 7.NS.A.2c 7.NS.A.3
3.6 Applying Rational Number Operations	2	7.EE.B.3	7.NS.A.3
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

September 2024

S	M	T	W	TH	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

Math 7/8 - Go Math Resource and Standards

Number Sense Standards for Modules 1, 2 & 3	
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. (major cluster)	
7.NS.A.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. **a.** 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. **b.** 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. **c.** 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 in real-world contexts. **d.** Apply properties of operations as strategies to add and subtract rational numbers.
7.NS.A.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. **a.** 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. **b.** 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 $-\left(\frac{p}{q}\right) = \frac{-p}{q} = \frac{p}{-q}$. Interpret quotients of rational numbers by describing real world contexts. **c.** Apply properties of operations as strategies to multiply and divide rational numbers. **d.** 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.
7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.

Math 7/8 - Go Math Resource and Standards

Module 4/Module 16: Rates and Proportionality

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
4.1 Unit Rates	3	7.RP.A.1	
16.3 Interpreting the Unit Rate as Slope		8.EE.B.5	8.F.A.2 8.F.B.4
16.2 Constant Rate of Change	3	7.RP.A.2	7.RP.A.2a 7.RP.A.2b 7.RP.A.2c
3.2 Rate of Change and Slope		8.F.B.4	
4.3 Proportional Relationships and Graphs	3	7.RP.A.2a	7.RP.A.2b 7.RP.A.2c 7.RP.A.2d
16.1 Representing Proportional Relationships		8.EE.B.6	8.EE.B.5 8.F.B.4
Quiz Module 4 & Module 16 (Assess Modules 4, 16, & 17 after Module 17)	1		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

September/October 2024

S	M	T	W	TH	F	S
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Analyze proportional relationships and use them to solve real-world and mathematical problems. (major cluster)	
7.RP.A.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.
7.RP.A.2	Recognize and represent proportional relationships between quantities. **a.** 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. **b.** Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. **c.** 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. **d.** 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.
Understand the connections between proportional relationships, lines, and linear equations. (major cluster)	
8.EE.B.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.
8.EE.B.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.
Define, evaluate, and compare functions. (major cluster)	
8.F.A.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.
Use functions to model relationships between quantities. (major cluster)	
8.F.B.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.

Math 7/8 - Go Math Resource and Standards

Module 17: Nonproportional Relationships

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
17.1 Representing Linear Nonproportional Relationships	1	8.F.A.3	
17.2 Determining Slope and y-intercept	1	8.EE.B.6	8.F.B.4
17.3 Graphing Linear Nonproportional Relationships using Slope and y-intercept	2	8.F.B.4	8.F.A.3
17.4 Proportional and Nonproportional Situations	1	8.F.B.2	8.F.A.3 8.F.B.4
Review and Assess Modules 4, 16, 17	3		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

October 2024

S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

Understand the connections between proportional relationships, lines, and linear equations. (major cluster)	
8.EE.B.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.
Define, evaluate, and compare functions. (major cluster)	
8.F.A.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.
8.F.A.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.
Use functions to model relationships between quantities. (major cluster)	
8.F.B.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.

Math 7/8 - Go Math Resource and Standards

Module 5: Proportions and Percent

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
5.1 Percent Increase and Decrease	1	7.RP.A.3	
5.2 Rewriting Percent Expressions	1	7.EE.A.2	7.RP.A.3 7.EE.B.3
5.3 Applications of Percent	1	7.RP.A.3	7.EE.B.3
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

November 2024

S	M	T	W	TH	F	S
27	28	29	30	31	**1**	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	**22**	23
24	25	26	27	28	**29**	30

Analyze proportional relationships and use them to solve real-world and mathematical problems. (major cluster)	
7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.
Use properties of operations to generate equivalent expressions. (major cluster)	
7.EE.A.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."
Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (major cluster)	
7.EE.B.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.

Math 7/8 - Go Math Resource and Standards

Module 6: Expressions and Equations

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
6.1 Algebraic Expressions	1	7.EE.A.1	7.EE.A.2
6.2 One-Step Equations with Rational Coefficients Math 6 worked with $x + p = q$ and $px = q$ for positive rational numbers. Math 7 will need to solve these with negative rational numbers, and work with the equations $x - p = q$ and $\frac{x}{p} = q$.	1	7.EE.B.4	
6.3 Writing Two-Step Equations	1	7.EE.B.4	
6.4 Solving Two-Step Equations	1	7.EE.B.4a	7.EE.B.4
Quiz Module 6 (Test Module 6 & 18 after Module 18)	1		

Suggested Module Pacing

November 2024

S	M	T	W	TH	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Use properties of operations to generate equivalent expressions. (major cluster)	
7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
7.EE.A.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."
Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (major cluster)	
7.EE.B.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.
7.EE.B.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. **a.** Solve word problems leading to equations of the form $px+q=r$, and $p(x+q)=r$, where p, q and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Math 7/8 - Go Math Resource and Standards

Module 18: Solving Linear Equations

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
18.1 Equations with the Variable on Both Sides	2	8.EE.C.7	8.EE.C.7b
18.2 Equations with Rational Numbers	2	8.EE.C.7b	8.EE.C.7
18.3 Equations with the Distributive Property	2	8.EE.C.7b	
18.4 Equations with Many Solutions or No Solution	2	8.EE.C.7a	
Review and Assess Module 6 & Module 18	3		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

November/December 2024

S	M	T	W	TH	F	S
17	18	19	20	21	**22**	23
24	25	26	27	28	**29**	30
1	2	3	4	5	**6**	7
8	9	10	11	12	**13**	14
15	16	17	18	19	**20**	21
22	23	24	25	26	**27**	28

Analyze and solve linear equations and pairs of simultaneous linear equations. (major cluster)	
8.EE.C.7	Solve linear equations in one variable. **a.** 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). **b.** Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms

Module 7: Inequalities

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
7.1 Writing and Solving One-Step Inequalities	1	7.EE.B.4b	7.EE.B.4
7.2 Writing Two-Step Inequalities	1	7.EE.B.4	
7.3 Solving Two-Step Inequalities	1	7.EE.B.4b	

Suggested Module Pacing

December 2024

S	M	T	W	TH	F	S
1	2	3	4	5	**6**	7
8	9	10	11	12	**13**	14
15	16	17	18	19	**20**	21
22	23	24	25	26	**27**	28

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (major cluster)	
7.EE.B.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. b. Solve word problems leading to inequalities of the form $px+q>r, px+q<r$ 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.

End Of Quarter Two

Math 7/8 - Go Math Resource and Standards

Module 11: Random Samples and Populations

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
11.1 Populations and Samples	2	7.SP.A.1	
11.2 Making Inferences	2	7.SP.A.2	7.RP.S.2c 7.SP.A.1
11.3 Generating Random Samples	2	7.SP.A.2	
Review and Assess Module 11 & Module 10			

Suggested Module Pacing

Use random sampling to draw inferences about a population. (supporting cluster)	
7.SP.A.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.
7.SP.A.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.
Analyze proportional relationships and use them to solve real-world and mathematical problems. (major cluster)	
7.RP.A.2	Recognize and represent proportional relationships between quantities. **c.** 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.

Module 10: Analyzing and Comparing Data

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
10.1 Comparing Data Displayed in Dot Plots	1	7.SP.B.4	7.SP.B.3
10.2 Comparing Data Displayed in Box Plots	1	7.SP.B.3	7.SP.B.4
10.3 Using Statistical Measures to Compare Populations	2	7.SP.B.3	7.SP.B.4
Assess Module 11 & Module 10 after Module 10	2		

Suggested Module Pacing

Draw informal comparative inferences about two populations. (additional cluster)	
7.SP.B.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variability, 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.
7.SP.B.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

Math 7/8 - Go Math Resource and Standards

Module 12: Experimental Probability

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
12.1 Probability	1	7.SP.C.5	7.SP.C.7a
12.2 Experimental Probability of Simple Events	1	7.SP.C.6	7.SP.C.7b
12.3 Experimental Probability of Compound Events	1	7.SP.C.8	7.SP.C.8a-c
12.4 Making Predictions with Experimental Probability	1	7.SP.C.6	
(Assess Module 12 & 13 at the end of Module 13)			

Suggested Module Pacing

January 2025						
S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Investigate chance processes and develop, use, and evaluate probability models. (supporting cluster)	
7.SP.C.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.
7.SP.C.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.
7.SP.C.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. a. 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. b. 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?
7.SP.C.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. 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. b. 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. c. Design and use a simulation to generate frequencies for compound events.

Math 7/8 - Go Math Resource and Standards

Module 13: Theoretical Probability and Standards

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
13.1 Theoretical Probability of Simple Events	1	7.SP.C.7a	7.SP.C.6 7.SP.C.7
13.2 Theoretical Probability of Compound Events	1	7.SP.C.8	7.SP.C.8a 7.SP.C.8b
13.3 Making Predictions with Theoretical Probability	1	7.SP.C.6	7.SP.C.7a
13.4 Using Technology to Conduct a Simulation	1	7.SP.C.8c	7.SP.C.8
Review and Assess Module 12 & 13	2		

Suggested Module Pacing

January/February 2025

S	M	T	W	TH	F	S
26	27	28	29	30	31	**1**
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

Investigate chance processes and develop, use, and evaluate probability models. (supporting cluster)	
7.SP.C.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.
7.SP.C.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. a. 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.
7.SP.C.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. 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. b. 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. c. Design and use a simulation to generate frequencies for compound events.

Math 7/8 - Go Math Resource and Standards

Module 8: Modeling Geometric Figures

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
8.1 Similar Shapes and Scale Drawings	2	7.G.A.1	
8.2 Geometric Drawings	1	7.G.A.2	
8.3 Cross Sections	1	7.G.A.3	
Review and Assess	2		

Suggested Module Pacing

February 2025

S	M	T	W	TH	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

Draw, construct, describe geometrical figures & describe relationships between them. (additional cluster)	
7.G.A.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.
7.G.A.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.
7.G.A.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.

Module 9: Circumference, Area, and Volume

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
9.1 Circumference	1	**7.G.B.4**	
9.2 Area of Circles	1	**7.G.B.4**	
9.3 Area of Composite Figures	1	**7.G.B.6**	
9.4 Solving Surface Area Problems	1	**7.G.B.6**	**7.EE.B.4a**
9.5 Solving Volume Problems	1	**7.G.B.6**	**7.EE.B.4a**
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

February 2025

S	M	T	W	TH	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. (additional cluster)	
7.G.B.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.
7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- & three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, & right prisms.
Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (major cluster)	
7.EE.B.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. **a.** Solve word problems leading to equations of the form $px+q=r$, and $p(x+q)=r$, where p, q and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Math 7/8 - Go Math Resource and Standards

Module 22: Volume

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
22.1 Volume of Cylinders	1	8.G.C.9	
22.2 Volume of Cones	2	8.G.C.9	
22.3 Volume of Spheres	1	8.G.C.9	
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

February /March 2025

S	M	T	W	TH	F	S
23	24	25	26	27	28	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22

Solve real world and mathematical problems involving of cylinders, cones and spheres. (additional cluster)	
8.G.C.9	Know the formulas for the volume of cones, cylinders, and spheres and use them to solve real world and mathematical problems. Note: Make connections between shapes learned in 6^{th}/7^{th} grades and the new volumes in 8^{th}.

Module 19: Transformations and Congruence

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
19.1 Properties of Translations	1	8.G.A.1	8.G.A.1a-c 8.G.A.3
19.2 Properties of Reflections	1	8.G.A.1	8.G.A.1a-c 8.G.A.3
19.3 Properties of Rotations	2	8.G.A.1	8.G.A.1a-c 8.G.A.3
19.4 Algebraic Representations of Transformations	2	8.G.A.3	
19.5 Congruent Figures	2	8.G.A.2	
Review and Assess	2		

Suggested Module Pacing

March/April 2025

S	M	T	W	TH	F	S
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19

Understand congruence and similarity using physical models, transparencies, or geometry software. (additional cluster)	
8.G.A.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.
8.G.A.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.
8.G.A.3	Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.

Math 7/8 - Go Math Resource and Standards

Module 20: Transformations and Similarity

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
20.1 Properties of Dilations	2	8.G.A.4	8.G.A.3
20.2 Algebraic Representations of Dilations	2	8.G.A.3	
20.3 Similar Figures	2	8.G.A.4	
Review and Assess	2		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Understand congruence and similarity using physical models, transparencies, or geometry software. (additional cluster)	
8.G.A.3	Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.
8.G.A.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.

Module 21: Angle Relationships in Parallel Lines & Triangles

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
21.1/8.4 Parallel Lines Cut by a Transversal	3	8.G.A.5 7.G.B.5	
21.2 Angle Theorems for Triangles	2	8.G.A.5	**8.EE.C.7** **8.EE.C.7b**
21.3 Angle-Angle Similarity	3	8.G.A.5	**8.EE.B.6** **8.EE.C.7**
Review and Assess	2		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. (additional cluster)	
7.G.B.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.
Understand congruence and similarity using physical models, transparencies, or geometry software. (major cluster)	
8.G.A.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.
Understand the connections between proportional relationships, lines, and linear equations. (major cluster)	
8.EE.B.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.
Analyze and solve linear equations and pairs of simultaneous linear equations. (major cluster)	
8.EE.C.7	Solve linear equations in one variable. **b.** Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Math 7/8 - Go Math Resource and Standards

Module 15: Exponents and Scientific Notation

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
15.1 Integer Exponents	2	**8.EE.A.1**	
15.2 Scientific Notation with Positive Powers of 10	1	8.EE.A.3	
15.3 Scientific Notation with Negative Powers of 10	1	8.EE.A.3	
15.4 Operations with Scientific Notation	2	8.EE.A.4	8.EE.A.3
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

May 2025

S	M	T	W	TH	F	S
27	28	29	30	**1**	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Work with radicals and integer exponents. (major cluster)	
8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.
8.EE.A.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.
8.EE.A.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.

Math 7/8 - Go Math Resource and Standards

Module 14: Real Numbers

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
14.1 Rational and Irrational Numbers Represent solutions using square root and cube root for $x^2 = 12$, then $x = \sqrt{12}$ and $x^3 = 27$, then $x = \sqrt[3]{27}$. Evaluate small perfect square roots and small cube roots for $\sqrt{49} = 7$ and $\sqrt[3]{8} = 2$.	2	8.NS.A.1	8.NS.A.2 8.EE.A.2
14.2 Sets of Real Numbers	1	8.NS.A.1	
14.3 Ordering Real Numbers	2	8.NS.A.2	
Review and Assess	2		

Suggested Module Pacing

May 2025

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Know that there are numbers that are not rational, and approximate them by rational numbers. (supporting cluster)	
8.NS.A.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; rational numbers show that the decimal expansions repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
8.NS.A.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 $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.
Work with radicals and integer exponents. (major cluster)	
8.EE.A.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 the $\sqrt{2}$ is irrational.

Grade 8 Module 12: Pythagorean Theorem

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
12.1 The Pythagorean Theorem	2	**8.G.B.7**	**8.G.B.6**
12.2 Converse of the Pythagorean Theorem	1	**8.G.B.6**	
12.3 Distance Between Two Points (using Pythagorean Th, not distance formula)	2	8.G.B.8	
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

May/June 2025

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Understand and apply the Pythagorean Theorem. (major cluster)	
8.G.B.6	Explain a proof of the Pythagorean Theorem and its converse.
8.G.B.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. Solve $x^2 = p$ for any p .
8.G.B.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

End Of Quarter Four

2024-2025

Math 8
Course Guide

#224 Math 8
#225A/225B MYP Math 8
#222 Basic Math 8

Math 8 Pacing (Days in Q1-44, Q2-39, Q3-48, Q4-49)

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
Module	Days	Module	Days
1 – Real Numbers	8	7 – Review Linear Equations	12
2 – Exponents, Scientific Notation	12	12 – Pythagorean Theorem	13
3 – Proportional Relationships	9	13 – Volume	10
4 – Nonproportional Relationships	10	8 – Solving Systems of Linear Equations	12
5 – Writing Linear Equations	10	9 – Transformations & Congruence	12
6 – Functions	10	10 – Transformations & Similarity	8
7 – Solving Linear Equations	12	11 – Angle Relationships	10
Semester Flex/Review	10	14 – Scatter Plots	6
		15 – Two Way Tables	6
		Semester Flex/Review	7
Be here by 12/19 end of Q2		Be here by 6/6 end of Q4	

Math 8 – Go Math Resources and Standards

Module 1: Real Numbers

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
1.1 Rational and Irrational Numbers Represent solutions using square root and cube root for $x^2 = 12$, then $x = \sqrt{12}$ and $x^3 = 27$, then $x = \sqrt[3]{27}$. Evaluate small perfect square roots and small cube roots for $\sqrt{49} = 7$ and $\sqrt[3]{8} = 2$.	3	8.NS.A.1	8.NS.A.2 8.EE.A.2
1.2 Sets of Real Numbers	1	8.NS.A.1	
1.3 Ordering Real Numbers	2	8.NS.A.2	
Review and Assess	2		

Suggested Module Pacing

August 2024						
S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Know that there are numbers that are not rational, and approximate them by rational numbers. (supporting cluster)	
8.NS.A.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; rational numbers show that the decimal expansions repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
8.NS.A.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 $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.
Work with radicals and integer exponents. (major cluster)	
8.EE.A.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 the $\sqrt{2}$ is irrational.

Math 8 – Go Math Resources and Standards

Module 2: Exponents and Scientific Notation

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
2.1 Integer Exponents	4	**8.EE.A.1**	
2.2 Scientific Notation with Positive Powers of 10	1	8.EE.A.3	
2.3 Scientific Notation with Negative Powers of 10	1	8.EE.A.3	
2.4 Operations with Scientific Notation	3	8.EE.A.4	
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

August/September 2024

S	M	T	W	TH	F	S
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21

Work with radicals and integer exponents. (major cluster)	
8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.
8.EE.A.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.
8.EE.A.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.

Math 8 – Go Math Resources and Standards

Module 3: Proportional Relationships

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
3.1 Representing Proportional Relationships	2	8.EE.B.6	8.EE.B.5 8.F.B.4
3.2 Rate of Change and Slope	2	8.F.B.4	
3.3 Interpreting the Unit Rate as Slope	2	8.EE.B.5	8.F.A.2 8.F.B.4
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

September 2024

S	M	T	W	TH	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

Understand the connections between proportional relationships, lines, and linear equations. (major cluster)	
8.EE.B.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.
8.EE.B.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.
Define, evaluate, and compare functions. (major cluster)	
8.F.A.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.
Use functions to model relationships between quantities. (major cluster)	
8.F.B.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.

Math 8 – Go Math Resources and Standards

Module 4: Nonproportional Relationships

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
4.1 Representing Linear Nonproportional Relationships	3	**8.F.A.3**	
4.2 Determining Slope and y-intercept	2	**8.EE.B.6**	**8.F.B.4**
4.3 Graphing Linear Nonproportional Relationships using Slope and y-intercept	2	**8.F.B.4**	**8.F.A.3**
4.4 Proportional and Nonproportional Situations	2	8.F.A.2	**8.F.A.3** **8.F.B.4**
Quiz Module 4 (Assess Module 4 & Module 5 after Module 5)	1		

Suggested Module Pacing

September/October 2024

S	M	T	W	TH	F	S
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Understand the connections between proportional relationships, lines, and linear equations. (major cluster)	
8.EE.B.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.
Define, evaluate, and compare functions. (major cluster)	
8.F.A.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.
8.F.A.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.
Use functions to model relationships between quantities. (major cluster)	
8.F.B.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.

Math 8 – Go Math Resources and Standards

Module 5: Writing Linear Equations

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
5.1 Writing Linear Equations from Situations and Graphs	3	**8.F.B.4**	
5.2 Writing Linear Equations from a Table	3	**8.F.B.4**	
Review and Assess	2		
Essential Standards Reteach and Intervention	2		

Suggested Module Pacing

October/November 2024

S	M	T	W	TH	F	S
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	**1**	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16

Use functions to model relationships between quantities. (supporting cluster)	
8.F.B.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.

Module 6: Functions

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
6.1 Identifying and Representing Functions	2	8.F.A.1	
6.2 Describing Functions	2	**8.F.A.3**	8.F.A.1
6.3 Comparing Functions	2	8.F.A.2	**8.F.B.4**
6.4 Analyzing Graphs	1	8.F.B.5	
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

November 2024

S	M	T	W	TH	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	**29**	30

Define, evaluate, and compare functions. (major clusters)	
8.F.A.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. (Function notation is not required in Grade 8.)
8.F.A.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.
8.F.A.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.
Use functions to model relationships between quantities. (supporting cluster)	
8.F.B.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.
8.F.B.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.

Math 8 – Go Math Resources and Standards

Module 7: Solving Linear Equations

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
7.1 Equations with the Variable on Both Sides	3	8.EE.C.7	8.EE.C.7b
7.2 Equations with Rational Numbers	3	8.EE.C.7b	8.EE.C.7
7.3 Equations with the Distributive Property	3	8.EE.C.7b	
Review and Assess	2		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

November/December 2024

S	M	T	W	TH	F	S
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Analyze and solve linear equations and pairs of simultaneous linear equations. (major cluster)	
8.EE.C.7	Solve linear equations in one variable. **a.** 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). **b.** Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms

End Of Quarter Two

Math 8 – Go Math Resources and Standards

Review Module 7: Solving Linear Equations

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
7.1 Equations with the Variable on Both Sides	2	**8.EE.C.7**	**8.EE.C.7b**
7.2 Equations with Rational Numbers	2	**8.EE.C.7b**	**8.EE.C.7**
7.3 Equations with the Distributive Property	2	**8.EE.C.7b**	
7.4* Equations with Many Solutions or No Solution *Not taught in 1st semester	3	**8.EE.C.7a**	
Review and Assess	3		

Suggested Module Pacing

January 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Module 12: Pythagorean Theorem

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
12.1 The Pythagorean Theorem	4	**8.G.B.7**	**8.G.B.6**
12.2 Converse of the Pythagorean Theorem	2	**8.G.B.6**	
12.3 Distance Between Two Points (using Pythagorean Th, not distance formula)	3	8.G.B.8	
Review and Assess	3		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

January/February 2025

S	M	T	W	TH	F	S
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15

Understand and apply the Pythagorean Theorem. (major cluster)	
8.G.B.6	Explain a proof of the Pythagorean Theorem and its converse.
8.G.B.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. Solve $x^2 = p$ for any p .
8.G.B.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Math 8 – Go Math Resources and Standards

Module 13: Volume

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
13.1 Volume of Cylinders	2	8.G.C.9	
13.2 Volume of Cones	2	8.G.C.9	
13.3 Volume of Spheres	2	8.G.C.9	
Review and Assess	3		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

February 2025

S	M	T	W	TH	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

Solve real world and mathematical problems involving of cylinders, cones and spheres. (additional cluster)	
8.G.C.9	Know the formulas for the volume of cones, cylinders, and spheres and use them to solve real world and mathematical problems. Note: Make connections between shapes learned in 6th/7th grades and the new volumes in 8th.

Module 8: Solving Systems of Linear Equations

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
8.1 Solving Systems of Linear Equations by Graphing (Examine a graph, table of values or equation to find a solution to the system)	3	8.EE.C.8a	8.EE.C.8 8.EE.C.8c
8.2 Solve Systems by Substitution (Set up equations in $y = mx + b$ and set the expressions of $mx + b$ equal to each other and solve.)	3	8.EE.C.8b	8.EE.C.8c
8.5 Solving Special Systems (discuss systems that have infinite solutions and no solution)	3	8.EE.C.8a	8.EE.C.8c
Review and Assess	3		

Suggested Module Pacing

March 2025

S	M	T	W	TH	F	S
23	24	25	26	27	28	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

Analyze and solve linear equations and pairs of simultaneous linear equations. (major cluster)	
8.EE.C.8	Analyze and solve pairs of simultaneous linear equations. a. 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. b. 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. c. 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.

Math 8 – Go Math Resources and Standards

Module 9: Transformations and Congruence

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
9.1 Properties of Translations	1	8.G.A.1	8.G.A.1a-c 8.G.A.3
9.2 Properties of Reflections	2	8.G.A.1	8.G.A.1a-c 8.G.A.3
9.3 Properties of Rotations	2	8.G.A.1	8.G.A.1a-c 8.G.A.3
9.4 Algebraic Representations of Transformations	2	8.G.A.3	
9.5 Congruent Figures	2	8.G.A.2	
Review and Assess	3		

Suggested Module Pacing

March/April 2025

S	M	T	W	TH	F	S
23	24	25	26	27	28	29
30	31	**1**	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26

Understand congruence and similarity using physical models, transparencies, or geometry software. (additional cluster)	
8.G.A.1	Verify experimentally the properties of rotations, reflections, and translations: d. Lines are taken to lines, and line segments to line segments of the same length. e. Angles are taken to angles of the same measure. f. Parallel lines are taken to parallel lines.
8.G.A.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.
8.G.A.3	Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.

Module 10: Transformations and Similarity

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
10.1 Properties of Dilations	2	8.G.A.4	8.G.A.3
10.2 Algebraic Representations of Dilations	2	8.G.A.3	
10.3 Similar Figures	2	8.G.A.4	
Review and Assess	2		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Understand congruence and similarity using physical models, transparencies, or geometry software. (additional cluster)	
8.G.A.3	Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.
8.G.A.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.

Math 8 – Go Math Resources and Standards

Module 11: Angle Relationships in Parallel Lines & Triangles

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
11.1 Parallel Lines Cut by a Transversal	3	8.G.A.5	
11.2 Angle Theorems for Triangles	2	8.G.A.5	8.EE.C.7 8.EE.C.7b
11.3 Angle-Angle Similarity	2	8.G.A.5	8.EE.B.6 8.EE.C.7
Review and Assess	3		

Suggested Module Pacing

April/May 2025

S	M	T	W	TH	F	S
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24

Understand congruence and similarity using physical models, transparencies, or geometry software. (major cluster)	
8.G.A.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.
Understand the connections between proportional relationships, lines, and linear equations. (major cluster)	
8.EE.B.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.
Analyze and solve linear equations and pairs of simultaneous linear equations. (major cluster)	
8.EE.C.7	Solve linear equations in one variable. **b.** Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Module 14: Scatter Plots

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
14.1 Scatter Plots and Association	2	8.SP.A.1	
14.2 Trend Lines and Predictions	2	8.SP.A.3	8.SP.A.1 8.SP.A.2
Review and Assess	2		

Suggested Module Pacing

May 2025

S	M	T	W	TH	F	S
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Investigate patterns of association in bivariate data. (supporting cluster)	
8.SP.A.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.
8.SP.A.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.
8.SP.A.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.

Math 8 – Go Math Resources and Standards

Module 15: Two-Way Tables

GoMath Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
15.1 Two-Way Frequency Tables	2	8.SP.A.4	
15.2 Two-Way Relative Frequency Tables	2	8.SP.A.4	
Review and Assess	2		

Suggested Module Pacing

May 2025

S	M	T	W	TH	F	S
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Investigate patterns of association in bivariate data. (supporting cluster)	
8.SP.A.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?

End Of Quarter Four

High School Mathematics Course Guides

The Secondary Math Course Guides provide the standards aligned to topics and resources available in the currently adopted text. It is the teacher's professional responsibility to ensure that their students are prepared for the next course in the Pathway. This can only be accomplished when all grade level/course standards are taught with student engagement and an expectation of rigor in mathematics.

Excellence in Education, Every Student, Every Day, to Graduation

COURSE DESCRIPTIONS FOR HIGH SCHOOL MATHEMATICS

Algebra 1 **Course #2201-2202**
Foundations in Algebra 1 **Course #7769-7770**
Full Year = 1 math credit
Prerequisite: Successful completion of all semesters of Math 7 and Math 8 or Math 7/8.
This is a one-year course designed to teach the fundamentals of elementary algebra. This course lays the foundation of knowledge and skills to meet the Nevada Academic Content Standards in Mathematics (NVACS) for high school students. A strong foundation in algebra is needed for subsequent mathematics courses. The NVACS studied include all 5 Domains: Relationships between Quantities and Reasoning with Equations, Linear and Exponential Relationships, Descriptive Statistics, Expressions and Equations and Quadratic Functions and Modeling. Throughout the year, students will be expected to develop the ability to reason and communicate mathematically, apply learned concepts to new problem-solving situations and exhibit increased confidence in their ability to solve mathematical problems.

Geometry **Course #2211-2212**
Foundations in Geometry **Course #7771-7772**
Full Year = 1 math credit
Prerequisite: Successful completion of all semesters of Algebra 1 (or all semesters of the 2-year course).
This is a one-year course that will cover the following topics through emphasis on basic geometric proofs, axioms, postulates and theorems, plane geometric figures, right triangles with trigonometry, constructions, congruence and similarity, circles, coordinate and transformational geometry, inductive and deductive reasoning, three-dimensional geometry, and probability. Emphasis is on the development of deductive reasoning skills. Students will also review algebraic techniques, work on realistic problems, and use technology when possible.

Formal Geometry **Course #2215-2216**
Full Year = 1 math credit (Honors)
Prerequisite: Successful completion of all semesters of Algebra 1. Admission into Formal Geometry will be based on the student's previous performance in addition to teacher recommendation, student's desire to learn and work ethic.
This is a one-year course that will cover the following topics through emphasis on basic geometric proofs, axioms, postulates and theorems, plane geometric figures, right triangles with trigonometry (Law of Sine and Cosine), constructions, congruence and similarity, circles, coordinate and transformational geometry, inductive and deductive reasoning, three-dimensional geometry, and probability. Emphasis is on the development of deductive reasoning skills. Students will also review algebraic techniques, and work on realistic problems. An ability to think abstractly is critical for successful completion of this course.

Algebra 2 **Course #2221-2222**
Foundations in Algebra 2 **Course #7779-7780**
Full Year = 1 math credit
Prerequisite: Successful completion of all semesters of Algebra 1 and Geometry or Formal Geometry.
This is a one-year course, which strengthens and expands on the techniques and concepts learned in Algebra 1. This course will reinforce the student's problem solving and algebraic skills in preparation for advanced mathematics courses. The major topics of study are relations and functions, domain and range of parent functions systems of nonlinear equations, polynomials and polynomial functions, complex numbers, quadratic equations, rational and radical functions, exponential and logarithmic functions, statistics, and matrices. Throughout the year, students will continue to develop the ability to reason and communicate mathematically, apply learned concepts to new problem-solving situations, and exhibit increased confidence in their ability to solve mathematical problems.

Algebra 2 (H) **Course #2227-2228**

Full Year = 1 math credit (Honors)

Prerequisite: Successful completion of all semesters of Algebra 1 and Geometry or Formal Geometry. Admission into Algebra 2 (H) will be based on the student's previous performance, student's desire to learn and work ethic in addition to teacher recommendation.

This is a one-year course, designed for students with a strong understanding of the concepts learned in Algebra 1 and Geometry. This course will build upon the student's problem solving and algebraic skills in preparation for advanced mathematics courses through a course that addresses the rigor expected of an honors level course. The major topics of study are relations and functions, domain and range of parent functions, systems of nonlinear equations, polynomials and polynomial functions, complex numbers, quadratic equations, rational and radical functions, exponential and logarithmic functions, statistics, and matrices. Throughout the year, students will continue to develop the ability to reason and communicate mathematically, apply learned concepts to new problem-solving situations, and exhibit increased confidence in their ability to so challenging mathematical problems.

All students must earn credits in Algebra 1, Geometry and Algebra 2 before enrolling in any of the following courses. Some courses have additional pre-requisites (see Course Description).

Introductory PreCalculus **Course #2049-2050**

Full Year = 1.0 math credit

Prerequisite: Successful completion of all semesters of Algebra 1, Geometry and Algebra 2.

This is a one-year course designed to follow Algebra 2. The major topics of semester one of study are polynomials and rational functions, exponential and logarithmic functions, domain and range of advanced functions, the use of notation in set, interval and inequality, composition of functions, complex numbers, powers and roots, polynomial equations and inequalities, rational equations and inequalities. The major topics of semester two are matrix operations and applications, system of linear equations in two and three variables, conic sections, sequences and series, probability, and limits. At this time this course is not endorsed by the NCAA, if you have questions about this please contact your school counselor.

PreCalculus with Trigonometry **Course #2231-2232**

Full year = 1 math credit (Honors)

Prerequisite: Successful completion of all semesters of Algebra 1, Geometry or Formal Geometry and Algebra 2 or Algebra 2 (H). Admission into PreCalculus w/Trigonometry will be based on the student's previous performance, student's desire to learn and work ethic in addition to teacher recommendation.

This is a one-year course designed to teach the fundamentals of pre-calculus with trigonometry. The course begins with a review of the basics of functions, polynomial functions and equations, radical and rational functions and equations and exponential and logarithmic functions. Trigonometry topics are trigonometric functions; applications of trigonometric functions, trigonometric identities, polar coordinates, graphs of polar equations, complex numbers, powers and roots. Additional topics are vectors, sequences and series, conics, inverse and composition of functions, and limits. Throughout the year, students will continue to develop the ability to reason and communicate mathematically, apply learned concepts to new problem-solving situations, and exhibit increased confidence in their ability to solve mathematical problems.

Advanced Algebra 3 **Course #2241-2242**

Full Year = 1 math credit

Prerequisite: Successful completion of all semesters of Algebra 1, Geometry and Algebra 2.

This is a one-year non-honors level course designed to build upon the concepts presented in Algebra 2. Students will apply Algebra 2 concepts in real-life contexts to strengthen and expand problem solving, numerical literacy and application skills in preparation for post-secondary choices including the world of work, college, technical training or the military. Mathematics topics that will be imbedded into the modules include: Functions (Linear, Quadratics, Exponentials, Logarithms, Rational, and Polynomial); Geometry and Measurement, Linear Programming, Probability and Data Analysis. Financial Math is a strong second semester focus. Graphing Calculators are required.

Probability, Statistics and Discrete Mathematics **Course #2243-2244**

Full Year = 1 math credit

Prerequisite: Successful completion of all semesters of Algebra 1, Geometry and Algebra 2.

This is a one-year course designed to provide students with opportunities to explore concrete concepts, probability, statistics and discrete mathematics. The first semester consists of studying set theory, probability, statistics, experimental design, sampling techniques, distributions, measures of center, spread and position. Students are provided with opportunities to collect and analyze data relevant to students and draw conclusions based on this analysis. The second semester will involve hypothesis testing, confidence intervals, correlation, and linear regression, finance, and number representations. Throughout the course, emphasis will be given to providing students with numerous opportunities to model problem situations using hands-on materials, graphing calculators, and computers. Students need to have completed the first semester of Probability, Statistics and Discrete Mathematics in order to continue into the second semester.

Advanced Placement Mathematics

AP Calculus AB **Course #2255-2256**

Full Year = 1 math credit (Advanced Placement)

Prerequisite: Successful completion of all semesters of Pre-Calculus with Trigonometry.

Advanced Placement Calculus AB is a one-year course designed for those students wishing to study mathematics on the collegiate level. The major topics of study are functions, limits and continuity, derivatives and applications of the derivative, integrals, techniques of integration, and applications of the integral, and inverse functions. This is for students who have completed the equivalent of four years of college preparatory mathematics. Students apply skills and information acquired in previous math courses. Students are required to take the AP exam in May. All AP exams have a cost associated with them.

AP Calculus BC **Course #2257-2258**

Full Year = 1 math credit (Advanced Placement)

Prerequisite: Successful completion of all semesters of Pre-Calculus with Trigonometry.

Advanced Placement Calculus BC is a one-year course designed for those students who have completed the equivalent of four years of college preparatory mathematics and have working knowledge of functions: linear, polynomial, rational, exponential, logarithmic, trigonometric, inverse trigonometric and piecewise-defined. The major topics of study are functions, graphs and limits including parametric, polar and vectors, derivatives and applications of derivatives, integrals, applications of integrals, and fundamental Theorem of Calculus, anti-differentiation and applications of anti-differentiation, and polynomial approximations and series. Students are required to take the AP exam in May. All AP exams have a cost associated with them.

AP Statistics **Course #2271-2272**

Full Year = 1 math credit (Advanced Placement)

Prerequisite: Successful completion of all semesters of Algebra 1, Geometry or Formal Geometry and Algebra 2 or Algebra 2 (H).

This is a one-year course designed to offer Statistics to those students wishing to study the topic at or on par with the university level. The major topics of study are Inferential and Descriptive Statistics, Data Collection and Analysis, Data Distributions, Probability, and Experimental Design. Students are required to take the AP exam in May. All AP exams have a cost associated with them.

Special Education Classes

Bridge to Algebra **Course #7767-7768**

Full Year = 1 math credit

This course is for the first-year high school student receiving special education services. The curriculum will introduce algebraic expressions and linear equations; applied through a review of operations on integers, fractions, decimals, percentages, and radicals. Students explore proportional relations using equations, tables, and graphs. After successful completion of Bridge to Algebra a student may proceed to Algebra 1, or equivalent.

Two-Year Algebra 1 **Course #7824-7825**

Two-Full Years = 2 math credits **Course #7826-7827**

Prerequisite: Successful completion of all semesters of Math 7 and Math 8 or Math 7/8 or Bridge to Algebra.

This is a two-year course designed to teach the fundamentals of elementary algebra. This course lays the foundation of knowledge and skills to meet the Nevada Academic Content Standards in Mathematics (NVACS) for high school students. A strong foundation in algebra is needed for subsequent mathematics courses. The NVACS studied include all five Domains: Relationships between Quantities and Reasoning with Equations, Linear and Exponential Relationships, Descriptive Statistics, Expressions and Equations and Quadratic Functions and Modeling. Throughout the year, students will be expected to develop the ability to reason and communicate mathematically, apply learned concepts to new problem-solving situations and exhibit increased confidence in their ability to solve mathematical problems.

Math Skills **Course #7763-7764**

One Year = 1.0 math credit

This course is for the first or second year high school student receiving special education services and may be repeated one time for credit (total 2 credits). It will focus on basic skills in operations, place value, fractions, decimals, percentages, problem solving, money, time, measurement, charts, graphs, word problems, basic geometry and may include an introduction to basic algebraic concepts. This course does not meet the requirements for the End of Course exams in mathematics.

Transitions Math **Course #7765-7766**

One Year = 1.0 math credit

This course is for the third and/or fourth year high school student receiving special education services and may be repeated once for credit (total 2 credits). This course is designed to cover a wide number of mathematical topics/concepts over a two-year period. In the even-numbered years (e.g. 2016-17, 2018-19, etc.) the curriculum will focus on consumer applications, including earning money, buying food, shopping, household budgeting, car maintenance/repair costs, home improvement, travel, personal budgeting, banking and investing, paying taxes, and career preparation. In the odd-numbered years (e.g. 2017-18, 2019-20, etc.) the curriculum will focus on the world of work, including skills students need on the job such as wages, benefits, kinds of businesses, human resource departments, business travel, corporate banking, operating expenses, business management, casualty insurance, government regulations, risks for business owners, sales and marketing, and mail-order businesses. This course does not meet the requirements for the End of Course exams in mathematics.

College Readiness Classes

Pre-College Math **Course #2229-2230**

Full year = 1 math credit

Prerequisite: Students who enroll in PreCollege should have their credits in Algebra 1 and Geometry. This course is for Juniors or Seniors that need additional time in developing their fundamental skills in math before moving on to upper-level mathematics courses.

This is a two-semester mathematics course designed for students to learn more mathematics before taking Pre-Calculus w/Trigonometry or for seniors that do not qualify for Math 095. Topics covered include the fundamental operations on real numbers, linear equations and inequalities, systems, linear programming, rational exponents, polynomials, rational expressions, roots and radicals, and quadratics. Students will use MathXL and should have access to a computer to participate in this class. At this time this course is not endorsed by the NCAA, if you have questions about this please contact your school counselor.

Early College Math 095 **Course #2010**

One semester = 0.5 math credit

Prerequisite: Seniors with successful completion of Algebra 2 in both semesters and meet the criteria set by UNR in the Memorandum of Understanding.

This is a one-semester mathematics course designed to help students place into Math 096 or equivalent in college. Topics covered include the fundamental operations on real numbers, first-degree equations, inequalities in one variable, polynomials, integer exponents, solving quadratic equations by factoring. Students will be enrolled in MyMathLab and must have access to a computer to participate in this class. At this time this course is not endorsed by the NCAA, if you have questions about this please contact your school counselor.

Early College Math 096 **Course #2011**

One semester = 0.5 math credit

Prerequisite: Seniors with successful completion of Algebra 2 in both semesters and meet the criteria set by UNR in the Memorandum of Understanding and successful completion of Math 095.

This is a one-semester mathematics course designed to help students place into a credit bearing math course in college. Topics covered include graphing linear equations, solving systems of linear equations in two variables and linear inequalities, solving quadratic, rational and radical equations, factoring, simplifying rational and radical expressions and complex numbers, determining the equations of lines and solving application problems. Students will be enrolled in MyMathLab and must have access to a computer to participate in this class. At this time this course is not endorsed by the NCAA, if you have questions about this please contact your school counselor.

Algebraic Precalculus **Course #2008**

One semester = 0.5 math credit

Prerequisite: Seniors with successful completion of Algebra 2 in both semesters and meet the criteria set by UNR in the Memorandum of Understanding.

This is a one-semester course designed to follow Math 096 to help students place into a credit bearing math course in college. The major topics of this semester of study are exponential and logarithmic functions, and complex numbers, powers and roots, sequences and series, domain and range of advanced functions, notation: set, interval and inequality, composition of functions, polynomial equations and inequalities, rational equations and inequalities, matrix operations and applications, and system of linear equations in three variables. At this time this course is not endorsed by the NCAA, if you have questions about this please contact your school counselor.

Essential Standards

Washoe County School District is committed to the vision that all students will meet or exceed academic expectations as defined in the Nevada Academic Content Standards (NVACS) and as detailed in WCSD course guide. To achieve this vision, teachers are expected to teach all standards aligned to a course/grade level. To ensure the highest level of learning for all students, teachers engage in the work of continuous improvement through the Professional Learning Community (PLC) process. To support the work of collaborative teams within the PLC process, educators from across the district identified essential standards, defined as:

> **". . . a carefully selected subset of the total list of the grade-specific and course-specific standards within each content area that students must know and be able to do by the end of each school year in order to be prepared for the standards at the next grade level or course" (Ainsworth, 2015 p. 55).**

In WCSD, PLC teams guarantee success for all students by focusing their collaborative time, common assessments, and team-provided interventions on identified essential standards first (Adapted from Taking Action, 2018, p.86). The WCSD focus on essential standards does not relieve a teacher of the responsibility for teaching and assessing all standards identified by the NVACS for each grade/course.

> **Essential standards in the course guide are bolded and highlighted. Note: if a standard is essential in one Chapter it is labeled essential throughout all Topics/Chapters of the guide.**

2024-2025

Algebra 1
Course Guide

#2201/2202 Algebra 1
#228 Middle School Algebra 1
#217A/217B MYP Algebra 1 S1/S2
#776 Accelerated Algebra 1
#7769/7770 Foundations in Algebra 1

Algebra 1 Pacing (Days in Q1-44, Q2-39, Q3-48, Q4-49)

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
Topic	Days	Topic	Days
1 – Solving Equations & Inequalities	18	6 – Exponents & Exponential Functions	18
2 – Linear Equations	13	7 – Polynomials & Factoring	23
3 – Linear Functions	13	8 – Quadratic Functions	19
4 – Systems of Equations & Inequalities	17	9 – Solving Quadratic Equations	24
5 – Piecewise Functions	14	Semester Flex/Review Days	7
Semester Flex/Review Days	2	Final Exams	4
Final Exams	4		
Be here by end of Semester One		Be here by end of Semester Two	

- If time allows, look at STEM Projects and Math in 3 Acts

Algebra 1

Topic 1: Solving Linear Equations and Inequalities

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
1-2 Solving Linear Equations Supplement with simplify expressions and equations with more fractions.	3	**HSA.CED.A.1** HSA.REI.A.1 **HSA.REI.B.3**	
1-3 Solving Equations with a Variable on Both Sides	3	**HSA.CED.A.1** **HSA.REI.B.3**	**HSA.REI.A.1** HSN.Q.A.2
1-4 Literal Equations and Formulas Prioritize transforming equations to slope-intercept form.	3	**HSA.CED.A.1** **HSA.CED.A.4**	HSN.Q.A.1
1-5 Solving Inequalities in One Variable	2	**HSA.CED.A.1** **HSA.CED.A.3** **HSA.REI.B.3**	
1-6 Compound Inequalities	3	**HSA.CED.A.1** **HSA.CED.A.3** **HSA.REI.B.3**	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

August/September 2024

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14

Reason quantitatively and use units to solve problems.	
HSN.Q.A.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs.
HSN.Q.A.2	Define appropriate quantities for the purpose of descriptive modeling.
Create equations that describe numbers or relationships.	
HSA.CED.A.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.
HSA.CED.A.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.
HSA.CED.A.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.
Understand solving equations as a process of reasoning and explain the reasoning.	
HSA.REI.A.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.
Solve equations and inequalities in one variable.	
HSA.REI.B.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Algebra 1

Topic 2: Linear Equations

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
2-1 Slope-Intercept Form	3	HSA.CED.A.2 HSS.ID.C.7	
2-2 Point-Slope Form (Supplement (h, k) form)	2	HSS.ID.C.7 HSF.LE.A.2	HSA.CED.A.2
2-3 Standard Form (Convert to other forms: slope intercept, (h,k) form and point-slope)	3	HSA.CED.A.3 HSS.ID.C.7	HSA.CED.A.2
2-4 Parallel and Perpendicular Lines (Introduce and identify Parallel and Perpendicular lines understanding slopes and graphs)	1	HSA.CED.A.2 HSA.CED.A.4	HSF.IF.C.7a HSG.GPE.B.5
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

September 2024

S	M	T	W	TH	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

Create equations that describe numbers or relationships.	
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
HSA.CED.A.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.
HSA.CED.A.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.
Analyze functions using different representations.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **a.** Graph linear and quadratic functions show intercepts, maxima and minima.
Interpret expression for functions in terms of the situation they model.	
HSF.LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).
Interpret linear models.	
HSS.ID.C.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.B.5	Use the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the slope of a line parallel or perpendicular to a given line that passes through a given point).

Algebra 1

Topic 3: Linear Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
3-1 Relations and Functions	2	HSF.IF.A.1	
3-2 Linear Functions (Write Linear Functions from tables, ordered pairs, and with slope and intercept)	3	HSF.IF.A.2 HSF.IF.B.5	HSF.IF.A.1 HSF.LE.A.2
3-5 Optional: Scatter Plots and Lines of Fit	1	HSS.ID.B.6a	HSS.ID.B.6 HSS.ID.B.6c HSS.ID.C.7
3-4 Optional: Arithmetic Sequence (emphasis on function notation, emphasis on explicit and how it relates to (h,k) form, expose to subscript notation and recursive)	3	HSF.IF.A.3 HSF.BF.A.2	HSF.BF.A.1 HSF.LE.A.1 HSF.LE.A.1b HSF.LE.A.2
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

September/October 2024

S	M	T	W	TH	F	S
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Build a function that models a relationship between two quantities.	
HSF.BF.A.1	Write a function that describes a relationship between two quantities. **a.** Determine an explicit expression, a recursive process, or steps for calculation from a context.
HSF.BF.A.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.
Understand the concept of a function and use function notation.	
HSF.IF.A.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, the $f(x)$ denotes the output of f corresponding to input x. The graph of f is $y=f(x)$.
HSF.IF.A.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
HSF.IF.A.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.5	Relate the domain of a function to its graph and to the quantitative relationship it describes.
Interpret expression for functions in terms of the situation they model.	
HSF.LE.A.1	Distinguish between situations that can be modeled with linear functions and with exponential functions. **b.** Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
HSF.LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).
Summarize, represent and interpret data on two categorical and quantitative variables.	
HSS.ID.B.6	Represent data on two quantitative variables on a scatter plot & describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in context of data. c. Fit a linear function for a scatter plot that suggests a linear association.
Interpret linear models.	
HSS.ID.C.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in context.

Algebra 1

Topic 4: Systems of Linear Equations and Inequalities

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
4-1 Solving Systems of Equations by Graphing	3	**HSA.REI.C.6** HSA.REI.D.11	**HSF.IF.C.9**
4-2 Solving Systems of Equations by Substitution	3	**HSA.CED.A.3** **HSA.REI.C.6**	HSA.REI.D.11
4-3 Solving Systems of Equations by Elimination	3	**HSA.CED.A.3** HSA.REI.C.5	
4-4 Linear Inequalities in Two Variables	3	**HSA.CED.A.3** **HSA.REI.D.12**	
4-5 Systems of Linear Inequalities	2	**HSA.CED.A.3** **HSA.REI.D.12**	
Flex Days: Review, reteach, extend, assess	3		

Suggested Module Pacing

October/November 2024

S	M	T	W	TH	F	S
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	**1**	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23

Create equations that describe numbers or relationships.	
HSA.CED.A.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.
Solve systems of equations.	
HSA.REI.C.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.
HSA.REI.C.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.	
HSA.REI.D.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 absolute value equations/functions.
HSA.REI.D.12	Graph the solutions to 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 intersections of the corresponding half-planes.
Analyze functions using different representations.	
HSF.IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically and in table or a verbal description.

Algebra 1

Topic 5: Piecewise Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
1-7 Absolute Value Equations	2	**HSA.CED.A.1**	HSA.REI.D.11 **HSF.IF.A.1**
5-1 The Absolute Value Function (All notations of end behaviors)	3	**HSF.IF.B.4** HSF.IF.B.6	**HSF.IF.C.7b**
5-2 Optional: Piecewise-Defined Functions (linear pieces over a restricted domain, absolute value as a piecewise function)	3	**HSF.IF.A.2** **HSF.IF.B.4** **HSF.IF.C.7b**	HSF.IF.B.6
5-4 Transformations of (Piecewise-Defined) Absolute Value Functions	3	**HSF.BF.B.3**	**HSF.IF.C.7b** **HSF.IF.C.9**
Flex Days: Review, reteach, extend, assess	3		

Suggested Module Pacing

November/December 2024

S	M	T	W	TH	F	S
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Create equations that describe numbers or relationships.	
HSA.CED.A.1	Create equations and inequalities in one variable and use them to solve problems.
Represent and solve equations and inequalities graphically.	
HSA.REI.D.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 absolute value equations/functions.
Build new functions form existing functions.	
HSF.BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.
Understand the concept of a function and use function notation.	
HSF.IF.A.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, the $f(x)$ denotes the output of f corresponding to input x. The graph of f is $y=f(x)$.
HSF.IF.A.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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.
HSF.IF.B.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.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **b.** Graph square root, cube root and piecewise-defined functions, including step functions and absolute value functions.
HSF.IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically and in table or a verbal description.

Algebra 1

Topic 6: Exponents and Exponential Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
Supplement: Review 8th Grade exponent properties.	2		
6-1 Rational Exponents and Properties of Exponents Supplement: developmentally appropriate equations with exponents	4	HSN.RN.A.1 HSN.RN.A.2	
6-2 Exponential Functions	4	**HSF.IF.B.4** **HSFL.E.A.1**	**HSF.IF.B.5** **HSF.BF.A.1** **HSF.LE.A.1a**
6-3 Exponential Growth and Decay (Omit Compound Interest)	3	**HSF.LE.A.2** **HSF.LE.A.1a-c** HSF.LE.B.5	**HSF.IF.C.8b** **HSA.CED.A.2** **HSA.SSE.A.1b** **HSA.SSE.B.3c**
6-4 Geometric Sequences (recognize geometric sequence compared to other sequences, verify equation works for given sequence)	2	HSF.BF.A.2 **HSF.LE.A.2**	HSF.IF.A.3
Flex Days: Review, reteach, extend, assess	3		

Suggested Module Pacing

January 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Extend the properties of exponents to rational exponents.	
HSN.RN.A.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents follows from extending the properties of integer 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 $(5^{1/3})^3 = 5^{(1/3)3}$ to hold, so $(5^{1/3})^3$ must equal 5.
HSN.RN.A.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.
Create equations that describe numbers or relationships.	
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
Interpret the structure of expressions.	
HSA.SSE.A.1	Interpret expressions that represent a quantity in **terms of its context**. **b.** Interpret complicated expressions by viewing one or more of their parts as a single entity. For ex, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P.
Write expression in equivalent forms to solve problems.	
HSA.SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. **c.** Use properties of exponents to transform expressions for exponential functions.
Build a function that models a relationship between two quantities.	
HSF.BF.A.1	Write a function that describes a relationship between two quantities. **a.** Determine an explicit expression, a recursive process, or steps for calculation from a context.
HSF.BF.A.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.
Understanding the concept of a function and use function notation.	
HSF.IF.A.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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.
HSF.IF.B.5	Relate the domain of a function to its graph and where applicable, to the quantitative relationship it describes.

Algebra 1

Analyze functions using different representations.	
HSF.IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **b.** Use the process 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.
Construct and compare linear, quadratic, and exponential models and solve problems.	
HSF.LE.A.1	Distinguish between situations that can be modeled with linear functions and with exponential functions. **a.** Prove that linear functions can be modeled by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. **b.** Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. **c.** Recognize situations in which one quantity grows or decays by a constant percent or rate per unit interval relative to another.
HSF.LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).
Interpret expression for functions in terms of the situation they model.	
HSF.LE.B.5	Interpret the parameters in a linear or exponential function in terms of a context.

Topic 7: Polynomials and Factoring

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
7-1 Adding and Subtracting Polynomials	2	HSA.APR.A.1	
7-2 Multiplying Polynomials	2	HSA.APR.A.1	
7-3 Multiplying Special Cases	2	HSA.APR.A.1	
7-4 Factoring Polynomials (Quadratics)	3	HSA.APR.A.1 HSA.SSE.A.2	
7-5 Factoring $x^2 + bx + c$	4	HSA.SSE.A.1a	
7-6 Factoring $ax^2 + bx + c$	4	HSA.SSE.A.1a	
7-7 Factoring Special Cases	1	HSA.SSE.A.1 HSA.SSE.A.2	
Flex Days: Review, reteach, extend, assess	5		

Suggested Module Pacing

February/March 2025

S	M	T	W	TH	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	1
2	3	4*	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22

*3/4: Tentative ACT Test Date

Perform arithmetic operations on polynomials.	
HSA.APR.A.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.
Interpret the structure of expressions.	
HSA.SSE.A.1	Interpret expressions that represent a quantity in **terms of its context**. **a.** Interpret parts of an expression, such as terms, factors, and coefficients. **b.** Interpret complicated expressions by viewing one or more of their parts as a single entity. For ex, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P.
HSA.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.

Algebra 1

Topic 8: Quadratic Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
8-1 Key Features of a Quadratic Function	2	HSA.CED.A.2 HSF.IF.B.4 HSF.IF.B.6	HSF.BF.B.3 HSA.REI.D.10
8-2 Quadratic Functions in Vertex Form	3	HSF.IF.C.7 HSF.BF.B.3	HSF.IF.C.7a
8-3 Quadratic Functions in Standard Form (analyze and convert between vertex and standard form)	3	HSF.IF.B.4	HSF.IF.C.7a HSF.IF.C.8a HSF.IF.C.9
8-4 Modeling with Quadratic Functions (Ex. 1 &2, No Regression)	2	HSF.IF.A.2 HSS.ID.B.6a	HSF.BF.A.1 HSS.ID.B.6b
8-5 Linear, Exponential and Quadratic Models (Ex. 1 & 3, Examine Graphs and Tables-first and second differences and ratios)	2	HSF.LE.A.3 HSS.ID.B.6a	
Flex Days: Review, reteach, extend, assess	6		

Suggested Module Pacing

March/April 2025

S	M	T	W	TH	F	S
2	3	4*	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26

*3/4: Tentative ACT Test Date

Create equations that describe numbers or relationships.	
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
Represent and solve equations and inequalities graphically.	
HSA.REI.D.10	Understand that the graph of an equations in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
Build new functions from existing functions.	
HSF.BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(kx)$, and $f(x+k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and 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.
Understanding the concept of a function and use function notation.	
HSF.IF.A.2	Use function notation, evaluate functions for inputs in their domain, and interpret statements that use function notation in terms of a context.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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
HSF.IF.B.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.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **a.** Graph linear and quadratic functions and show intercepts, maxima, and minima.
HSF.IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **a.** 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.
HSF.IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically and in table or a verbal description.

Algebra 1

Construct and compare linear, quadratic and exponential models and solve problems.	
HSF.LE.A.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.
Summarize, represent, and interpret data on two categorical and quantitative variables	
HSS.ID.B.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. 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. b. Informally assess the fit of a function by plotting and analyzing residuals.

Module 9: Solving Quadratic Equations

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
9-1 Solving Quadratic Equations Using Graphs and Tables	2	HSA.REI.11	**HSACED.A.1 HSA.CED.A.2 HSA.REI.B.4b**
9-2 Solving Quadratic Equations by Factoring	4	**HSA.SSE.B.3.a HSA.APR.B.3**	**HSA.REI.B.4b HSF.IF.C.8a**
Supplement: Practice with radial properties, simplifying square roots	2		
9-3 Rewriting Radical Expressions	2	HSN.RN.A.2	**HSA.SSE.A.2**
9-4 Solving Quadratic Equations Using Square Roots	2	**HSA.SSE.A.2 HSA.REI.B.4b**	**HSA.CED.A.1**
9-5 Completing the Square, $a = 1$ **only**	2	**HSA.REI.B.4a HSA.SSE.B.3b**	**HSF.IF.C.8a**
9-6 The Quadratic Formula and the Discriminant	2	HSA.REI.B.4a **HSA.REI.B.4b HSA.SSE.B.3**	
9-7 **Graphing Only** - Solving Systems of Linear and Quadratic Equations	2	HSA.REI.C.7 HSA.REI.D.11	
Flex Days: Review, reteach, extend, assess	6		

Suggested Module Pacing

April/May 2025

S	M	T	W	TH	F	S
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24

Extend the properties of exponents to rational exponents.	
HSN.RN.A.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.
Perform arithmetic operations on polynomials.	
HSA.APR.B.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.
Create equations that describe numbers or relationships.	
HSA.CED.A.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.
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

Algebra 1

Solve equations and inequalities in one variable.	
HSA.REI.B.4	Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. **b.** 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.
Solve systems of equations.	
HSA.REI.C.7	Solve a system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.
Represent and solve equations and inequalities graphically.	
HSA.REI.D.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 (quadratic), rational, absolute value, exponential, and logarithmic functions.
Interpret the structure of expressions.	
HSA.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.
HSA.SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. **a.** Factor a quadratic expression to reveal the zeros of the function it defines. **b.** Complete the square in a quadratic expression to reveal the maximum or minimum value of a function.
Analyze functions using different representations.	
HSF.IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **a.** 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.

2024-2025

Geometry
Course Guide

#2211/2212 Geometry
#7771/7772 Foundations in Geometry

Geometry Pacing (Days in Q1-44, Q2-39, Q3-48, Q4-49)

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
Chapter - Topic	Days	Chapter - Topic	Days
1 - Tools of Geometry	12	6 - Quadrilaterals	10
2 - Logical Arguments and Line Relationships	17	7 - Similarity	13
3 - Rigid Transformations and Symmetry	10	8 - Right Triangles and Trigonometry	12
4 - Triangles and Congruence	16	9 - Circles	11
5 - Relationships in Triangles	14	10 - Extending Area	13
Flex/Review Days	8	11 - Extending Volume	10
Final Exams	4	12 – Probability (optional)	12
		Flex/Review Days	10
		Final Exams	4
Be here by end of Semester One		Be here by end of Semester Two	

Geometry

Chapter 1: Tools of Geometry

(Only use Chapter 0 in remediation)

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
1-1 Points, Lines, and Planes	1	**HSG.CO.A.1**	
1-2 Line Segments and Distance	2	**HSG.CO.A.1** HSG.CO.D.12	
1-3 Locating Points and Midpoints	2	**HSG.CO.A.1** HSG.GPE.B.6	HSG.CO.D.12
1-4 Angle Measure	1	**HSG.CO.A.1** HSG.CO.D.12	
1-5 Angle Relationships	2	**HSG.CO.A.1**	HSG.CO.D.12
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

August 2024

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Experiment with transformations in the plane.	
HSG.CO.A.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.
Make geometric constructions.	
HSG.CO.D.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.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.B.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

Geometry

Chapter 2: Logical Arguments and Line Relationships

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
2-3 Deductive Reasoning	2	Prep for **HSG.CO.C.9** **HSG.CO.C.10**	
2-4 Writing Proofs (write small proofs and practice 'fill in the blank' steps for larger proofs)	2	**HSG.CO.C.9** **HSG.MG.A.3**	
2-5 Proving Segment Relationships	2	**HSG.CO.C.9**	HSG.CO.D.12
2-6 Proving Angle Relationships	2	**HSG.CO.C.9**	HSG.CO.D.12
2-7 Parallel Lines and Transversals	2	**HSG.CO.A.1** **HSG.CO.C.9**	
2-8 Slope and Equations of Lines	1	HSG.GPE.B.5	
2-9 Proving Lines Parallel	1	**HSG.CO.C.9** HSG.CO.D.12	HSG.GPE.B.5
2-10 Perpendiculars and Distance (Less emphasis here, it will be revisited in 6.1)	1	HSG.CO.D.12 **HSG.MG.A.3**	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

September 2024

S	M	T	W	TH	F	S
					30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Experiment with transformations in the plane.	
HSG.CO.A.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.
Prove geometric theorems.	
HSG.CO.C.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.
Make geometric constructions.	
HSG.CO.D.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.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.B.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).
Apply geometric concepts in modeling situations.	
HSG.MG.A.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).

Geometry

Chapter 3: Rigid Transformations Symmetry

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
3-1 Reflections	1	HSG.CO.A.2 **HSG.CO.A.5** **HSG.CO.B.6**	HSG.CO.A.4
3-2 Translations	1	HSG.CO.A.2 **HSG.CO.A.5** **HSG.CO.B.6**	HSG.CO.A.4
3-3 Rotations	1	HSG.CO.A.4 **HSG.CO.A.5** **HSG.CO.B.6**	HSG.CO.A.2
3-4 Compositions of Transformations	2	HSG.CO.A.2 **HSG.CO.A.5**	
3-5 Symmetry	1	HSG.CO.A.3	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

September/October 2024

S	M	T	W	TH	F	S
22	23	24	25	26	27	28
29	30	**1**	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Experiment with transformations in the plane.	
HSG.CO.A.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).
HSG.CO.A.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.
HSG.CO.A.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
HSG.CO.A.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 on to another.
Understand congruence in terms of rigid transformations.	
HSG.CO.B.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.

Geometry

Chapter 4: Triangles and Congruence

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
4-1 Angles of Triangles	2	**HSG.CO.C.10**	
4-2 Congruent Triangles	2	**HSG.CO.B.7** **HSG.CO.C.10** **HSG.SRT.B.5**	
4-3 Proving Triangles Congruent-SSS, SAS	2	**HSG.CO.B.8** **HSG.SRT.B.5**	**HSG.CO.C.10** HSG.CO.D.12
4-4 Proving Triangles Congruent-ASA, AAS	2	**HSG.CO.B.8** **HSG.SRT.B.5**	**HSG.CO.C.10** HSG.CO.D.12
4-5 Proving Right Triangles Congruent	1	**HSG.CO.C.10** **HSG.SRT.B.5**	
4-6 Isosceles and Equilateral Triangles	1	**HSG.CO.C.10** HSG.CO.D.12	
4-7 Optional: Triangles and Coordinate Proof	2	**HSG.CO.C.10** HSG.GPE.B.4	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

October/November 2024

S	M	T	W	TH	F	S
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23

Understand congruence in terms of rigid motions.	
HSG.CO.B.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.
HSG.CO.B.8	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.
Prove geometric theorems.	
HSG.CO.C.10	Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to $180°$; 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.
Make geometric constructions.	
HSG.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.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.B.4	Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.
Prove theorems involving similarity.	
HSG.SRT.B.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Geometry

Chapter 5: Relationships in Triangles

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
5-1 Bisectors of Triangles	2	HSG.CO.C.10 HSG.MG.A.3	HSG.CO.C.9 HSG.CO.D.12
5-2 Medians & Altitudes of Triangles (No emphasis on points of concurrency)	2	HSG.CO.C.10 HSG.MG.A.3	HSG.CO.D.12
5-3 Inequalities in One Triangle	2	HSG.CO.C.10	
5-5 The Triangle Inequality	2	HSG.CO.C.10 HSG.MG.A.3	HSG.CO.D.12
5-6 Optional: Inequalities in Two Triangles	1	HSG.CO.C.10	
Flex Days: Review, reteach, extend, assess	5		

Suggested Module Pacing

November/December 2024

S	M	T	W	TH	F	S
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Prove geometric theorems.	
HSG.CO.C.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.
HSG.CO.C.10	Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to $180°$; 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.
Make geometric constructions.	
HSG.CO.D.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.
Apply geometric concepts in modeling situations.	
HSG.MG.A.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).

Geometry

Chapter 6: Quadrilaterals

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
6-1 Angles of Polygons	1	**HSG.MG.A.1**	
2-10 Revisit Perpendiculars and Distance	1	HSG.CO.D.12 **HSG.MG.A.3**	
6-2 Parallelograms	1	**HSG.CO.C.11** HSG.GPE.B.4	
6-3 Tests for Parallelograms	2	**HSG.CO.C.11** HSG.CO.D.12 HSG.GPE.B.4	HSG.GPE.B.5
6-4 Special Parallelograms: Rectangles	1	**HSG.CO.C.11** HSG.GPE.B.4	HSG.CO.D.12
6-5 Special Parallelograms: Rhombi, Squares	1	**HSG.CO.C.11** HSG.GPE.B.4	HSG.CO.D.12
6-6 Trapezoids and Kites	1	HSG.GPE.B.4 **HSG.MG.A.3**	
Flex Days: Review, reteach, extend, assess	3		

Suggested Module Pacing

January 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Prove geometric theorems.	
HSG.CO.C.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.	
HSG.CO.D.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.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.4	Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that figure defined by four given points in the coordinate plane is a rectangle.
HSG.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).
Apply geometric concepts in modeling situations.	
HSG.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects.
HSG.MG.A.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).

Geometry

Chapter 7: Similarity

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
7-1 Dilations	2	HSG.CO.A.2 **HSG.SRT.A.1a** **HSG.SRT.A.1b**	
7-2 Similar Polygons	1	**HSG.SRT.A.2**	
7-3 Similar Triangles AA Similarity	1	**HSG.SRT.A.2** **HSG.SRT.A.3** **HSG.SRT.B.5**	
7-4 Similar Triangles SSS and SAS Similarity	1	**HSG.SRT.A.2** **HSG.SRT.B.4** **HSG.SRT.B.5**	
7-5 Parallel Lines and Proportional Parts	2	**HSG.SRT.B.4** **HSG.SRT.B.5**	HSG.CO.D.12
7-6 Parts of Similar Triangles	2	**HSG.SRT.B.4** **HSG.SRT.B.5**	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

January/February 2025

S	M	T	W	TH	F	S
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15

Experiment with transformations in the plane.	
HSG.CO.A.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).
Make geometric constructions.	
HSG.CO.D.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.
Understand similarity in terms of similarity transformations.	
HSG.SRT.A.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.
HSG.SRT.A.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 proportionality of all corresponding pairs of sides.
HSG.SRT.A.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.
Prove theorems involving similarity.	
HSG.SRT.B.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.
HSG.SRT.B.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Geometry

Chapter 8: Right Triangles and Trigonometry

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
Review simplifying radicals and rationalizing denominator $\frac{3}{\sqrt{2}} = \frac{3\sqrt{2}}{2}$	1		
8-1 Optional: Geometry Mean	1	HSG.SRT.B.4 HSG.SRT.B.5	
8-2 The Pythagorean Theorem and Its Converse	2	HSG.SRT.C.8 HSG.MG.A.3	HSG.CO.C.10
8-3 Special Right Triangles	2	HSG.SRT.B.6	
8-4 Trigonometry	2	HSG.SRT.C.7	HSG.SRT.B.6
8-5 Angles of Elevation and Depression	2	HSG.SRT.C.8	
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

February 2025

S	M	T	W	TH	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	1

Prove geometric theorems.	
HSG.CO.C.10	Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to $180°$; 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.
Apply geometric concepts in modeling situations.	
HSG.MG.A.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).
Prove theorems involving similarity.	
HSG.SRT.B.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.
HSG.SRT.B.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
Define trigonometric ratios and solve problems involving right triangles.	
HSG.SRT.C.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.
HSG.SRT.C.7	Explain and use the relationship between the sine and cosine of complementary angles.
HSG.SRT.C.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

Geometry

Chapter 9: Circles

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
9-1 Circles and Circumference	1	**HSG.CO.A.1** **HSG.C.A.2**	
9-2 Measuring Angles and Arcs	1	**HSG.C.A.2** **HSG.C.B.5**	
9-3 Arcs and Chords	1	**HSG.C.A.2**	HSG.CO.D.12 **HSG.MG.A.3**
9-4 Inscribed Angles	2	**HSG.C.A.2** HSG.C.A.3	HSG.CO.D.13
9-5 Tangents	1	**HSG.C.A.2** HSG.C.A.4	HSG.CO.D.12
9-6 Secants, Tangents and Angle Measures	1	**HSG.C.A.2**	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

February/March 2025

S	M	T	W	TH	F	S
23	24	25	26	27	28	1
2	3	4*	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22

*Tentative: ACT Test Date

Experiment with transformations in the plane.	
HSG.CO.A.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.
Make geometric constructions.	
HSG.CO.D.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.
HSG.CO.D.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.
Understand and apply theorems about circles.	
HSG.C.A.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.
HSG.C.A.3	Construct the inscribed and circumscribed circles of a triangle and prove properties of angles for a quadrilateral inscribed in a circle.
HSG.C.A.4	(+) Construct a tangent line from a point outside a given circle to the circle.
HSG.C.A.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.
Apply geometric concepts in modeling situations.	
HSG.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects.
HSG.MG.A.3	Apply geometric methods to solve design problems (designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Geometry

Chapter 10: Extending Area

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
10-1 Areas of Parallelograms and Triangles	1	HSG.GPE.B.7 HSG.MG.A.1	
10-2 Areas of Trapezoids, Rhombi, and Kites	1	HSG.MG.A.3	
10-3 Areas of Circles and Sectors	2	HSG.C.B.5 HSG.GMD.A.1	
10-4 Areas of Regular Polygons and Composite Figures (Focus on understanding-hexagons or given apothem)	2	HSG.MG.A.3	
10-5 Area of Nonrigid Transformations	1	HSG.GMD.A.1 HSG.MG.A.1	
10-6 Surface Area	2	HSG.MG.A.1 HSG.MG.A.3	HSG.GMD.A.1
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Understand and apply theorems about circles.	
HSG.C.B.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.
Explain volume formulas and use them to solve problems.	
HSG.GMD.A.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 dissections arguments, Cavalieri's Principle, and informal limit arguments.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.B.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.
Apply geometric concepts in modeling situations.	
HSG.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects.
HSG.MG.A.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).

Geometry

Chapter 11: Extending Volume

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
11-1 Cross Sections and Solids of Revolution	1	HSG.GMD.B.4	
11-2 Volumes of Prisms and Cylinders	1	**HSG.GMD.A.1** **HSG.GMD.A.3**	**HSG.MG.A.3**
11-3 Volumes of Pyramids and Cones	2	**HSG.GMD.A.1** **HSG.GMD.A.3**	**HSG.MG.A.3**
11-4 Spheres	1	**HSG.GMD.A.3**	**HSG.MG.A.3**
11-6 Volume and Nonrigid Transformations	1	**HSG.GMD.A.1**	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
30	31	**1**	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3

Explain volume formulas and use them to solve problems.	
HSG.GMD.A.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 dissections arguments, ~~Cavalieri's Principle, and informal limit arguments.~~
HSG.GMD.A.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.
Visualize relations between two-dimensional and three-dimensional objects.	
HSG.GMD.B.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.
Apply geometric concepts in modeling situations.	
HSG.MG.A.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).

Geometry

Chapter 12: Probability (Optional)

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
12-1 Representing Sample Spaces	1	HSS.CP.A.1	
12-2 Probability and Counting	1	HSS.CP.A.1	
12-3 Probability with Permutations and Combinations	1	HSS.CP.B.9	
12-4 Geometric Probability	1	HSS.MD.B.7	
12-5 Probability and the Multiplication Rule	2	HSS.CP.A.2 HSS.CP.B.8	
12-6 Probability and the Addition Rule	2	HSS.CP.A.1 HSS.CP.B.7	
12-7 Conditional Probability	2	HSS.CP.A.3 HSS.CP.A.5	HSS.CP.B.6
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

May 2025

S	M	T	W	TH	F	S
27	28	29	30	**1**	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Understand independence and conditional probability and use them to interpret data.	
HSS.CP.A.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”).
HSS.CP.A.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.
HSS.CP.A.3	Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, 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.
HSS.CP.A.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.
Use the rules of probability to compute probabilities of compound events in a uniform probability model.	
HSS.CP.B.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.
HSS.CP.B.7	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.
HSS.CP.B.8	(+) Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B)=P(A)P(B\|A)= P(B)P(A\|B)$, and interpret the answer in terms of the model.
HSS.CP.B.9	Use permutations and combinations to compute probabilities of compound events and solve problems.
Use probability to evaluate outcomes of decisions.	
HSS.MD.B.7	(+) Analyze decisions and strategies using probability concepts.

2024-2025

Formal Geometry Course Guide

#2215/2216 Formal Geometry

Formal Geometry Pacing (Days in Q1-44, Q2-39, Q3-48, Q4-49)

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
Chapter - Topic	Days	Chapter - Topic	Days
1 - Tools of Geometry	12	6 - Quadrilaterals	10
2 - Logical Arguments and Line Relationships	22	7 - Similarity	13
3 - Rigid Transformations and Symmetry	10	8 - Right Triangles and Trigonometry	15
4 - Triangles and Congruence	15	9 - Circles	11
5 - Relationships in Triangles	13	10 - Extending Area	13
Semester Flex/Review Days	5	11 - Extending Volume	10
Final Exams	4	12 – Probability	12
		Semester Flex/Review Days	8
		Final Exams	4
Be here by end of Semester One		Be here by end of Semester Two	

Formal Geometry

Chapter 1: Tools of Geometry

(Only use Chapter 0 in remediation)

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
1-1 Points, Lines, and Planes	1.5	**HSG.CO.A.1**	
1-2 Line Segments and Distance	2	**HSG.CO.A.1** HSG.CO.D.12	
1-3 Locating Points and Midpoints	2	**HSG.CO.A.1** HSG.GPE.B.6	HSG.CO.D.12
1-4 Angle Measure	1	**HSG.CO.A.1** HSG.CO.D.12	
1-5 Angle Relationships	2.5	**HSG.CO.A.1**	HSG.CO.D.12
Flex Days: Review, reteach, extend, assess	3		

Suggested Module Pacing

August 2024

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Experiment with transformations in the plane.	
HSG.CO.A.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.
Make geometric constructions.	
HSG.CO.D.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.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.B.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

Formal Geometry

Chapter 2: Logical Arguments and Line Relationships

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
2-1 Conjectures and Counterexamples	1	Prep for **HSG.CO.C.9** **HSG.CO.C.10**	
2-2 Statements, Conditionals and Biconditionals	1		
2-3 Deductive Reasoning	1		
2-4 Writing Proofs (Students should be able to write proofs of any size)	5	**HSG.CO.C.9** **HSG.MG.A.3**	
2-5 Proving Segment Relationships	2	**HSG.CO.C.9**	HSG.CO.D.12
2-6 Proving Angle Relationships	2	**HSG.CO.C.9**	HSG.CO.D.12
2-7 Parallel Lines and Transversals	2	**HSG.CO.A.1** **HSG.CO.C.9**	
2-8 Slope and Equations of Lines	1	HSG.GPE.B.5	
2-9 Proving Lines Parallel	2	**HSG.CO.C.9** HSG.CO.D.12	HSG.GPE.B.5
2-10 Perpendiculars and Distance (Less emphasis here, it will be revisited in 6.1)	1	HSG.CO.D.12 **HSG.MG.A.3**	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

September 2024

S	M	T	W	TH	F	S
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Experiment with transformations in the plane.	
HSG.CO.A.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.
Prove geometric theorems.	
HSG.CO.C.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.
Make geometric constructions.	
HSG.CO.D.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.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.B.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).
Apply geometric concepts in modeling situations.	
HSG.MG.A.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).

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Chapter 3: Rigid Transformations Symmetry

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
3-1 Reflections	1	HSG.CO.A.2 **HSG.CO.A.5** **HSG.CO.B.6**	HSG.CO.A.4
3-2 Translations	1	HSG.CO.A.2 **HSG.CO.A.5** **HSG.CO.B.6**	HSG.CO.A.4
3-3 Rotations	1	HSG.CO.A.4 **HSG.CO.A.5** **HSG.CO.B.6**	HSG.CO.A.2
3-4 Compositions of Transformations	2	HSG.CO.A.2 **HSG.CO.A.5**	
3-5 Symmetry	2	HSG.CO.A.3	
Flex Days: Review, reteach, extend, assess	3		

Suggested Module Pacing

October 2024

S	M	T	W	TH	F	S
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Experiment with transformations in the plane.	
HSG.CO.A.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).
HSG.CO.A.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.
HSG.CO.A.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
HSG.CO.A.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 on to another.
Understand congruence in terms of rigid transformations.	
HSG.CO.B.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.

Formal Geometry

Chapter 4: Triangles and Congruence

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
4-1 Angles of Triangles	2	**HSG.CO.C.10**	
4-2 Congruent Triangles	2	**HSG.CO.B.7** **HSG.CO.C.10** **HSG.SRT.B.5**	
4-3 Proving Triangles Congruent-SSS, SAS	2	**HSG.CO.B.8** **HSG.SRT.B.5**	**HSG.CO.C.10** HSG.CO.D.12
4-4 Proving Triangles Congruent-ASA, AAS	2	**HSG.CO.B.8** **HSG.SRT.B.5**	**HSG.CO.C.10** HSG.CO.D.12
4-5 Proving Right Triangles Congruent	1	**HSG.CO.C.10** **HSG.SRT.B.5**	
4-6 Isosceles and Equilateral Triangles	1	**HSG.CO.C.10** HSG.CO.D.12	
4-7 Triangles and Coordinate Proof	1	**HSG.CO.C.10** HSG.GPE.B.4	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

October/November 2024

S	M	T	W	TH	F	S
20	21	22	23	24	25	26
27	28	29	30	31	**1**	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23

Understand congruence in terms of rigid motions.	
HSG.CO.B.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.
HSG.CO.B.8	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.
Prove geometric theorems.	
HSG.CO.C.10	Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to $180°$; 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.
Make geometric constructions.	
HSG.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.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.B.4	Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.
Prove theorems involving similarity.	
HSG.SRT.B.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

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Chapter 5: Relationships in Triangles

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
5-1 Bisectors of Triangles	2	HSG.CO.C.10 HSG.MG.A.3	HSG.CO.C.9 HSG.CO.D.12
5-2 Medians & Altitudes of Triangles (No emphasis on points of concurrency)	2	HSG.CO.C.10 HSG.MG.A.3	HSG.CO.D.12
5-3 Inequalities in One Triangle	1	HSG.CO.C.10	
5-4 Indirect Proof	1	HSG.CO.C.10	
5-5 The Triangle Inequality	2	HSG.CO.C.10 HSG.MG.A.3	HSG.CO.D.12
5-6 Inequalities in Two Triangles	2	HSG.CO.C.10	
Flex Days: Review, reteach, extend, assess	3		

Suggested Module Pacing

November/December 2024

S	M	T	W	TH	F	S
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Prove geometric theorems.	
HSG.CO.C.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.
HSG.CO.C.10	Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to $180°$; 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.
Make geometric constructions.	
HSG.CO.D.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.
Apply geometric concepts in modeling situations.	
HSG.MG.A.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).

Formal Geometry

Chapter 6: Quadrilaterals

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
6-1 Angles of Polygons	1	**HSG.MG.A.1**	
6-2 Parallelograms	1	**HSG.CO.C.11** HSG.GPE.B.4	
6-3 Tests for Parallelograms	2	**HSG.CO.C.11** HSG.CO.D.12 HSG.GPE.B.4	HSG.GPE.B.5
6-4 Special Parallelograms: Rectangles	1	**HSG.CO.C.11** HSG.GPE.B.4	HSG.CO.D.12
6-5 Special Parallelograms: Rhombi, Squares	1	**HSG.CO.C.11** HSG.GPE.B.4	HSG.CO.D.12
6-6 Trapezoids and Kites	1	HSG.GPE.B.4 **HSG.MG.A.3**	
Flex Days: Review, reteach, extend, assess	3		

Suggested Module Pacing

January 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Prove geometric theorems.	
HSG.CO.C.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.	
HSG.CO.D.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.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.4	Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that figure defined by four given points in the coordinate plane is a rectangle.
HSG.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).
Apply geometric concepts in modeling situations.	
HSG.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects.
HSG.MG.A.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).

Formal Geometry

Chapter 7: Similarity

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
7-1 Dilations	2	HSG.CO.A.2 **HSG.SRT.A.1a** **HSG.SRT.A.1b**	
7-2 Similar Polygons	1	**HSG.SRT.A.2**	
7-3 Similar Triangles AA Similarity	1	**HSG.SRT.A.2** **HSG.SRT.A.3** **HSG.SRT.B.5**	
7-4 Similar Triangles SSS and SAS Similarity	1	**HSG.SRT.A.2** **HSG.SRT.B.4** **HSG.SRT.B.5**	
7-5 Parallel Lines and Proportional Parts	2	**HSG.SRT.B.4** **HSG.SRT.B.5**	HSG.CO.D.12
7-6 Parts of Similar Triangles	2	**HSG.SRT.B.4** **HSG.SRT.B.5**	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

January/February 2025

S	M	T	W	TH	F	S
19	20	21	22	23	24	25
26	27	28	29	30	31	**1**
2	3	4	5	6	7	8
9	10	11	12	13	14	15

Experiment with transformations in the plane.	
HSG.CO.A.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).
Make geometric constructions.	
HSG.CO.D.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.
Understand similarity in terms of similarity transformations.	
HSG.SRT.A.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.
HSG.SRT.A.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 proportionality of all corresponding pairs of sides.
HSG.SRT.A.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.
Prove theorems involving similarity.	
HSG.SRT.B.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.
HSG.SRT.B.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Formal Geometry

Chapter 8: Right Triangles and Trigonometry

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
Review simplifying radicals and rationalizing denominator $\frac{3}{\sqrt{2}} = \frac{3\sqrt{2}}{2}$	1		
8-1 Optional: Geometry Mean	1	**HSG.SRT.B.4** **HSG.SRT.B.5**	
8-2 The Pythagorean Theorem and Its Converse	2	**HSG.SRT.C.8** **HSG.MG.A.3**	**HSG.CO.C.10**
8-3 Special Right Triangles	1	**HSG.SRT.B.6**	
8-4 Trigonometry	2	**HSG.SRT.C.7**	**HSG.SRT.B.6**
8-5 Angles of Elevation and Depression	1	**HSG.SRT.C.8**	
8-6 The Law of Sines	2	**HSG.SRT.D.10** **HSG.SRT.D.11**	
8-7 The Law of Cosines	2	**HSG.SRT.D.10** **HSG.SRT.D.11**	
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

February 2025

S	M	T	W	TH	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	**1**

Prove geometric theorems.	
HSG.CO.C.10	Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to $180°$; 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.
Apply geometric concepts in modeling situations.	
HSG.MG.A.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).
Prove theorems involving similarity.	
HSG.SRT.B.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.
HSG.SRT.B.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
Define trigonometric ratios and solve problems involving right triangles.	
HSG.SRT.C.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.
HSG.SRT.C.7	Explain and use the relationship between the sine and cosine of complementary angles.
HSG.SRT.C.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.
HSG.SRT.C.10	Prove the Laws of Sines and Cosines and use them to solve problems.
HSG.SRT.C.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).

Formal Geometry

Chapter 9: Circles

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
9-1 Circles and Circumference	1	**HSG.CO.A.1** **HSG.C.A.2**	
9-2 Measuring Angles and Arcs	1	**HSG.C.A.2** **HSG.C.B.5**	
9-3 Arcs and Chords	1	**HSG.C.A.2**	HSG.CO.D.12 **HSG.MG.A.3**
9-4 Inscribed Angles	2	**HSG.C.A.2** HSG.C.A.3	HSG.CO.D.13
9-5 Tangents	1	**HSG.C.A.2** HSG.C.A.4	HSG.CO.D.12
9-6 Secants, Tangents and Angle Measures	1	**HSG.C.A.2**	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

March 2025

S	M	T	W	TH	F	S
2	3	4*	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

*Tentative: ACT Test Date

Experiment with transformations in the plane.	
HSG.CO.A.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.
Make geometric constructions.	
HSG.CO.D.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.
HSG.CO.D.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.
Understand and apply theorems about circles.	
HSG.C.A.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.
HSG.C.A.3	Construct the inscribed and circumscribed circles of a triangle and prove properties of angles for a quadrilateral inscribed in a circle.
HSG.C.A.4	(+) Construct a tangent line from a point outside a given circle to the circle.
HSG.C.A.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.
Apply geometric concepts in modeling situations.	
HSG.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects.
HSG.MG.A.3	Apply geometric methods to solve design problems (designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Formal Geometry

Chapter 10: Extending Area

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
10-1 Areas of Parallelograms and Triangles	1	HSG.GPE.B.7 HSG.MG.A.1	
10-2 Areas of Trapezoids, Rhombi, and Kites	1	HSG.MG.A.3	
10-3 Areas of Circles and Sectors	2	HSG.C.B.5 HSG.GMD.A.1	
10-4 Areas of Regular Polygons and Composite Figures (Focus on understanding-hexagons given apothem)	2	HSG.MG.A.3	
10-5 Area of Nonrigid Transformations	1	HSG.GMD.A.1 HSG.MG.A.1	
10-6 Surface Area	2	HSG.MG.A.1 HSG.MG.A.3	HSG.GMD.A.1
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Understand and apply theorems about circles.	
HSG.C.B.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.
Explain volume formulas and use them to solve problems.	
HSG.GMD.A.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 dissections arguments, Cavalieri's Principle, and informal limit arguments.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.B.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.
Apply geometric concepts in modeling situations.	
HSG.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects.
HSG.MG.A.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).

Formal Geometry

Chapter 11: Extending Volume

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
11-1 Cross Sections and Solids of Revolution	1	HSG.GMD.B.4	
11-2 Volumes of Prisms and Cylinders	1	**HSG.GMD.A.1** **HSG.GMD.A.3**	**HSG.MG.A.3**
11-3 Volumes of Pyramids and Cones	2	**HSG.GMD.A.1** **HSG.GMD.A.3**	**HSG.MG.A.3**
11-4 Spheres	1	**HSG.GMD.A.3**	**HSG.MG.A.3**
11-6 Volume and Nonrigid Transformations	1	**HSG.GMD.A.1**	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
30	31	**1**	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	**1**	2	3
4	5	6	7	8	9	10

Explain volume formulas and use them to solve problems.	
HSG.GMD.A.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 dissections arguments, Cavalieri's Principle, and informal limit arguments.
HSG.GMD.A.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.
Visualize relations between two-dimensional and three-dimensional objects.	
HSG.GMD.B.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.
Apply geometric concepts in modeling situations.	
HSG.MG.A.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).

Formal Geometry

Chapter 12: Probability

McGraw Hill Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
12-4 Geometric Probability	1	HSS.MD.B.7	
Optional Topics Below			
12-1 Representing Sample Spaces	1	HSS.CP.A.1	
12-2 Probability and Counting	1	HSS.CP.A.1	
12-3 Probability with Permutations and Combinations	1	HSS.CP.B.9	
12-5 Probability and the Multiplication Rule	2	HSS.CP.A.2 HSS.CP.B.8	
12-6 Probability and the Addition Rule	2	HSS.CP.A.1 HSS.CP.B.7	
12-7 Conditional Probability	2	HSS.CP.A.3 HSS.CP.A.5	HSS.CP.B.6
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

May 2025

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Understand independence and conditional probability and use them to interpret data.	
HSS.CP.A.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”).
HSS.CP.A.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.
HSS.CP.A.3	Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, 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.
HSS.CP.A.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.
Use the rules of probability to compute probabilities of compound events in a uniform probability model.	
HSS.CP.B.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.
HSS.CP.B.7	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.
HSS.CP.B.8	(+) Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B)=P(A)P(B\|A)= P(B)P(A\|B)$, and interpret the answer in terms of the model.
HSS.CP.B.9	Use permutations and combinations to compute probabilities of compound events and solve problems.
Use probability to evaluate outcomes of decisions.	
HSS.MD.B.7	(+) Analyze decisions and strategies using probability concepts.

2024-2025

Algebra 2
Course Guide

#2221/2222 Algebra 2
#7779/7780 Foundations in Algebra 2

Algebra 2 Pacing (Days in Q1-44, Q2-39, Q3-48, Q4-49)

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
Topic	Days	Topic	Days
1 – Linear Functions & Systems	12	4 – Rational Functions	25
10 - Matrices	12	5 – Rational Exponents & Radical Functions	21
2 – Quadratic Functions & Equations	23	6 – Exponential & Logarithmic Functions	25
3 – Polynomial Functions	23	11 – Statistics (optional)	10
Semester Flex/Review Days	7	Semester Flex/Review Days	10
Final Exams	4	Final Exams	4
Be here by end of Semester One		Be here by end of Semester Two	

- If time allows, look at STEM Projects and Math in 3 Acts

Algebra 2

Topic 1: Linear Functions and Systems

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
Supplement 1-1 Key Features: Domain/Range, relative Max/Min, end behavior Use interval notation and inequalities for Domain & Range. Transformations of Absolute Value Functions	3	**HSF.BF.B.3** **HSF.IF.B.4** **HSF.IF.B.5** HSF.IF.B.6 **HSF.IF.B.7b**	
1-3 Piecewise-Defined Functions	2	HSF.IF.B.7b HSS.ID.B.6a	**HSF.IF.B.5** HSF.LE.A.2
1-5 Solving Equations and Inequalities by Graphing	2	**HSA.CED.A.1**	HSA.REI.D.11
1-6 Linear Systems solve (2 equations, 2 unknowns) by graphing, substitution and elimination, no matrices	3	HSA.CED.A.3 HSA.REI.C.6	HSA.CED.A.2
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

August/September 2024

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14

Create equations that describe numbers or relationships.	
HSA.CED.A.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.
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
HSA.CED.A.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.
Solve systems of equations.	
HSA.REI.C.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.	
HSA.REI.D.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.
Build new functions from existing functions.	
HSF.BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(kx)$, $and\ f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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, relative maximums and minimums; symmetries; end behavior; and periodicity.
HSF.IF.B.5	Relate the domain of a function to its graph and the quantitative relationship it describes.
HSF.IF.B.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.

Algebra 2

Analyze functions using different representations.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **b.** Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
Interpret expression for functions in terms of the situation they model.	
HSF.LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including from a table).
Summarize, represent, and interpret data on two categorical and quantitative variables	
HSS.ID.B.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. 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.

Topic 10: Matrices

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
10-1 Operations with Matrices (Calculate all operations (and determinants) by hand and with technology.)	2	HSN.VM.C.6(+) HSN.VM.C.7(+) HSN.VM.C.8(+)	
10-2 Matrix Multiplication	2	HSN.VM.C.8(+) HSN.VM.C.10(+)	HSN.VM.C.9(+)
10-4 Inverses and Determinants (2x2 matrices only)	2	HSA.REI.C.9(+) HSN.VM.C.10(+)	
10-5 Inverse Matrices & System of Equations (2x2 matrices only, Calculate all operations (and determinants) by hand and with technology.)	3	HSA.REI.C.8(+) HSA.REI.C.9(+)	HSA.CED.A.3
Flex Days: Review, reteach, extend, assess	3		

Suggested Module Pacing

September 2024

S	M	T	W	TH	F	S
					30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Create equations that describe numbers or relationships.	
HSA.CED.A.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.
Solve systems of equations.	
HSA.REI.C.8	(+) Represent a system of linear equations as a single matrix equation in a vector variable.
HSA.REI.C.9	(+) Find the inverse of a matrix if it exists and use it to solve system of linear equations (use technology for matrices of dimensions 3 x 3 or greater).
Perform operations on matrices and use matrices in applications.	
HSN.VM.C.6	(+) Use matrices to represent and manipulate data.
HSN.VM.C.7	(+) Multiply matrices by scalars to produce new matrices.
HSN.VM.C.8	(+) Add, subtract, and multiply matrices of appropriate dimensions.
HSN.VM.C.9	(+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.
HSN.VM.C.10	(+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of

Algebra 2

Topic 2: Quadratic Functions and Equations

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
2-1 Vertex Form of a Quadratic Function **(No horizontal stretch/compressions for any families)**	3	HSA.CED.A.2 **HSF.IF.B.4**	**HSF.BF.B.3** **HSF.IF.C.7a**
2-2 Standard Form of a Quadratic Function	3	HSA.CED.A.2 **HSF.IF.B.4**	**HSF.IF.C.7a** HSS.ID.B.6
2-3 Factored Form of a Quadratic Function	3	**HSA.APR.B.3** HSA.SSE.B.3a	**HSF.IF.C.7a** HSA.SSE.A.2 HSA.SSE.B.3b
2-4 Complex Numbers and Operations (Perform addition, subtraction, and multiplication)	3	**HSN.CA.1** HSN.CN.A.2	HSN.CN.A.3
2-5 Completing the Square ($a = 1$ only)	3	HSA.REI.B.4a HSA.SSE.B.3b	HSA.REI.B.4b **HSN.CN.C.7**
2-6 The Quadratic Formula	2	HSA.REI.B.4b **HSN.CN.C.7**	HSA.REI.B.4a
2-7 Linear-Quadratic Systems	2	HSA.REI.C.7 HSA.REI.D.11	**HSN.CN.C.7**
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

September/October 2024

S	M	T	W	TH	F	S
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Perform arithmetic operations with complex numbers.	
HSN.CN.A.1	Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.
HSN.CN.A.2	Use the relation$i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.
HSN.CN.A.3	(+) Find the conjugate of a complex number; use conjugates to find moduli ($\lvert a + bi \rvert = \sqrt{a^2 + b^2}$) and quotients of complex numbers.
Use complex numbers and their operations on the complex plane.	
HSN.CN.C.7	Solve quadratic equations with real coefficients that have complex solutions.
Perform arithmetic operations on polynomials.	
HSA.APR.B.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.
Create equations that describe numbers or relationships.	
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
Solve equations and inequalities in one variable.	
HSA.REI.B.4	Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. b. 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 ± bi for real numbers a and b.
Solve systems of equations	
HSA.REI.C.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.

Algebra 2

Represent and solve equations and inequalities graphically.	
HSA.REI.D.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.
Interpret the structure of expressions.	
HSA.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.
Write expressions in equivalent forms to solve problems.	
HSA.SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. a. Factor a quadratic expression to reveal the zeros of the function it defines. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
Build new functions from existing functions.	
HSF.BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and 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.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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.
Analyze functions using different representations.	
HSF.IF.C.7a	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **a.** Graph linear and quadratic functions and show intercepts, maxima, and minima.

Algebra 2

Topic 3: Polynomial Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
3-1 Graphing Polynomial Functions	4	**HSF.IF.B.4** **HSF.IF.B.7c**	HSF.IF.B.6
3-2 Adding, Subtracting and Multiplying Polynomials	2	HSA.APR.A.1 HSF.IF.C.9	HSF.BF.A.1b
3-3 Dividing Polynomials	2	HSA.APR.C.4	HSA.SSE.A.2
3-4 Polynomial Identities	4	HSA.APR.B.2 HSA.APR.D.6	HSA.SSE.A.2
3-5 Zeros of Polynomial Functions	4	**HSA.APR.B.3** **HSF.IF.C.7c**	HSA.SSE.A.2
3-6 Theorems About Roots of Polynomial Equations (Graph focus, no Rational Root or Remainder Theorems)	2	HSN.CN.C.9(+)	HSN.CN.C.8(+) HSA.APR.B.2 **HSA.APR.B.3**
3-7 Transformations of Polynomial Functions (Cubic only)	1	**HSF.BF.B.3**	
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

November/December 2024

S	M	T	W	TH	F	S
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Use complex numbers in polynomial identities and equations.	
HSN.CN.C.8	(+) Extend polynomial identities to the complex numbers. For example, rewrite $x^2 + 4 = (x + 2i)(x - 2i)$
HSN.CN.C.9	(+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.
Perform arithmetic operations on polynomials.	
HSA.APR.A.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.
Understand the relationship between zeros and factors of polynomials.	
HSA.APR.B.2	Know and apply the Remainder Thm: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ iff $(x - a)$ is a factor of $p(x)$.
HSA.APR.B.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.
Use polynomial identities to solve problems.	
HSA.APR.C.4	Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.
HSA.APR.D.6	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x) / b(x)$, where $a(x), b(x), q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of b(x), using inspection, long division, or computer algebra system.
Create equations that describe numbers or relationships.	
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
Interpret the structure of expressions.	
HSA.SSE.A.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 the difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.
Build a function that models a relationship between two quantities.	
HSF.BF.A.1	Write a function that describes a relationship between two quantities. b. Combine standard function types using arithmetic operations.

Algebra 2

Build new functions from existing functions.	
HSF.BF.A.3	Identify the effect on the graph of replacing $f(x)$ by $f(x)+k$, $k \cdot f(x)$, $f(kx)$, and $f(x+k)$ for specific values of *k* (both positive and negative); find the value of k given the graphs. Experiment with cases and 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.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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.
HSF.IF.B.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.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **c.** Graph polynomial functions identifying zeros when suitable factorizations are available, and showing end behavior.
HSF.IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically and in table or a verbal description).

Algebra 2

Topic 4: Rational Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
Review Fractions and Factoring Quadratics	1		
4-1 Inverse Variation and the Reciprocal Function	4	**HSF.BF.B.3**	HSA.CED.A.2 **HSF.IF.C.7d**
4-2 Graphing Rational Functions (Transformation of rational functions)	2	**HSF.BF.B.3** **HSF.IF.C.7d** HSA.APR.D.6	HSA.REI.D.11
4-3 Multiplying and Dividing Rational Expressions (Denominators with degree 1 or 2)	4	HSA.APR.D.6	**HSA.APR.D.7** HSA.SSE.A.2
4-4 Adding and Subtracting Rational Expressions (Denominators with degree 1 or 2)	5	HSA.SSE.A.2 **HSA.APR.D.7**	
4-5 Solving Rational Equations	5	HSA.REI.A.1 **HSA.REI.A.2**	**HSA.CED.A.1**
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

January/February 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	**1**
2	3	4	5	6	7	8
9	10	11	12	13	14	15

Rewrite rational expressions.	
HSA.APR.D.6	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x) \ / \ b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of b(x), using inspection, long division, or computer algebra system.
HSA.APR.D.7	Rewrite rational expressions. Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.
Create equations that describe numbers or relationships.	
HSA.CED.A.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.
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
Understand solving equations as a process of reasoning and explain the reasoning.	
HSA.REI.A.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.
HSA.REI.A.2	Solve simple rational and radical equations in one variable, and give examples
Represent and solve equations and inequalities graphically.	
HSA.REI.D.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.
Interpret the structure of expressions.	
HSA.SSE.A.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 the difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

Algebra 2

Build new functions from existing functions.	
HSF.BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and 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.
Analyze functions using different representations.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **d.** Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.

Algebra 2

Topic 5: Rational Exponents and Radical Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
5-1 nth Roots, Radicals, and Rational Exponents (Use absolute value when simplifying expressions, $\sqrt[4]{625x^{24}y^{28}} = \lvert 5x^6y^7 \rvert$. Use $\pm$ when solving equations, if $x^2 = 36$, then $x = \pm 6$.)	4	HSN.RN.A.1 **HSN.RN.A.2**	HSA.REI.A.1
5-2 Properties of Exponents and Radicals	4	HSA.SSE.A.1 HSA.SSE.A.2	
5-3 Graphing Radical Functions	3	**HSF.IF.B.4** **HSF.IF.C.7b** **HSF.BF.B.3**	
5-4 Solving Radical Equations	2	HSA.REI.A.1 HSA.REI.A.2	HSA.CED.A.4
5-5 Function Operations	3	HSF.BF.A.1b HSF.BF.A.1c	
5-6 Inverse Relations and Functions	3	**HSF.BF.B.4a** HSF.BF.B.4b	HSF.BF.B.4c HSF.BF.B.4d
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

February/March 2025

S	M	T	W	TH	F	S
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	**1**
2	3	4*	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22

*Tentative: ACT Test Date

Extend the properties of exponents to rational exponents.	
HSN.RN.A.1	Explain how the definitions 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.
HSN.RN.A.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.
Create equations that describe numbers or relationships.	
HSA.CED.A.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.
HSA.CED.A.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.
Understand solving equations as a process of reasoning and explain the reasoning.	
HSA.REI.A.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.
HSA.REI.A.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
Interpret the structure of expressions.	
HSA.SSE.A.1	Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. b. 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.
HSA.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.
Build a function that models a relationship between two quantities.	
HSF.BF.A.1	Write a function that describes a relationship between two quantities. b. 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. c. Compose functions. For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.

Algebra 2

Build new functions from existing functions.	
HSF.BF.B.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.
HSF.BF.B.4	Find inverse functions. **a.** Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. For example, $f(x) = 2x^3$ or $f(x) = \frac{x+1}{x-1}\ for\ x \neq 1$. b. (+) Verify by composition that one function is the inverse of another. c. (+) Read values of an inverse function from a graph or a table, given the function has an inverse. d. (+) Produce an invertible function from a non-invertible function by restricting the domain.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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.
Analyze functions using different representations.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **b.** Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

Algebra 2

Topic 6: Exponential and Logarithmic Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
6-1 Key Features of Exponential Functions (supplement transformations with (h,k) and $f(x) = ab^{x-h} + k$, Algebra 1 Topic 6-5)	4	**HSF.BF.B.3** **HSF.IF.B.4** **HSF.IF.C.7e** HSF.LE.B.5	HSF.IF.B.6 HSF.IF.C.9 HSF.LE.A.2
6-2 Exponential Models	3	**HSF.IF.C.8b** HSF.LE.B.5 HSS.ID.B.6a	HSA.SSE.B.3c
6-3 Logarithms	4	**HSF.BF.B.4a** HSF.BF.B.5 **HSF.LE.A.4**	
6-4 Logarithmic Functions	3	**HSF.BF.B.3**	HSF.BF.B.5 **HSF.IF.B.5** HSF.IF.B.6 **HSF.IF.C.7e** HSF.IF.C.9
6-5 Properties of Logarithms	3	HSA.SSE.A.2	**HSF.LE.A.4** HSA.REI.A.1
6-6 Exponential and Logarithmic Equations	3	HSA.SSE.A.2 **HSA.CED.A.1**	HSA.REI.A.1 HSA.REI.D.11 **HSF.LE.A.4**
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3

Create equations that describe numbers or relationships.	
HSA.CED.A.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.
Understand solving equations as a process of reasoning and explain the reasoning.	
HSA.REI.A.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.
Represent and solve equations and inequalities graphically.	
HSA.REI.D.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.
Interpret the structure of expressions.	
HSA.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.
Write expression in equivalent forms to solve problems.	
HSA.SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. c. 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%.
Build new functions from existing functions.	
HSF.BF.B.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.

Algebra 2

HSF.BF.B.4	Find inverse functions. **a.** Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. For example, $f(x) = 2x^3$ or $f(x) = \frac{x+1}{x-1}$ $for\ x \neq 1$.
HSF.BF.B.5	(+) Understand the inverse relationship between exponents and logarithms and use this
Interpret functions that arise in applications in terms of context.	
HSF.IF.B.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.
HSF.IF.B.5	Relate the domain of a function to its graph and, to the quantitative relationship it describes.
HSF.IF.B.6	Calculate and interpret the average rate of change of a function over a specified interval.
Analyze functions using different representations.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
HSF.IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **b.** Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)12^t$, $y = (1.2)^t/10$, and classify them as representing exponential growth or decay.
HSF.IF.C.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.
Interpret expression for functions in terms of the situation they model.	
HSF.LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).
HSF.LE.A.4	For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.
Interpret expression for functions in terms of the situation they model.	
HSF.LE.B.5	Interpret the parameters in a linear or exponential function in terms of a context.

Algebra 2

Topic 11: Statistics (Optional)

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
11-1 Statistical Questions and Variables	2	HSN.Q.A.2 HSN.IC.A.1	
11-2 Statistical Studies and Sampling Methods	2	HSN.IC.A.1 HSS.IC.B.3 HSS.IC.B.6	
11-3 Data Distributions	2	HSS.ID.A.1 HSS.ID.A.2	HSS.IC.A.2
11-4 Normal Distributions	2	HSS.ID.A.4 HSS.IC.B.6	
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

May 2025

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Understand and evaluate random processes underlying statistical experiments.	
HSS.IC.A.1	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
HSS.IC.A.2	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability 0.5.
Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	
HSS.IC.B.3	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
HSS.IC.B.6	Evaluate reports based on data.
Summarize, represent, and interpret data on a single count or measurement variable.	
HSS.ID.A.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).
HSS.ID.A.2	Use statistics appropriate to the shape of the data distribution to compare center (median,
HSS.ID.A.4	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

2024-2025

Algebra 2 Honors Course Guide

#2227/2228 Algebra 2 Honors

Algebra 2 Honors Pacing (Days in Q1-44, Q2-39, Q3-48, Q4-49)

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
Topic	Days	Topic	Days
1 – Linear Functions & Systems	12	4 – Rational Functions	25
10 - Matrices	14	5 – Rational Exponents & Radical Functions	22
2 – Quadratic Functions & Equations	24	6 – Exponential & Logarithmic Functions	22
3 – Polynomial Functions	20	11 – Statistics (optional)	10
Semester Flex/Review Days	7	7-Trigonometry (optional)	10
Final Exams	4	Semester Flex/Review Days	3
		Final Exams	4
Be here by end of Semester One		Be here by end of Semester Two	

- If time allows, look at STEM Projects and Math in 3 Acts

Algebra 2 Honors

Topic 1: Linear Functions and Systems

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
Supplement 1-1 Key Features: Domain/Range, relative Max/Min, end behavior Use interval notation and inequalities for Domain & Range. Transformations of Absolute Value Functions	3	**HSF.BF.B.3** **HSF.IF.B.4** **HSF.IF.B.5** **HSF.IF.B.7b**	HSF.IF.B.6
1-3 Piecewise-Defined Functions	2	HSF.IF.B.7b HSS.ID.B.6a	**HSF.IF.B.5** HSF.LE.A.2
1-5 Solving Equations and Inequalities by Graphing	2	**HSA.CED.A.1**	HSA.REI.D.11
1-6 Linear Systems solve (3 equations, 3 unknowns) by graphing, substitution and elimination, no matrices	3	HSA.CED.A.3 HSA.REI.C.6	HSA.CED.A.2
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

August/September 2024

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14

Create equations that describe numbers or relationships.	
HSA.CED.A.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.
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
HSA.CED.A.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.
Solve systems of equations.	
HSA.REI.C.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.	
HSA.REI.D.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.
Build new functions from existing functions.	
HSF.BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(kx)$, $and\ f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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, relative maximums and minimums; symmetries; end behavior; and periodicity.
HSF.IF.B.5	Relate the domain of a function to its graph and the quantitative relationship it describes.
HSF.IF.B.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.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **b.** Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
Interpret expression for functions in terms of the situation they model.	
HSF.LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including from a table).
Summarize, represent, and interpret data on two categorical and quantitative variables	
HSS.ID.B.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. 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.

Algebra 2 Honors

Topic 10: Matrices

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
10-1 Operations with Matrices (Calculate all operations (and determinants) by hand and with technology.)	2	HSN.VM.C.6(+) HSN.VM.C.7(+) HSN.VM.C.8(+)	
10-2 Matrix Multiplication	2	HSN.VM.C.8(+) HSN.VM.C.10(+)	HSN.VM.C.9(+)
10-3 Vectors	2	HSN.VM.A.1 HSN.VM.B.4 HSN.VM.B.5	HSN.VM.C.11
10-4 Inverses and Determinants (Ex. 1-5)	2	HSA.REI.C.9(+) HSN.VM.C.10(+)	
10-5 Inverse Matrices & System of Equations (Calculate all operations (and determinants) by hand and with technology.)	3	HSA.REI.C.8(+) HSA.REI.C.9(+)	HSA.CED.A.3
Flex Days: Review, reteach, extend, assess	3		

Suggested Module Pacing

September 2024

S	M	T	W	TH	F	S
					30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Create equations that describe numbers or relationships.	
HSA.CED.A.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.
Solve systems of equations.	
HSA.REI.C.8	(+) Represent a system of linear equations as a single matrix equation in a vector variable.
HSA.REI.C.9	(+) Find the inverse of a matrix if it exists and use it to solve system of linear equations (use technology for matrices of dimensions 3 x 3 or greater).
Represent and model with vector quantities.	
HSN.VM.A.1	(+) Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitude.
Perform operations on vectors.	
HSN.VM.B.4	(+) Add and subtract vectors. a. Add vectors end-to-end component wise, and by the parallelogram rule. Understand that the magnitude of a sum of the magnitudes. b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum. c. Understand vector subtraction $v - w$, as $v + (-w)$, where $-w$ is the additive inverse of w, with the same magnitude as w and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.
HSN.VM.B.5	Compute the magnitude of a scalar multiple cv using $\|\|cv\|\| = \|c\|v$. Compute the direction of cv knowing that when $\|c\|v \neq 0$, the direction of cv is either along v (for $c > 0$) or against v (for $c < 0$).
Perform operations on matrices and use matrices in applications.	
HSN.VM.C.6	(+) Use matrices to represent and manipulate data.
HSN.VM.C.7	(+) Multiply matrices by scalars to produce new matrices.
HSN.VM.C.8	(+) Add, subtract, and multiply matrices of appropriate dimensions.
HSN.VM.C.9	(+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.
HSN.VM.C.10	(+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of

Algebra 2 Honors

Topic 2: Quadratic Functions and Equations

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
2-1 Vertex Form of a Quadratic Function **(No horizontal stretch/compressions for any families)**	3	HSA.CED.A.2 **HSF.IF.B.4**	**HSF.BF.B.3**
2-2 Standard Form of a Quadratic Function	3	HSA.CED.A.2 **HSF.IF.B.4**	HSS.ID.B.6
2-3 Factored Form of a Quadratic Function	3	**HSA.APR.B.3** HSA.SSE.B.3a	HSA.SSE.A.2 HSA.SSE.B.3b
2-4 Complex Numbers and Operations	3	**HSN.CA.1** HSN.CN.A.2	HSN.CN.A.3(+)
2-5 Completing the Square	3	HSA.REI.B.4 HSA.SSE.B.3b	HSA.REI.B.4b **HSN.CN.C.7**
2-6 The Quadratic Formula	3	HSA.REI.B.4b **HSN.CN.C.7**	HSA.REI.B.4a
2-7 Linear-Quadratic Systems	2	HSA.REI.C.7 HSA.REI.D.11	**HSN.CN.C.7**
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

September/October 2024

S	M	T	W	TH	F	S
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

Perform arithmetic operations with complex numbers.	
HSN.CN.A.1	Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.
HSN.CN.A.2	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.
HSN.CN.A.3	(+) Find the conjugate of a complex number; use conjugates to find moduli ($\|a + bi\| = \sqrt{a^2 + b^2}$) and quotients of complex numbers.
Use complex numbers and their operations on the complex plane.	
HSN.CN.C.7	Solve quadratic equations with real coefficients that have complex solutions.
Perform arithmetic operations on polynomials.	
HSA.APR.B.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.
Create equations that describe numbers or relationships.	
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
Solve equations and inequalities in one variable.	
HSA.REI.B.4	Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. b. 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 ± bi for real numbers a and b.
Solve systems of equations	
HSA.REI.C.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.

Algebra 2 Honors

Represent and solve equations and inequalities graphically.	
HSA.REI.D.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.
Interpret the structure of expressions.	
HSA.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.
Write expressions in equivalent forms to solve problems.	
HSA.SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. a. Factor a quadratic expression to reveal the zeros of the function it defines. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
Build new functions from existing functions.	
HSF.BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and 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.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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.
Analyze functions using different representations.	
HSF.IF.C.7a	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **a.** Graph linear and quadratic functions and show intercepts, maxima, and minima.

Algebra 2 Honors

Topic 3: Polynomial Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
3-1 Graphing Polynomial Functions	3	**HSF.IF.B.4** **HSF.IF.C.7c**	**HSF.IF.A.2** HSF.IF.B.6
3-2 Adding, Subtracting and Multiplying Polynomials	2	HSA.APR.A.1 HSF.IF.C.9	HSF.BF.A.1b
3-3 Dividing Polynomials	2	HSA.APR.C.4	HSA.SSE.A.2
3-4 Polynomial Identities	4	HSA.APR.B.2 HSA.APR.D.6	HSA.SSE.A.2
3-5 Zeros of Polynomial Functions	4	**HSA.APR.B.3** **HSF.IF.C.7c**	**HSF.IF.A.2** HSA.SSE.A.2
3-6 Theorems About Roots of Polynomial Equations (Graph focus, no Rational Root or Remainder Theorems)	2	HSN.CN.C.9(+)	HSN.CN.C.8(+) HSA.APR.B.2 **HSA.APR.B.3**
3-7 Transformations of Polynomial Functions (Cubic only)	1	**HSF.BF.B.3**	
Flex Days: Review, reteach, extend, assess	2	2	

Suggested Module Pacing

November/December 2024

S	M	T	W	TH	F	S
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Use complex numbers in polynomial identities and equations.	
HSN.CN.C.8	(+) Extend polynomial identities to the complex numbers. For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$.
HSN.CN.C.9	(+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.
Perform arithmetic operations on polynomials.	
HSA.APR.A.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.
Understand the relationship between zeros and factors of polynomials.	
HSA.APR.B.2	Know and apply the Remainder Theorem: For polynomial p(x) and number a, the remainder of division by (x – a) is p(a), so p(a) = 0 if and only if (x – a) is a factor of p(x).
HSA.APR.B.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.
Use polynomial identities to solve problems.	
HSA.APR.C.4	Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.
HSA.APR.D.6	Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or computer algebra system.
Interpret the structure of expressions.	
HSA.SSE.A.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 the difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.
Build a function that models a relationship between two quantities.	
HSF.BF.A.1	Write a function that describes a relationship between two quantities. b. Combine standard function types using arithmetic operations.

Algebra 2 Honors

Build new functions from existing functions.	
HSF.BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x)+k$, $k \cdot f(x)$, $f(kx)$, and $f(x+k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and 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.
Understand the concept of a function and use function notation.	
HSF.IF.A.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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.
HSF.IF.B.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.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **c.** Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
HSF.IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically and in table or a verbal description).

Algebra 2 Honors

Topic 4: Rational Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
Review Fractions and Factoring Quadratics	1		
4-1 Inverse Variation and the Reciprocal Function	2	**HSF.BF.B.3**	HSA.CED.A.2 **HSF.IF.C.7d**
4-2 Graphing Rational Functions (Transformation of rational functions)	4	**HSF.BF.B.3** **HSF.IF.C.7d** HSA.APR.D.6	HSA.REI.D.11
4-3 Multiplying and Dividing Rational Expressions	4	HSA.APR.D.6	**HSA.APR.D.7** HSA.SSE.A.2
4-4 Adding and Subtracting Rational Expressions	5	HSA.SSE.A.2 **HSA.APR.D.7**	
4-5 Solving Rational Equations	5	HSA.REI.A.1 **HSA.REI.A.2**	**HSA.CED.A.1**
Flex Days: Review, reteach, extend, assess	4		

Suggested Module Pacing

January/February 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	**1**
2	3	4	5	6	7	8
9	10	11	12	13	14	15

Rewrite rational expressions.	
HSA.APR.D.6	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x) \ / \ b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of b(x), using inspection, long division, or computer algebra system.
HSA.APR.D.7	Rewrite rational expressions. Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.
Create equations that describe numbers or relationships.	
HSA.CED.A.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.
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
Understand solving equations as a process of reasoning and explain the reasoning.	
HSA.REI.A.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.
HSA.REI.A.2	Solve simple rational and radical equations in one variable, and give examples
Represent and solve equations and inequalities graphically.	
HSA.REI.D.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.
Interpret the structure of expressions.	
HSA.SSE.A.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 the difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

Algebra 2 Honors

Build new functions from existing functions.	
HSF.BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x)+k$, $k \cdot f(x)$, $f(kx)$, and $f(x+k)$ for specific values of *k* (both positive and negative); find the value of k given the graphs. Experiment with cases and 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.
Analyze functions using different representations.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **d.** Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.

Algebra 2 Honors

Topic 5: Rational Exponents and Radical Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
5-1 nth Roots, Radicals, and Rational Exponents (Use absolute value when simplifying expressions, $\sqrt[4]{625x^{24}y^{28}} = \|5x^6y^7\|$. Use $\pm$ when solving equations, if $x^2 = 36$, then $x = \pm 6$.)	4	HSN.RN.A.1 HSN.RN.A.2	HSA.REI.A.1
5-2 Properties of Exponents and Radicals	4	HSA.SSE.A.1 HSA.SSE.A.2	
5-3 Graphing Radical Functions	3	**HSF.IF.B.4** **HSF.IF.C.7b** **HSF.BF.B.3**	
5-4 Solving Radical Equations	3	HSA.REI.A.1 HSA.REI.A.2	HSA.CED.A.4
5-5 Function Operations	3	HSF.BF.A.1b HSF.BF.A.1c	
5-6 Inverse Relations and Functions	3	**HSF.BF.B.4a** HSF.BF.B.4b	HSF.BF.B.4c HSF.BF.B.4d
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

February/March 2025

S	M	T	W	TH	F	S
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	**1**
2	3	4*	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22

*Tentative: ACT Test Date

Extend the properties of exponents to rational exponents.	
HSN.RN.A.1	Explain how the definitions 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.
HSN.RN.A.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.
Create equations that describe numbers or relationships.	
HSA.CED.A.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.
HSA.CED.A.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.
Understand solving equations as a process of reasoning and explain the reasoning.	
HSA.REI.A.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.
HSA.REI.A.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
Interpret the structure of expressions.	
HSA.SSE.A.1	Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. b. 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.
HSA.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.
Build a function that models a relationship between two quantities.	
HSF.BF.A.1	Write a function that describes a relationship between two quantities. b. 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. c. Compose functions. For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.

Algebra 2 Honors

Build new functions from existing functions.	
HSF.BF.B.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.
HSF.BF.B.4	Find inverse functions. **a.** Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. For example, $f(x) = 2x^3$ or $f(x) = \frac{x+1}{x-1}$ $for\ x \neq 1$. b. (+) Verify by composition that one function is the inverse of another. c. (+) Read values of an inverse function from a graph or a table, given the function has an inverse. d. (+) Produce an invertible function from a non-invertible function by restricting the domain.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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.
Analyze functions using different representations.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **b.** Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

Algebra 2 Honors

Topic 6: Exponential and Logarithmic Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
6-1 Key Features of Exponential Functions (supplement transformations with (h,k) and $f(x) = ab^{x-h} + k$, Algebra 1 Topic 6-5)	4	**HSF.BF.B.3** **HSF.IF.B.4** **HSF.IF.C.7e** HSF.LE.B.5	HSF.IF.B.6 HSF.IF.C.9 HSF.LE.A.2
6-2 Exponential Models	3	**HSF.IF.C.8b** HSF.LE.B.5 HSS.ID.B.6a	HSA.SSE.B.3c
6-3 Logarithms	4	**HSF.BF.B.4a** HSF.BF.B.5 **HSF.LE.A.4**	
6-4 Logarithmic Functions	3	**HSF.BF.B.3**	HSF.BF.B.5 **HSF.IF.B.5** HSF.IF.B.6 **HSF.IF.C.7e** HSF.IF.C.9
6-5 Properties of Logarithms	4	HSA.SSE.A.2	**HSF.LE.A.4** HSA.REI.A.1
6-6 Exponential and Logarithmic Equations	2	HSA.SSE.A.2 **HSA.CED.A.1**	HSA.REI.A.1 HSA.REI.D.11 **HSF.LE.A.4**
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

April 2025

S	M	T	W	TH	F	S
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3

Create equations that describe numbers or relationships.	
HSA.CED.A.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.
Understand solving equations as a process of reasoning and explain the reasoning.	
HSA.REI.A.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.
Represent and solve equations and inequalities graphically.	
HSA.REI.D.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.
Interpret the structure of expressions.	
HSA.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.
Write expression in equivalent forms to solve problems.	
HSA.SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. c. 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%.
Build new functions from existing functions.	
HSF.BF.B.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.

Algebra 2 Honors

HSF.BF.B.4	Find inverse functions. **a.** Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. For example, $f(x) = 2x^3$ or $f(x) = \frac{x+1}{x-1}\ for\ x \neq 1$.
HSF.BF.B.5	(+) Understand the inverse relationship between exponents and logarithms and use this
Interpret functions that arise in applications in terms of context.	
HSF.IF.B.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.
HSF.IF.B.5	Relate the domain of a function to its graph and, to the quantitative relationship it describes.
HSF.IF.B.6	Calculate and interpret the average rate of change of a function over a specified interval.
Analyze functions using different representations.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
HSF.IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **b.** Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)12^t$, $y = (1.2)^t/10$, and classify them as representing exponential growth or decay.
HSF.IF.C.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.
Interpret expression for functions in terms of the situation they model.	
HSF.LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).
HSF.LE.A.4	For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.
Interpret expression for functions in terms of the situation they model.	
HSF.LE.B.5	Interpret the parameters in a linear or exponential function in terms of a context.

Algebra 2 Honors

Topic 11: Statistics (Optional)

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
11-1 Statistical Questions and Variables	2	HSN.Q.A.2 HSN.IC.A.1	
11-2 Statistical Studies and Sampling Methods	2	HSN.IC.A.1 HSS.IC.B.3 HSS.IC.B.6	
11-3 Data Distributions	2	HSS.ID.A.1 HSS.ID.A.2	HSS.IC.A.2
11-4 Normal Distributions	2	HSS.ID.A.4 HSS.IC.B.6	
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

May 2025						
S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Understand and evaluate random processes underlying statistical experiments.	
HSS.IC.A.1	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
HSS.IC.A.2	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability 0.5.
Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	
HSS.IC.B.3	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
HSS.IC.B.6	Evaluate reports based on data.
Summarize, represent, and interpret data on a single count or measurement variable.	
HSS.ID.A.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).
HSS.ID.A.2	Use statistics appropriate to the shape of the data distribution to compare center (median,
HSS.ID.A.4	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

Topic 7: Trigonometry (Optional)

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
7-1 Trigonometric Functions and Acute Angles	2	HSF.TF.A.3(+)	HSF.TF.A.2 HSF.TF.C.8
7-2 Angles and the Unit Circle	2	HSF.TF.A.1	
7-3 Trigonometric Functions and Real Numbers	2	HSF.TF.A.2 HSF.TF.C.8	HSF.TF.A.3(+)
Flex Days: Review, reteach, extend, assess	2		

Suggested Module Pacing

May 2025						
S	M	T	W	TH	F	S
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Extend the domain of trigonometric functions using the unit circle.	
HSF.TF.A.1	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.
HSF.TF.A.2	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.
HSF.TF.A.3	(+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for x, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number.
Prove and apply trigonometric identities.	
HSF.TF.C.8	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.

2024-2025

Introductory PreCalculus Course Guide

#2049/2050 Introductory Pre-Calculus

Course Description

This is a one-year course designed to follow Algebra 2. The major topics of semester one of study are polynomials and rational functions, exponential and logarithmic functions, domain and range of advanced functions, the use of notation in set, interval and inequality, composition of functions, complex numbers, powers and roots, polynomial equations and inequalities, rational equations and inequalities. The major topics of semester two are matrix operations and applications, system of linear equations in two and three variables, conic sections, sequences and series, probability, and limits. At this time this course is not endorsed by the NCAA, if you have questions about this please contact your school counselor.

Introductory PreCalculus

Introductory PreCalculus - Semester 1		
Topic		Resource
Topic Linear Ch. 1	Basics of Functions and Their Graphs	1.2
	More on Functions and Their Graphs	1.3
	Linear Functions	1.4
	Transformations of Functions	1.6
	Combinations of Functions; Composite Functions	1.7
	Inverse Functions	1.8
	Modeling with Functions	1.10
Topic Polynomial and Rational Functions Ch. 2	Polynomials	p4
	Factoring Polynomials	p5
	Complex Numbers	2.1
	Quadratic Functions	2.2
	Polynomial Functions and Their Graphs	2.3
	Dividing Polynomials; Remainder and Factor Theorems	2.4
	Zeros of Polynomial Functions	2.5
	Rational Expressions	p6
	Rational Functions and Their Graphs	2.6
	Solving Rational Equations	
	Polynomial and Rational Inequalities	2.7
Topic Exponentials and Logarithmic Ch. 3	Exponents and Scientific Notation	p2
	Radical and Rational Exponents	p3
	Exponential Functions	3.1
	Logarithmic Functions	3.2
	Properties of Logarithms	3.3
	Exponential and Logarithmic Equations	3.4
	Exponential Growth and Decay; Modeling Data	3.5
Final Review and Final Exams		

Introductory PreCalculus

Introductory PreCalculus - Semester 2		
Topic		Resource
Topic Systems Ch. 7	Systems of Linear Equations in Two and Three Variables	7.1 – 7.2
	Partial Fractions	7.3
	Systems of Nonlinear Equations in Two Variables	7.4
	Systems of Inequalities (supplement with nonlinear)	7.5
	Linear Programming	7.6
	Review-Distance and Midpoint Formulas; Circles	1.9
Topic Matrices Ch. 8	Matrix Solutions to Linear Systems	8.1
	Inconsistent and Dependent Systems and their Applications	8.2
	Matrix Operations and Their Applications	8.3
	Multiplicative Inverses of Matrices and Matrix Equations	8.4
	Determinants and Cramer's Rule	8.5
Topic Conics Ch. 9	The Ellipse Circles	9.1
	The Hyperbola	9.2
	The Parabola	9.3
	Parametric Equations - optional	9.5
Topic Sequences, Series, and Probability Ch. 10	Sequences and Summation Notation	10.1
	Arithmetic Sequences and Series	10.2
	Geometric Sequences and Series	10.3
	The Binomial Theorem - optional	10.5
	Counting Principles, Permutations and Combinations	10.6
	Probability	10.7
Topic Limits Ch. 11 optional	Finding Limits Using Tables and Graphs	11.1
	Finding Limits Using Properties of Limits	11.2
	Limits and Continuity	11.3
	Introduction to Derivatives	11.4
Final Review and Final Exams		

2024-2025

PreCalculus w/Trigonometry Course Guide

#2231/2232 PreCalculus w/Trig

Course Description

This is a one-year honors level course designed to teach the basic fundamentals of pre-calculus with the trigonometry. The major topics of study are: domain and range of advanced functions; composition of functions; rational and polynomial inequalities; complex numbers; powers and roots; exponential and logarithmic functions; trigonometric and circular functions; Cartesian and polar forms of equations; vectors; sequences and series; conics sections; systems of nonlinear equations; and limits. Throughout the year, students will continue to develop the ability to reason and communicate mathematically, apply learned concepts to new problem-solving situations, and exhibit increased confidence in their ability to solve mathematical problems. Graphing calculators are required. Pre-requisite into this class is Algebra 2 with a C or better.

PreCalculus with Trigonometry

PreCalculus w/Trig - Semester 1		
Topic		Resource
Review - Ch. 1 **1 week**	Basics of Functions and Their Graphs	1.2
	More on Functions and Their Graphs	1.3
	Linear Functions	1.4
	Transformations of Functions	1.6
	Combinations of Functions; Composite Functions	1.7
	Modeling with Functions	1.10
Review - Ch. 2 **3 weeks**	Quadratic Functions	2.2
	Polynomial Functions and Their Graphs	2.3
	Dividing Polynomials; Remainder and Factor Theorems	2.4
	Zeros of Polynomial Functions	2.5
	Rational Functions and Their Graphs	2.6
	Polynomial and Rational Inequalities	2.7
Review - Ch. 3 **2 weeks**	Radical and Rational Exponents	p3
	Exponential Functions	3.1
	Logarithmic Functions	3.2
	Properties of Logarithms	3.3
	Exponential and Logarithmic Equations	3.4
	Exponential Growth and Decay; Modeling Data	3.5
Ch. 4 **1 wk**	Angles and Radian Measure	4.1
	Trigonometric Functions: The Unit Circle	4.2
Be Here by Fall Break		
Ch. 4 (cont) **5.5 weeks**	Trigonometric Functions: The Unit Circle	4.2
	Right Triangle Trig	4.3
	Trigonometric Functions of Any Angle	4.4
	Graphs of Sine and Cosine Functions	4.5
	Graphs of Other Trig Functions	4.6
	Inverse Trig Functions	4.7
	Applications of Trig Functions	4.8
Ch. 6 **3 weeks**	The Law of Sines	6.1
	The Law of Cosines	6.2
	Vectors	6.6
	The Dot Product (optional)	6.7
Final Review and Final Exams		

PreCalculus with Trigonometry

PreCalculus w/Trig - Semester 2		
Topic		Resource
Ch. 5 **5 weeks**	Verifying Trig Identities	5.1
	Sum and Difference Formulas	5.2
	Double-Angle, Power Reducing, and Half-Angle Formulas	5.3
	Trigonometric Equations	5.5
Ch. 6 (cont) **2 weeks**	Polar Coordinates	6.3
	Graphs of Polar Equations	6.4
	Complex Numbers in Polar Form; DeMoivre's Theorem.	6.5
Ch. 7 **3 weeks**	Review - Systems of Linear Equations in Two and Three Variables	7.1 – 7.2
	Partial Fractions	7.3
	Systems of Nonlinear Equations in Two Variables	7.4
	Systems of Inequalities (supplement with nonlinear)	7.5
	Linear Programming	7.6
	Review-Distance and Midpoint Formulas; Circles	1.9
Be Here by Spring Break		
Ch. 9 **3 weeks**	The Ellipse Circles?	9.1
	The Hyperbola	9.2
	The Parabola	9.3
	Parametric Equations	9.5
Ch. 10 **3 weeks**	Sequences and Summation Notation	10.1
	Arithmetic Sequences and Series	10.2
	Geometric Sequences and Series	10.3
	The Binomial Theorem	10.5
Ch. 11 **2 weeks**	Finding Limits Using Tables and Graphs	11.1
	Finding Limits Using Properties of Limits	11.2
	Limits and Continuity	11.3
	Introduction to Derivatives	11.4
Final Review and Final Exams		

2024-2025

Advanced Algebra 3
Course Guide

#2241/2242 Advanced Algebra 3

Course Description

This is a one-year non-honors level course designed to build upon the concepts presented in Algebra 2. Students will apply Algebra 2 concepts in real-life contexts to strengthen and expand problem solving, numerical literacy and application skills in preparation for post-secondary choices including the world of work, college, technical training or the military. Mathematics topics that will be imbedded into the modules include: Functions (Linear, Quadratics, Exponentials, Logarithms, Rational, and Polynomial); Geometry and Measurement, Linear Programming, Probability and Data Analysis. Financial Math is a strong second semester focus. Teacher and student materials can be found in the Math Resources SharePoint. Graphing Calculators are required.

Advanced Algebra 3

Advanced Algebra 3 – Semester 1		
Topics		Resource
College and Career Readiness 7 weeks	Arithmetic-Numbers and Operations	S1-Q1, week #1
	Pre-Algebra	S1-Q1, week #2
	Elementary Algebra	S1-Q1, week #3
	Intermediate Algebra	S1-Q1, week #4
	Coordinate Geometry	S1-Q1, week #5
	Plane Geometry/Trigonometry	S1-Q1, week #6-7
Medical Math 9	Number Basics	S1-Q2, Ch 1
	Key Calculations	S1-Q2, Ch 2
	Measurement Systems	S1-Q2, Ch 3
	Medications	S1-Q2, Ch 4
	Temperature and Time	S1-Q2, Ch 5
	Charts and Graphs	S1-Q2, Ch 6

Advanced Algebra 3

Advanced Algebra 3 – Semester 2		
	Topics	Resource
Finance Consumer Math 12 weeks	Earning Money	S2-Q3, Ch 1
	Buying Food	S2-Q3, Ch 2
	Shopping for Clothes	S2-Q3, Ch 3
	Managing a Household	S2-Q3, Ch 4
	Buying and Maintaining a Car	S2-Q3, Ch 5
	Working with Food	S2-Q3, Ch 6
	Improving your Home	S2-Q3, Ch 7
	Traveling	S2-Q3, Ch 8
	Budgeting your Money	S2-Q3, Ch 9
	Interest	S2-Q3, Ch 10
	Taxes	S2-Q3, Ch 11
Project Based Finance Find Guest Speakers	Life After High School o Job possibilities immediately after HS o Summer School Opportunities o Community Volunteering o Career Choices* o College/trade/certification for those career choices	
	Location o Cost of living around the nation o Population statistics o Renting an Apartment o Cost of moving	
	Budgeting o Salary comparison with different education levels o Grocery shopping budgeting o Monthly luxury budgeting	
	Buying a Car o Cost of a car	
	Scenarios (Students are given 4 scenarios of different lives: - education level, careers, location, and budget)	

Advanced Algebra 3

Possible Optional Topics and Resources – Semester 2		
Unit - Finance 12 weeks	Overview of Personal Finance	Ch. 1
	The Financial Plan	Ch. 2
	Financial Decision Making	Ch. 3
	Budget and balance Sheets – Your Personal Financial Statements	Ch. 4
	Obtaining and Protecting your Credit	Ch. 5
	Exponential and Logarithmic Functions	Ch. 6
	The Value of Money	Ch. 7
	Personal Loans and Purchasing Decisions	Ch. 8
	Financial Assets and Liabilities	Ch. 9
	Credit Cards and Other Forms of Credit	Ch. 10
Unit – Health Issues 10 weeks	Statistics	Ch. 22
	Metric System	Ch. 23
	Human Body Math	Ch. 24
	Optimizing with Linear Programming	Ch. 25
	Set Theory	Ch. 26
Unit - Technology	Systems of Equations	Ch. 16
	Equation of a Circle	Ch. 17
	Modular Arithmetic	Ch. 18
	Random Numbers	Ch. 19
	Cryptography and Check Digits	Ch. 20
	Functions and Their Graphs	Ch. 21
Unit – Fine Arts	Polynomials	Ch. 11
	Matrices	Ch. 12
	Patterns and Series	Ch. 13
	Fractals	Ch. 14
	Parametric Equations and Polar Equations of Conics	Ch. 15

2024-2025

Probability/Statistics/Discrete Course Guide

#2243/2244 Prob/Stat/DM

Course Description

This is a one-year non honors level course designed to provide students with opportunities to explore concrete concepts, probability, statistics and discrete mathematics. The first semester is spent studying set theory, probability and statistics; experimental design, sampling techniques, distributions, measures of center, spread and position. Students will be provided with opportunities to collect and analyze data relevant to students and draw conclusions based on this analysis. The second semester will involve a confidence intervals, hypothesis testing, correlation, linear regression, linear programming, finance, and number representations. Throughout the course, emphasis will be given to providing students with numerous opportunities to model problem situations using hands-on materials, graphing calculators, and computers. The pre-requisite into this class is passing both semesters of Algebra 2.

Probability/Statistics/Discrete Math

Prob/Stat/DM – Semester 1		
Topic		Resource
Unit 1 3 weeks	Basic Set Concepts Subsets Venn Diagrams and Set operations Set operations and Venn Diagrams with three sets Survey problems	Chapter 2 Thinking Mathematically
Unit 2 3.5 weeks	The fundamental counting principal Permutations and Combinations Fundamentals of probability Probability with the counting Events involving NOT and OR Events involving AND Conditional probability	Chapter 11 Thinking Mathematically
Unit 3 2 week	Overview of statistics Data classification (no Levels of Measurement, students need Types of Data only) Experimental design	Chapter 1.1-1.3 Elementary Statistics
Unit 4 2.5 weeks	Frequency distributions and their graphs More graphs and displays Measures of central tendency, spread and position	Chapter 2.1-2.5 Elementary Statistics
Unit 5 1 week	Probability distributions Binomial distributions Expected value	Chapter 4.1-4.2 Elementary Statistics
Unit 6 4 weeks	Normal distributions Normal distributions: finding probabilities Normal distributions: finding Values Sampling distributions and the Central Limit Theorem Normal approximation to Binomial distributions	Chapter 5.1-5.4, 5.5 Elementary Statistics

Probability/Statistics/Discrete Math

Prob/Stat/DM – Semester 2		
	Topic	Resource
Unit 7 3 weeks	Confidence Intervals for the mean (large samples) Confidence Intervals for the mean (small samples) Confidence Intervals for population proportions	Chapter 6.1-6.3 Elementary Statistics
Unit 8 3 weeks	Introduction to Hypothesis Testing Hypothesis Testing for the mean (large samples) Hypothesis Testing for the mean (small samples) Hypothesis Testing for proportions	Chapter 7.1-7.4 Elementary Statistics
Unit 9 2.5 weeks	Correlation Linear Regression (include the meaning of r^2 in this topic)	Chapter 9.1-9.2, r^2 - p.499 Elementary Statistics
Unit 10 4 weeks	Percent, sales tax, and income tax Simple interest Compound interest Annuities, stocks and bonds (Introduce Stocks and Bonds but leave out the mathematics of them) Installment buying Amortization and the cost of home ownership	Chapter 8.1-8.6 Thinking Mathematically
options for final five weeks		
Unit 11 3 weeks	Graphs, Paths and Circuits Euler Paths and Euler Circuits Hamilton Paths and Hamilton Circuits Trees	Chapter 14.1-14.4 Thinking Mathematically
Unit 12 2 weeks	Number bases in positional systems Computation in positional systems	Chapter 4 Thinking Mathematically
Unit 13 5 weeks	Statements, Negation and Quantified Statements Compound Statements and Connectives Truth Tables for Negation, Conjunction and Disjunction Truth Tables for the Conditional and Biconditional Equivalent Statements, Variation of Conditional Statements and DeMorgans Laws Arguments and Truth Tables Arguments and Euler Diagrams	Chapter 3 Thinking Mathematically

2024-2025

PreCollege Math Course Guide

#2229/2230 Pre-College Math

Course Description

PreCollege Math is intended to provide the students the opportunity to engage in the content in Units 1-7. There is an optional Matrices Unit that you could put in after Unit 4 and additional units if students are finding more success. Please encourage the students that achieve success in Units 1-7 to take a college placement test before enrolling in college.

PreCollege Math

PreCollege Math – Semester One		
Topics		Book Reference
Unit 1 25 days	Fractions	1.1
	Order of Operations	1.2
	Variables, Expressions and Equations	1.3
	Real Numbers and the Number Line	1.4
	Adding and Subtracting Real Numbers	1.5
	Multiplying and Dividing Real Numbers	1.6
	Properties of Real Numbers	1.7
	Simplifying Expressions	1.8
Unit 2 18 days	The Addition Property of Equality	2.1
	The Multiplication Property of Equality	2.2
	More on Solving Linear Equations	2.3
	An Introduction to Applications of Linear Equations	2.4
	Formulas and Additional Applications from Geometry	2.5
	Ratio, Proportion, and Percent	2.6
	Further Applications of Linear Equations	2.7
	Solving Linear Inequalities	2.8
Unit 3 18 days	Linear Equations in Two Variable; Coordinate System	3.1
	Graphing Linear Equations in Two Variable	3.2
	Slope of the Line	3.3
	Writing and Graphing Equations of Lines	3.4
	Graphing Linear Inequalities in two Variables	3.5
	Introduction to Functions	3.6
Unit 4 18 days	Solving Systems of Linear Equations by Graphing	4.1
	Solving Systems of Linear Equations by Substitution	4.2
	Solving Systems of Linear Equations by Elimination	4.3
	Applications of Linear Systems	4.4
	Solving Systems of Linear Inequalities	4.5

PreCollege Math – Semester Two		
Topics		Book References
Optional Unit on Matrices	Matrix operations and system solving	Math Resources
Unit 5 20 days	The Product Rule and Power Rules for Exponents	5.1
	Integer Exponents and the Quotient Rule	5.2
	An Application of Exponents: Scientific Notation	5.3
	Adding and Subtracting Polynomials: Graphing	5.4
	Multiplying Polynomials	5.5
	Special Products	5.6
	Dividing Polynomials	5.7
Unit 6 20 days	The Greatest Common Factor; Factor by Grouping	6.1
	Factoring Trinomials	6.2
	More on Factoring Trinomials	6.3
	Special Factoring Techniques	6.4
	Solving Quadratic Equations by Factoring	6.5
	Applications of Quadratic Equations	6.6
Unit 7 20 days	The Fundamental Property of Rational Expressions	7.1
	Multiplying and Dividing Rational Expressions	7.2
	Least Common Denominators	7.3
	Adding and Subtracting Rational Expressions	7.4
	Complex Fractions	7.5
	Solving Equations with Rational Expressions	7.6
	Applications of Rational Expressions	7.7
	Variation	7.8
Unit 8 15 days Optional	Evaluating Roots	8.1
	Multiplying, Dividing, and Simplifying Radicals	8.2
	Adding and Subtracting Radicals	8.3
	Rationalizing the Denominator	8.4
	More Simplifying and Operations with Radicals	8.5
	Solving Equations with Radicals	8.6
	Using Rational Numbers as Exponents	8.7
Unit 9 15 days Optional	Solving Quadratic Equations by the Square Root Property	9.1
	Solving Quadratic Equations by Completing the Square	9.2
	Solving Quadratic Equations by the Quadratic Formula	9.3
	Complex Numbers	9.4
	More on Graphing Quadratic Equations	9.5

2024-2025

Special Education
Mathematics - Course Guides

The Secondary Math Course Guides provide the standards aligned to topics and resources available in the currently adopted text. It is the teacher's professional responsibility to ensure that their students are prepared for the next course in the Pathway. This can only be accomplished when all grade level/course standards are taught with student engagement and an expectation of rigor in mathematics.

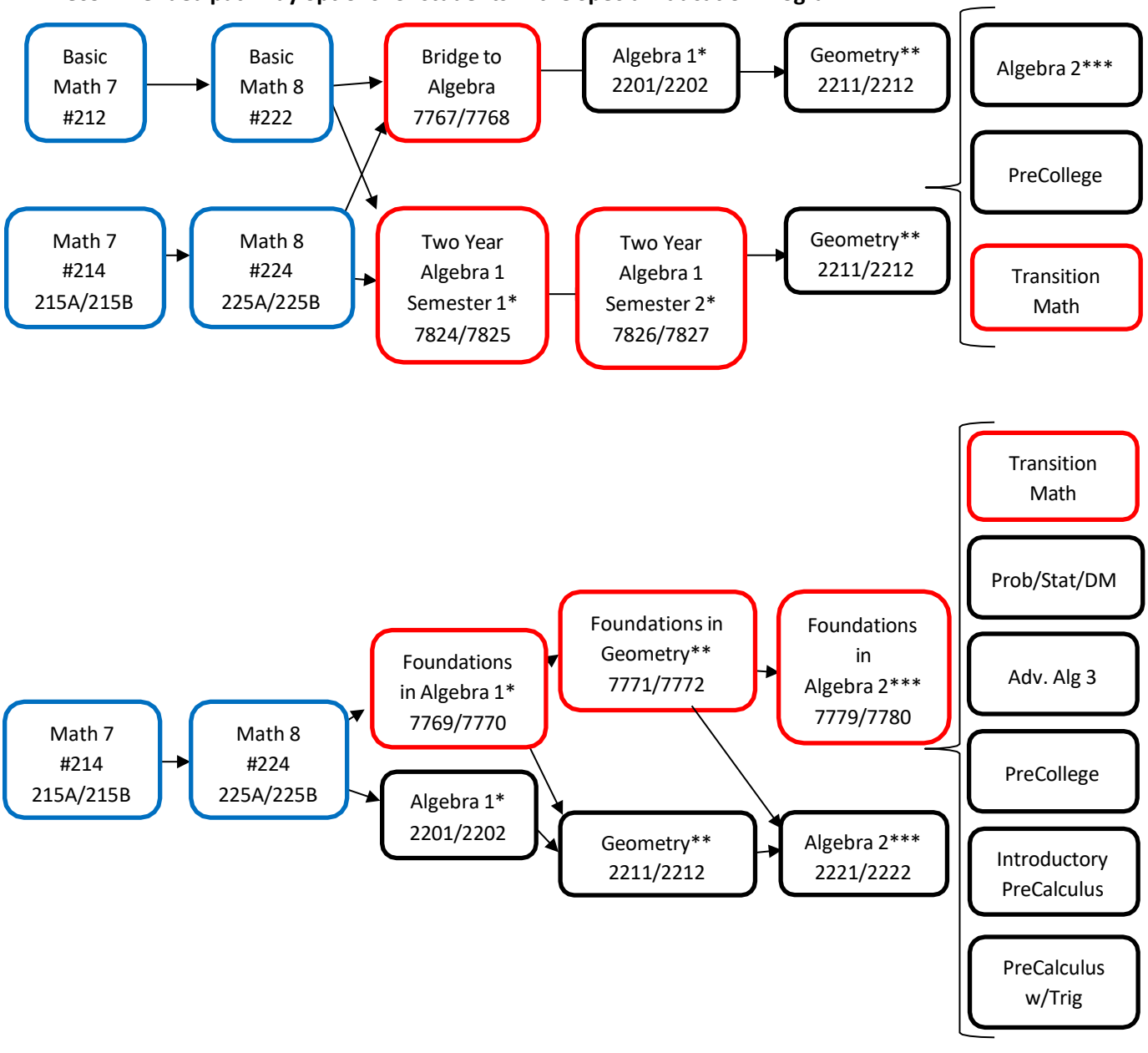
Excellence in Education, Every Student, Every Day, to Graduation

Grades 7-12, Pathways to a Standard Diploma for Students in the Special Education program

Washoe County School District
Every Child, By Name And Face, To Graduation

Grade 7 Options | Grade 8 Options | Grade 9 Options | Grade 10 Options | Grade 11 Options | Grade 12 Options

Recommended pathway options for students in the Special Education Program



* Equivalent Algebra 1 courses use the same curriculum and common District Final S1 and S2.
** Equivalent Geometry courses use the same curriculum and common District Final S1 and S2
***Equivalent Algebra 2 courses use the same curriculum and common District Final S1 and S2

NOTE: Not all course sequences are offered at every High School

2024-2025

Special Education Bridge to Algebra Course Guide

#7767/7768 Bridge to Algebra

(This is a one-year course offered by the Special Education Department to prepare Special Education students for Algebra 1)

Bridge to Algebra Pacing Days in Q1-39, Q2-44, Q3-48, Q4-49)

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
Chapter - Topic	Days	Chapter - Topic	Days
2 – Operations with Integers	17	4 – Powers and Roots	18
3 – Operations w/Rational Numbers	27	5/6 – Ratio, Proportion, & Percents	17
1 – The Language of Algebra	26	7 – Algebraic Expressions	22
Semester Flex/Review Days	7	8 – Equations and Inequalities	28
Final Exams	4	Semester Flex/Review Days	6
		Final Exams	4
End of Semester 1		End of Semester 2	

SPED Bridge to Algebra

Chapter 2: Operations with Integers

Envision Lesson and Topic	Suggested Pacing	Standards
2-1 Integers and Absolute Value	2	Prep for 7.NS.A.1 & 7.NS.A.1a
2-2 Inquiry Lab: Adding Integers (Algebra Tiles) Adding Integers	3	**7.NS.A.1** **7.NS.A.1a** **7.NS.A.1b** **7.NS.A.1d** **7.NS.A.3** **7.EE.B.3**
2-3 Inquiry Lab: Subtracting Integers (Algebra Tiles) Subtracting Integers	3	**7.NS.A.1** **7.NS.A.1a** **7.NS.A.1c** **7.NS.A.1d** **7.NS.A.3** **7.EE.B.3**
2-4 Inquiry Lab: Multiplying Integers (Algebra Tiles) Multiplying Integers	3	**7.NS.A.2** **7.NS.A.2a** **7.NS.A.2c** **7.NS.A.3** **7.EE.B.3**
2-5 Dividing Integers	2	**7.NS.A.2** **7.NS.A.2B** **7.NS.A.2c** **7.NS.A.3** **7.EE.B.3**
Review and Assess	2	
Essential Standards Reteach and Intervention	2	

Suggested Module Pacing

August/September 2024

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
7.NS.A.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. **a.** 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. **b.** 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. **c.** 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. **d.** Apply properties of operations as strategies to add and subtract rational numbers.
7.NS.A.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. **a.** 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. **b.** 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. **c.** Apply properties of operations as strategies to multiply and divide rational numbers. **d.** 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.
7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
7.EE.B.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.

SPED Bridge to Algebra

Chapter 3: Operations with Rational Numbers

Envision Lesson and Topic	Suggested Pacing	Standards	
3-1 Inquiry Lab: Fractions and Decimals Fractions and Decimals (practice by hand and with a calculator)	6	**7.NS.A.2** **7.NS.A.2d**	8.NS.A.1 **7.EE.B.3**
3-2 Rational Numbers (positive/negative fractions, decimals & integers)	4	**7.NS.A.2** **7.NS.A.2d**	8.NS.A.1 **7.EE.B.3**
3-3 Multiplying Rational Numbers (use area models, not tricks)	4	**7.NS.A.2** **7.NS.A.2a** **7.NS.A.2c**	**7.NS.A.3** **7.EE.B.3**
3-4 Dividing Rational Numbers (use strategies for division, not tricks)	3	**7.NS.A.2** **7.NS.A.2a** **7.NS.A.2c**	**7.NS.A.3** **7.EE.B.3**
3-5 Adding and Subtracting like Fractions	2	**7.NS.A.1** **7.NS.A.1d**	**7.NS.A.3** **7.EE.B.3**
3-6 Adding and Subtracting unlike Fractions	5	**7.NS.A.2** **7.NS.A.2a** **7.NS.A.2c**	**7.NS.A.3** **7.EE.B.3**
Review and Assess	3		

Suggested Module Pacing

September/October 2024

S	M	T	W	TH	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	**1**	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
7.NS.A.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. **a.** 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. **b.** 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. **c.** 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. **d.** Apply properties of operations as strategies to add and subtract rational numbers.
7.NS.A.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. **a.** 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. **b.** 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. **c.** Apply properties of operations as strategies to multiply and divide rational numbers. **d.** 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.
7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
Know that there are numbers that are not rational, and approximate them by rational numbers.	
8.NS.A.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; rational numbers show that the decimal expansions repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

SPED Bridge to Algebra

Chapter 1: The Language of Algebra

Envision Lesson and Topic	Suggested Pacing	Standards	
1-1 A Plan for Problem Solving	1	7.NS.A.3 7.EE.B.3	
1-2 Words and Expressions	3	7.NS.A.3	
1-3 Inquiry Lab: Rules and Exponents (Toothpicks) Variables and Expressions	4	7.NS.A.3 7.EE.B.3	
1-4 Properties of numbers	2	7.EE.A.1 7.EE.A.2	
1-5 Problem Solving Strategies	2	7.NS.A.3 7.EE.B.3	
1-6 Ordered Pairs and Relations	4	7.RP.A.2a 7.RP.A.2b	7.RP.A.2d 8.EE.B.5
1-7 Words, Equations, Tables	4	7.EE.B.4	
2-6 Graphing in Four Quadrants	2	7.RP.A.2a 7.RP.A.2b	7.RP.A.2d 8.EE.B.5
Review and Assess	4		

Suggested Module Pacing

October/November/December 2024

S	M	T	W	TH	F	S
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	**1**	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
Use properties of operations to generate equivalent expressions.	
7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
7.EE.A.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."
Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
7.EE.B.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.
7.EE.B.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. **a.** Solve word problems leading to equations of the form $px+q=r$ and $p(x+q)=r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?
Analyze proportional relationships and use them to solve real-world and mathematical problems.	
7.RPA.2	Recognize and represent proportional relationships between quantities. **a.** 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. **b.** Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. **d.** 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.
Understand the connections between proportional relationships, lines, and linear equations.	
8.EE.B.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.

SPED Bridge to Algebra

Chapter 4: Powers and Roots

Envision Lesson and Topic	Suggested Pacing	Standards
4-1 Powers and Exponents	2	**8.EE.A.1**
4-2 Negative Exponents	2	**8.EE.A.1**
4-3 Multiplying and Dividing Monomials	2	**8.EE.A.1**
4-4 Scientific Notation	2	**8.EE.A.1** 8.EE.A.3 8.EE.A.4
4-5 Compute with Scientific Notation Inquiry Lab: Scientific Notation Using Technology	4	8.EE.A.3 8.EE.A.4
4-6 Square Roots	2	8.NS.A.2 8.EE.A.2
4-7 The Real Number System	2	8.NS.A.1 8.NS.A.2 8.EE.A.2
Review and Assess	2	

Suggested Module Pacing

January 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Know that there are numbers that are not rational, and approximate them by rational numbers.	
8.NS.A.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; rational numbers show that the decimal expansions repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
8.NS.A.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 $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.
Work with radicals and integer exponents.	
8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.
8.EE.A.2	Use the square foot 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 $\sqrt{2}$ is irrational.
8.EE.A.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.
8.EE.A.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.

SPED Bridge to Algebra

Chapter 5/6: Ratio, Proportion, & Percent

Envision Lesson and Topic	Suggested Pacing	Standards	
5-1 Ratios (discuss equivalence , ex: 12 inches = 1 foot)	3	7.RP.A.1	
5-2 Unit Rates (Use double number lines (Grade 6) to assist with reasoning)	4	7.RP.A.1	
5-5 Proportional and Nonproportional Relationships	2	7.RP.A.2 7.RP.A.2a	7.RP.A.2b 7.RP.A.2c
5-7 Solving Proportions (Use double number lines (Grade 6) to assist with reasoning)	4	7.RP.A.2 7.RP.A.2b	7.RP.A.2c 7.RP.A.3
6-1 Using the Percent Proportion	2	7.RP.A.2 7.RP.A.2c	7.RP.A.3 7.EE.B.3
Review and Assess	2		

Suggested Module Pacing

February 2025

S	M	T	W	TH	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	1

Analyze proportional relationships and use them to solve real-world and mathematical problems.	
7.RP.A.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
7.RP.A.2	Recognize and represent proportional relationships between quantities. **a.** 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. **b.** Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. **c.** 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.
7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.
Use properties of operations to generate equivalent expressions.	
7.EE.B.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 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.

SPED Bridge to Algebra

Chapter 7: Algebraic Expressions

Envision Lesson and Topic	Suggested Pacing	Standards
7-1 The Distributive Property	1	7.NS.A.2 7.NS.A.2a 7.EE.A.1 7.EE.A.2
7-2 Inquiry Lab: Simplifying Algebraic Expressions Simplifying Algebraic Expression	6	7.EE.A.1 7.EE.A.2
7-3 Adding Linear Expressions (Algebra Tiles)	3	7.EE.A.1
7-4 Subtracting Linear Expressions (Algebra Tiles)	3	7.EE.A.1
7-5 Inquiry Lab: Factoring Linear Expressions (undistribute) Factoring Linear Expressions (Algebra Tiles)	6	7.EE.A.1
Review and Assess	3	

Suggested Module Pacing

February/March/April 2025

S	M	T	W	TH	F	S
23	24	25	26	27	28	**1**
2	3	4*	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	**1**	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
7.NS.A.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. **a.** 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.
Use properties of operations to generate equivalent expressions.	
7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
7.EE.A.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."

SPED Bridge to Algebra

Chapter 8: Equations and Inequalities

Envision Lesson and Topic	Suggested Pacing	Standards	
8-1 Solving Equations with Rational Coefficients	3	7.EE.B.4	8.EE.C.7 8.EE.C.7b
8-2 Inquiry Lab: Solving Two-Step Equations Solving Two-Step Equations (Algebra Tiles)	6	7.EE.B.4 7.EE.B.4a	8.EE.C.7 8.EE.C.7b
8-3 Writing Equations	3	7.EE.B.4 7.EE.B.4a	8.EE.C.7 8.EE.C.7b
8-4 Inquiry Lab: More Two-Step Equations More Two-Step Equations (Algebra Tiles)	3	7.EE.B.4 7.EE.B.4a	8.EE.C.7 8.EE.C.7b
8-5 Inquiry Lab: Solving Equations with Variables on Each Side Solving Equations with Variables on Each Side (Algebra Tiles)	4	7.EE.B.4 7.EE.B.4a	8.EE.C.7 8.EE.C.7b
8-6 Inequalities (with Number Lines)	2	7.EE.B.4	
8-7 Solving Inequalities (with Number Lines)	2	7.EE.B.4 7.EE.B.4b	
8-8 Solving Multi-Step Equations	3	7.EE.B.4 7.EE.B.4a 7.EE.B.4b	8.EE.C.7 8.EE.C.7a 8.EE.C.7b
Review and Assess	2		

Suggested Module Pacing

April/May 2025

S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
7.EE.B.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. **a.** Solve word problems leading to equations of the form $px+q=r$ and $p(x+q)=r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? b. Solve word problems leading to inequalities of the form $px+q>r$ or $px+q<r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. 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.
Analyze and solve linear equations and pairs of simultaneous linear equations.	
8.EE.C.7	Solve linear equations in one variable. **a.** 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). **b.** Solve linear equations with **rational number coefficients**, including equations whose solutions require expanding expressions using the distributive property and collecting like terms

2024-2025

SPED Two - Year Algebra 1 Course Guide

Special Education Two–Year Algebra 1
#7824/7825 Year One Algebra 1
#7826/7827 Year Two Algebra 1

(This is a two-year Algebra 1 Course offered by the Special Education Department.)

#7824/7825 Year One Algebra 1 Pacing

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
S1-Topics	Days	S2-Topics	Days
1 - Solving Equations & Inequalities	21	4 - Systems of Equations & Inequalities	31
2 - Linear Equations	26	5 – Piecewise Functions	28
3 - Linear Functions	22	Semester Flex/Review Days	32
Semester Flex/Review Days	6	Final Exams	4
Final Exams	4		
End of Semester 1 Year One		End of Semester 2 Year One	

#7826/7827 Year Two Algebra 1 Pacing

*Each topic has flexible days included in the schedule for review, reteaching, extension, or assessment as needed throughout the topic.			
S1-Topics	Days	S2-Topics	Days
6 – Exponents & Exponential Functions	33	8 - Quadratic Functions	28
7 - Polynomials and Factoring	33	9 – Solving Quadratic Equations	42
Semester Flex/Review Days	11	Semester Flex/Review Days	22
Final Exams	4	Final Exams	4
End of Semester 1 Year Two		End of Semester 2 Year Two	

SPED Year One Algebra 1 (S1)

Topic 1: Solving Linear Equations and Inequalities

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
1-2 Solving Linear Equations Supplement with simplify expressions and equations with more fractions.	3	**HSA.CED.A.1** HSA.REI.A.1 **HSA.REI.B.3**	
1-3 Solving Equations with a Variable on Both Sides	3	**HSA.CED.A.1** **HSA.REI.B.3**	**HSA.REI.A.1** HSN.Q.A.2
1-4 Literal Equations and Formulas Prioritize transforming equations to slope-intercept form.	3	**HSA.CED.A.1** **HSA.CED.A.4**	HSN.Q.A.1
1-5 Solving Inequalities in One Variable	3	**HSA.CED.A.1** **HSA.CED.A.3** **HSA.REI.B.3**	
1-6 Compound Inequalities	3	**HSA.CED.A.1** **HSA.CED.A.3** **HSA.REI.B.3**	
Review and Test	4		
Essential Standards Reteach and Intervention	2		

Suggested Module Pacing

August/September 2024

S	M	T	W	TH	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14

Reason quantitatively and use units to solve problems.	
HSN.Q.A.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs.
HSN.Q.A.2	Define appropriate quantities for the purpose of descriptive modeling.
Create equations that describe numbers or relationships.	
HSA.CED.A.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.
HSA.CED.A.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.
HSA.CED.A.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.
Understand solving equations as a process of reasoning and explain the reasoning.	
HSA.REI.A.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.
Solve equations and inequalities in one variable.	
HSA.REI.B.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

SPED Year One Algebra 1 (S1)

Topic 2: Linear Equations

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
2-1 Slope-Intercept Form	6	HSA.CED.A.2 HSS.ID.C.7	
2-2 Point-Slope Form (Supplement (h, k) form)	6	HSS.ID.C.7 HSF.LE.A.2	HSA.CED.A.2
2-3 Standard Form (Convert to other forms: slope intercept, (h,k) form and point-slope)	4	HSA.CED.A.3 HSS.ID.C.7	HSA.CED.A.2
2-4 Parallel and Perpendicular Lines (Introduce and identify Parallel and Perpendicular lines understanding slopes and graphs)	4	HSA.CED.A.2 HSA.CED.A.4	HSF.IF.C.7a HSG.GPE.B.5
Review and Test	4		
Essential Standards Reteach and Intervention	2		

Suggested Module Pacing

September/October 2024

S	M	T	W	TH	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

Create equations that describe numbers or relationships.	
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
HSA.CED.A.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.
HSA.CED.A.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.
Analyze functions using different representations.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **a.** Graph linear and quadratic functions show intercepts, maxima and minima.
Interpret expression for functions in terms of the situation they model.	
HSF.LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).
Interpret linear models.	
HSS.ID.C.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
Use coordinates to prove simple geometric theorems algebraically.	
HSG.GPE.B.5	Use the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the slope of a line parallel or perpendicular to a given line that passes through a given point).

SPED Year One Algebra 1 (S1)

Topic 3: Linear Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
3-1 Relations and Functions	6	HSF.IF.A.1	
3-2 Linear Functions (Write Linear Functions from tables, ordered pairs, and with slope and intercept)	6	HSF.IF.A.2 HSF.IF.B.5	HSF.IF.A.1 HSF.LE.A.2
3-5 Optional: Scatter Plots and Lines of Fit	4	HSS.ID.B.6a	HSS.ID.B.6 HSS.ID.B.6c HSS.ID.C.7
3-4 Optional: Arithmetic Sequence (emphasis on function notation, emphasis on explicit and how it relates to (h,k) form, expose to subscript notation and recursive)	2	HSF.IF.A.3 HSF.BF.A.2	HSF.BF.A.1 HSF.LE.A.1 HSF.LE.A.1b HSF.LE.A.2
Review and Test	2		
Essential Standards Reteach and Intervention	2		

Suggested Module Pacing

November/December 2024

S	M	T	W	TH	F	S
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Build a function that models a relationship between two quantities.	
HSF.BF.A.1	Write a function that describes a relationship between two quantities. **a.** Determine an explicit expression, a recursive process, or steps for calculation from a context.
HSF.BF.A.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.
Understand the concept of a function and use function notation.	
HSF.IF.A.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, the $f(x)$ denotes the output of f corresponding to input x. The graph of f is $y=f(x)$.
HSF.IF.A.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
HSF.IF.A.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.5	Relate the domain of a function to its graph and to the quantitative relationship it describes.
Interpret expression for functions in terms of the situation they model.	
HSF.LE.A.1	Distinguish between situations that can be modeled with linear functions and with exponential functions. **b.** Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
HSF.LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).
Summarize, represent and interpret data on two categorical and quantitative variables.	
HSS.ID.B.6	Represent data on two quantitative variables on a scatter plot & describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in context of data. c. Fit a linear function for a scatter plot that suggests a linear association.
Interpret linear models.	
HSS.ID.C.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in context.

SPED Year One Algebra 1 (S2)

Topic 4: Systems of Linear Equations and Inequalities

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
4-1 Solving Systems of Equations by Graphing	5	**HSA.REI.C.6** HSA.REI.D.11	**HSF.IF.C.9**
4-2 Solving Systems of Equations by Substitution	5	**HSA.CED.A.3** **HSA.REI.C.6**	HSA.REI.D.11
4-3 Solving Systems of Equations by Elimination	5	**HSA.CED.A.3** HSA.REI.C.5	
4-4 Linear Inequalities in Two Variables	5	**HSA.CED.A.3** **HSA.REI.D.12**	
4-5 Systems of Linear Inequalities	5	**HSA.CED.A.3** **HSA.REI.D.12**	
Review and Test	4		
Essential Standards Reteach and Intervention	2		

Suggested Module Pacing

January/February 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	**1**
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22

Create equations that describe numbers or relationships.	
HSA.CED.A.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.
Solve systems of equations.	
HSA.REI.C.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.
HSA.REI.C.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.	
HSA.REI.D.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 absolute value equations/functions.
HSA.REI.D.12	Graph the solutions to 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 intersections of the corresponding half-planes.
Analyze functions using different representations.	
HSF.IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically and in table or a verbal description.

SPED Year One Algebra 1 (S2)

Topic 5: Piecewise Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
1-7 Absolute Value Equations	5	**HSA.CED.A.1**	HSA.REI.D.11 **HSF.IF.A.1**
5-1 The Absolute Value Function (All notations of end behaviors)	7	**HSF.IF.B.4** HSF.IF.B.6	**HSF.IF.C.7b**
5-2 Optional: Piecewise-Defined Functions (linear pieces over a restricted domain, absolute value as a piecewise function)	4	**HSF.IF.A.2** **HSF.IF.B.4** **HSF.IF.C.7b**	HSF.IF.B.6
5-4 Transformations of (Piecewise-Defined) Absolute Value Functions	6	**HSF.BF.B.3**	**HSF.IF.C.7b** **HSF.IF.C.9**
Review and Test	4		
Essential Standards Reteach and Intervention	2		

Suggested Module Pacing

February/March/April 2025

S	M	T	W	TH	F	S
16	17	18	19	20	21	22
23	24	25	26	27	28	**1**
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	**1**	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19

Create equations that describe numbers or relationships.	
HSA.CED.A.1	Create equations and inequalities in one variable and use them to solve problems.
Represent and solve equations and inequalities graphically.	
HSA.REI.D.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 absolute value equations/functions.
Build new functions form existing functions.	
HSF.BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.
Understand the concept of a function and use function notation.	
HSF.IF.A.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, the $f(x)$ denotes the output of f corresponding to input x. The graph of f is $y=f(x)$.
HSF.IF.A.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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.
HSF.IF.B.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.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **b.** Graph square root, cube root and piecewise-defined functions, including step functions and absolute value functions.
HSF.IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically and in table or a verbal description.

SPED Year Two Algebra 1 (S1)

Topic 6: Exponents and Exponential Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
Supplement: Review 8th Grade exponent properties.	7		
6-1 Rational Exponents and Properties of Exponents Supplement: developmentally appropriate equations with exponents	5	HSN.RN.A.1 HSN.RN.A.2	
6-2 Exponential Functions	5	**HSF.IF.B.4** **HSFL.E.A.1**	**HSF.IF.B.5** **HSF.BF.A.1** **HSF.LE.A.1a**
6-3 Exponential Growth and Decay (Omit Compound Interest)	4	**HSF.LE.A.2** **HSF.LE.A.1a-c** HSF.LE.B.5	**HSF.IF.C.8b** **HSA.CED.A.2** **HSA.SSE.A.1b** **HSA.SSE.B.3c**
6-4 Geometric Sequences (recognize geometric sequence compared to other sequences, verify equation works for given sequence)	2	HSF.BF.A.2 **HSF.LE.A.2**	HSF.IF.A.3
6-5 Transformations of Exponential Functions (use book section as a guide)	4	**HSF.BF.B.3** **HSF.IF.B.4** **HSF.IF.C.9**	
Review and Test	5		
Essential Standards Reteach and Intervention	1		

Suggested Module Pacing

August/September/October 2024

S	M	T	W	TH	F	S
.16				**1**	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	**1**	2	3	4	5
6	7	8	9	10	11	12

Extend the properties of exponents to rational exponents.	
HSN.RN.A.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents follows from extending the properties of integer 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 $(5^{1/3})^3 = 5^{(1/3)3}$ to hold, so $(5^{1/3})^3$ must equal 5.
HSN.RN.A.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.
Create equations that describe numbers or relationships.	
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
Interpret the structure of expressions.	
HSA.SSE.A.1	Interpret expressions that represent a quantity in **terms of its context**. **b.** Interpret complicated expressions by viewing one or more of their parts as a single entity. For ex, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P.
Write expression in equivalent forms to solve problems.	
HSA.SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. **c.** Use properties of exponents to transform expressions for exponential functions.
Build a function that models a relationship between two quantities.	
HSF.BF.A.1	Write a function that describes a relationship between two quantities. **a.** Determine an explicit expression, a recursive process, or steps for calculation from a context.
HSF.BF.A.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.
Understanding the concept of a function and use function notation.	
HSF.IF.A.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.

SPED Year Two Algebra 1 (S1)

Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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.
HSF.IF.B.5	Relate the domain of a function to its graph and where applicable, to the quantitative relationship it describes.
Analyze functions using different representations.	
HSF.IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **b.** Use the process 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.
HSF.IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically and in table or a verbal description.
Construct and compare linear, quadratic, and exponential models and solve problems.	
HSF.LE.A.1	Distinguish between situations that can be modeled with linear functions and with exponential functions. **a.** Prove that linear functions can be modeled by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. **b.** Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. **c.** Recognize situations in which one quantity grows or decays by a constant percent or rate per unit interval relative to another.
HSF.LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).
Interpret expression for functions in terms of the situation they model.	
HSF.LE.B.5	Interpret the parameters in a linear or exponential function in terms of a context.

SPED Year Two Algebra 1 (S1)

Topic 7: Polynomials and Factoring

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
7-1 Adding and Subtracting Polynomials	2	HSA.APR.A.1	
7-2 Multiplying Polynomials	2	HSA.APR.A.1	
7-3 Multiplying Special Cases	2	HSA.APR.A.1	
7-4 Factoring Polynomials (Quadratics)	4	HSA.APR.A.1 HSA.SSE.A.2	
Supplement: Factor by Grouping	4		
7-5 Factoring $x^2 + bx + c$	4	HSA.SSE.A.1a	
7-6 Factoring $ax^2 + bx + c$	4	HSA.SSE.A.1a	
7-7 Factoring Special Cases	4	HSA.SSE.A.1 HSA.SSE.A.2	
Review and Test	5		
Essential Standards Reteach and Intervention	2		

Suggested Module Pacing

October/November/December 2024

S	M	T	W	TH	F	S
13	14	15	16	17	**18**	19
20	21	22	23	24	**25**	26
27	28	29	30	31	**1**	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Perform arithmetic operations on polynomials.	
HSA.APR.A.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.
Interpret the structure of expressions.	
HSA.SSE.A.1	Interpret expressions that represent a quantity in **terms of its context**. **a.** Interpret parts of an expression, such as terms, factors, and coefficients. **b.** Interpret complicated expressions by viewing one or more of their parts as a single entity. For ex, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P.
HSA.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.

SPED Year Two Algebra 1 (S2)

Topic 8: Quadratic Functions

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
8-1 Key Features of a Quadratic Function	5	HSA.CED.A.2 HSF.IF.B.4 HSF.IF.B.6	HSF.BF.B.3 HSA.REI.D.10
8-2 Quadratic Functions in Vertex Form	5	HSF.IF.C.7 HSF.BF.B.3	HSF.IF.C.7a
8-3 Quadratic Functions in Standard Form (analyze and convert between vertex and standard form)	5	HSF.IF.B.4	HSF.IF.C.7a HSF.IF.C.8a HSF.IF.C.9
8-4 Modeling with Quadratic Functions (No Regression)	5	HSF.IF.A.2 HSS.ID.B.6a	HSF.BF.A.1 HSS.ID.B.6b
8-5 Linear, Exponential and Quadratic Models (Examine Graphs and Tables-first and second differences and ratios)	3	HSF.LE.A.3 HSS.ID.B.6a	
Review and Test	3		
Essential Standards Reteach and Intervention	2		

Suggested Module Pacing

January/February 2025

S	M	T	W	TH	F	S
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15

Create equations that describe numbers or relationships.	
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
Represent and solve equations and inequalities graphically.	
HSA.REI.D.10	Understand that the graph of an equations in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
Build new functions from existing functions.	
HSF.BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(kx)$, and $f(x+k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and 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.
Understanding the concept of a function and use function notation.	
HSF.IF.A.2	Use function notation, evaluate functions for inputs in their domain, and interpret statements that use function notation in terms of a context.
Interpret functions that arise in applications in terms of the context.	
HSF.IF.B.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
HSF.IF.B.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.	
HSF.IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **a.** Graph linear and quadratic functions and show intercepts, maxima, and minima.
HSF.IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **a.** 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.
HSF.IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically and in table or a verbal description.

SPED Year Two Algebra 1 (S2)

Construct and compare linear, quadratic and exponential models and solve problems.	
HSF.LE.A.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.
Summarize, represent, and interpret data on two categorical and quantitative variables	
HSS.ID.B.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. 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. b. Informally assess the fit of a function by plotting and analyzing residuals.

Module 9: Solving Quadratic Equations

Envision Lesson and Topic	Suggested Pacing	Primary Standard(s)	Secondary Standard(s)
9-1 Solving Quadratic Equations Using Graphs and Tables	5	HSA.REI.11	**HSACED.A.1 HSA.CED.A.2 HSA.REI.B.4b**
9-2 Solving Quadratic Equations by Factoring	5	**HSA.SSE.B.3.a HSA.APR.B.3**	**HSA.REI.B.4b HSF.IF.C.8a**
Supplement: Practice with radial properties, simplifying square roots	4		
9-3 Rewriting Radical Expressions	4	HSN.RN.A.2	**HSA.SSE.A.2**
9-4 Solving Quadratic Equations Using Square Roots	4	**HSA.SSE.A.2 HSA.REI.B.4b**	**HSA.CED.A.1**
9-5 Completing the Square, $a = 1$ only	4	**HSA.REI.B.4a HSA.SSE.B.3b**	**HSF.IF.C.8a**
9-6 The Quadratic Formula and the Discriminant	4	HSA.REI.B.4a **HSA.REI.B.4b HSA.SSE.B.3**	
9-7 **Graphing Only** - Solving Systems of Linear and Quadratic Equations	6	HSA.REI.C.7 HSA.REI.D.11	
Review and Test	4		
Essential Standards Reteach and Intervention	2		

Suggested Module Pacing

February/March/April 2025

S	M	T	W	TH	F	S
16	17	18	19	20	21	22
23	24	25	26	27	28	**1**
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	**1**	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Extend the properties of exponents to rational exponents.	
HSN.RN.A.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.
Perform arithmetic operations on polynomials.	
HSA.APR.B.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.
Create equations that describe numbers or relationships.	
HSA.CED.A.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.
HSA.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

SPED Year Two Algebra 1 (S2)

Solve equations and inequalities in one variable.	
HSA.REI.B.4	Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. **b.** 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.
Solve systems of equations.	
HSA.REI.C.7	Solve a system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.
Represent and solve equations and inequalities graphically.	
HSA.REI.D.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 (quadratic), rational, absolute value, exponential, and logarithmic functions.
Interpret the structure of expressions.	
HSA.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.
HSA.SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. **a.** Factor a quadratic expression to reveal the zeros of the function it defines. **b.** Complete the square in a quadratic expression to reveal the maximum or minimum value of a function.
Analyze functions using different representations.	
HSF.IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **a.** 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.

2024-2025

GT Education Overview
Mathematics - Course Guides

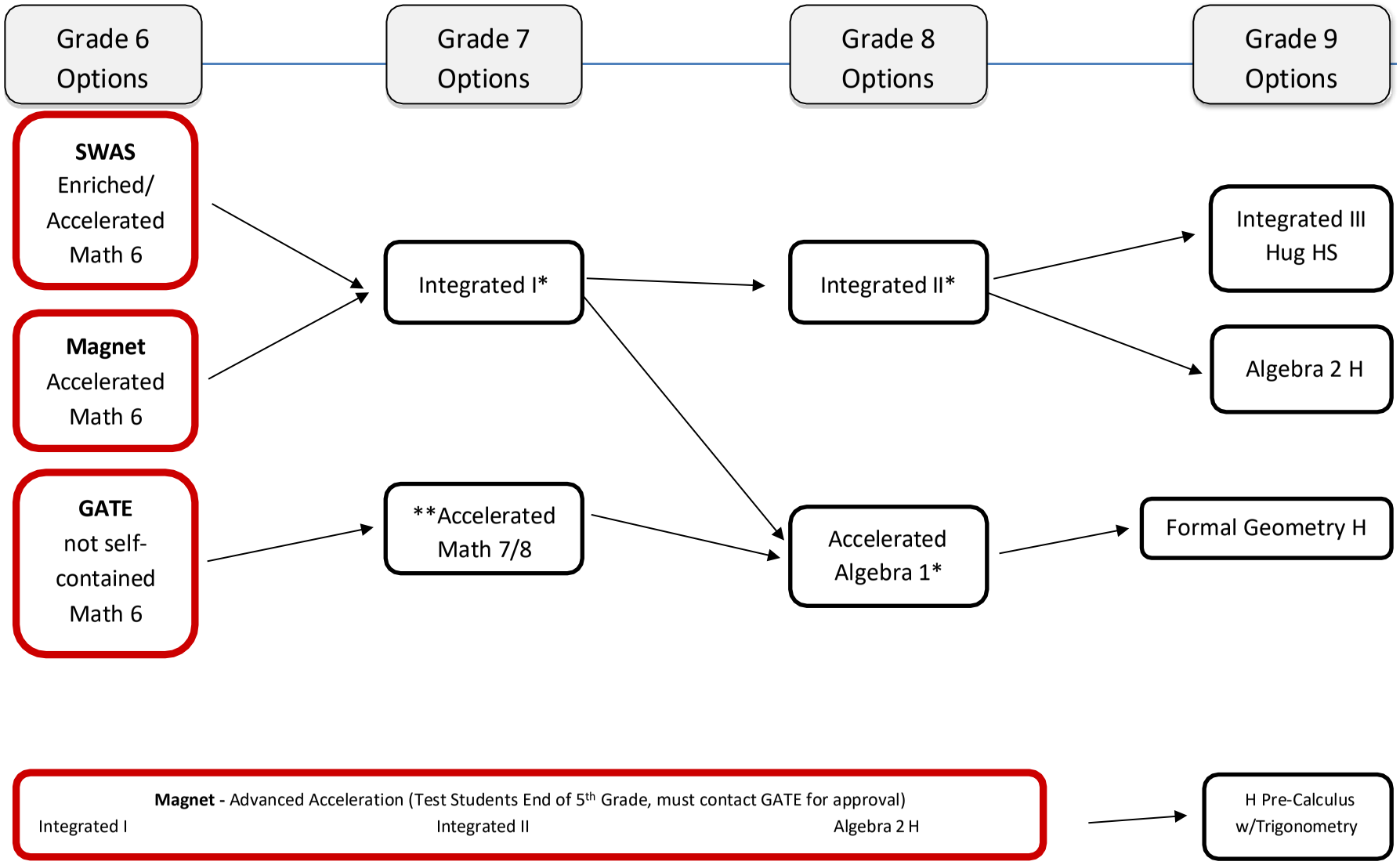
The Secondary Math Course Guides provide the standards aligned to topics and resources available in the currently adopted text. It is the teacher's professional responsibility to ensure that their students are prepared for the next course in the Pathway. This can only be accomplished when all grade level/course standards are taught with student engagement and an expectation of rigor in mathematics.

Excellence in Education, Every Student, Every Day, to Graduation

Washoe County School District
Every Child, By Name And Face, To Graduation

Grades 6-9, WCSD Pathways for Gifted & Talented Program

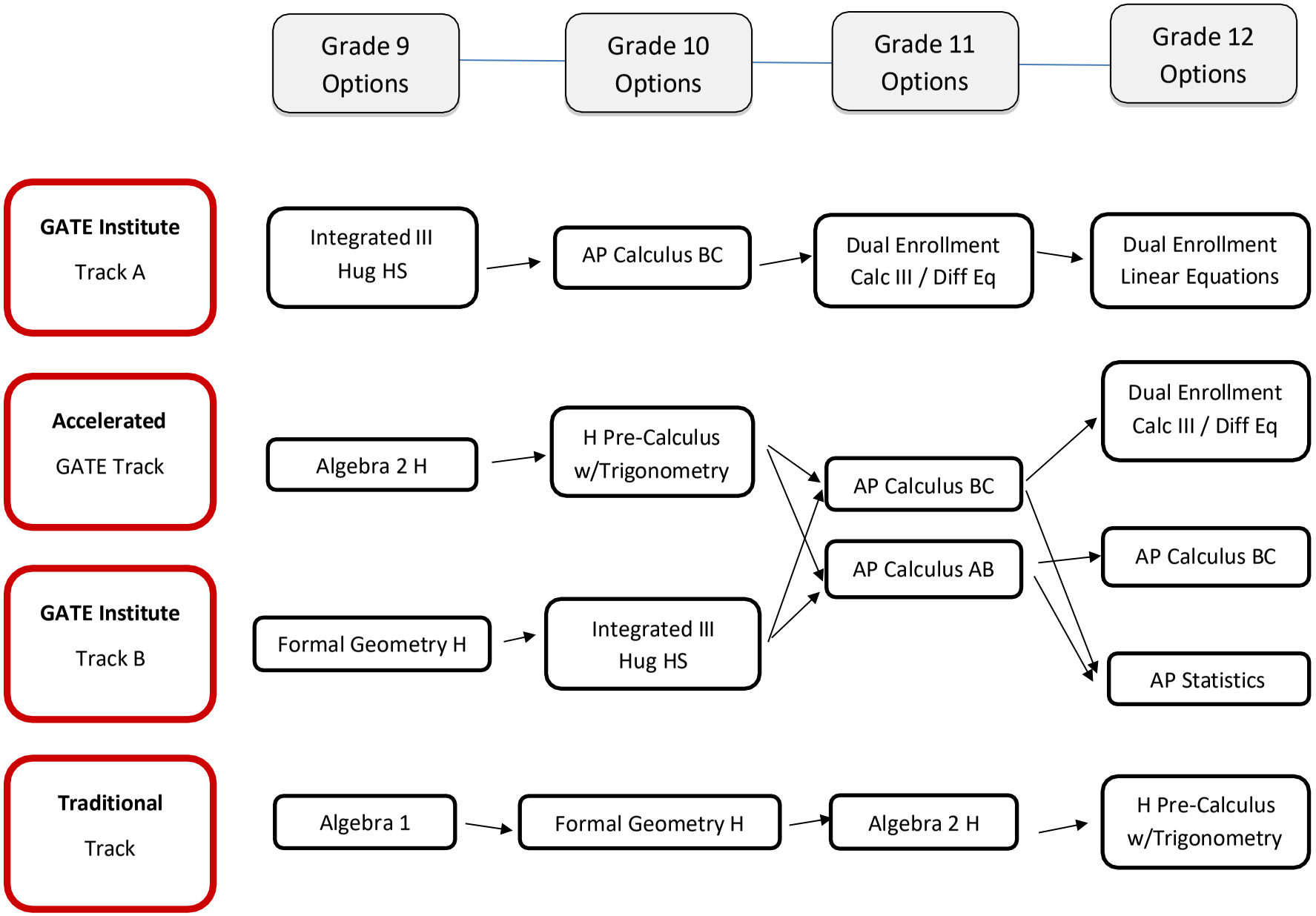
Mathematics in Washoe County School District consists of instruction and assessment aligned to the Common Core State Standards.



* High School credit is not awarded for high school level courses taken prior to 9th grade.
** Offered periodically and not at every site.

Washoe County School District
Every Child, By Name And Face, To Graduation

Grades 9-12, WCSD Pathways for Gifted & Talented Program



2022-2023

GT Math Course Descriptions

Accelerated Math 6 **MS Course #771**

This course is designed to meet the needs of mathematically accelerated students enrolled in the Middle School Magnet program model by preparing students for Accelerated High School Integrated Math I, which covers Pre-algebra and begins high school Algebra 1 and Formal Geometry. Mathematical Practice Standards apply throughout each course and with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. Content is organized into units, covering the following topics: Integer number sense; integer computation; number theory; fractions; decimals; algebraic expressions and equations; 2-dimensional and 3-dimensional geometry; ratios and proportions; percent concepts and computation; and statistics. Successful completion of this course will prepare students for Accelerated High School Integrated Math I.

Accelerated Math 7/8 **MS Course #755**

Prerequisite: Accelerated Math 6 or Math 6. This course is designed to meet the needs of mathematically accelerated students enrolled in the GATE Middle School Magnet program model. Coherently blending 7th and 8th grade content standards, this course prepares students for Accelerated Algebra 1 while attending to the specific learning needs of gifted students. Mathematical Practice Standards apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. Content is organized into units, covering the following topics: Rational numbers; algebraic expressions and equations; proportional relationships and graphs; statistical sampling, measures, and predictions; probability; area, surface area, and volume; similarity, geometric drawings, and geometric relationships; irrational numbers, number theory, square and cube roots, and Pythagorean theorem application and proof; geometric transformations; and powers, exponents, and scientific notation. Successful completion of this course will prepare students for Accelerated Algebra 1.

Accelerated Algebra 1 **MS Course #776**

Prerequisite: Accelerated High School Integrated Math I or Accelerated Math 7-8 This is an accelerated inquiry-based Algebra 1 course for students in the GATE Magnet Program, and covers the Nevada Academic Standards for 8th grade and Algebra 1 in-depth to prepare students for honors level high school math courses. Moving at an accelerated pace with a focus on application of mathematical concepts, this course will focus on number and quantity, algebra, functions, modeling, geometry, and statistics and probability through the Mathematical Practice Standards. Students who successfully complete Accelerated Algebra I may be recommended for Formal Geometry in high school. Students do NOT receive high school credit for this course.

GT Math Course Descriptions

Accelerated HS Integrated Math I **MS Course #772**

This course is designed to offer an integrated approach to mathematics learning, with an emphasis on solving real-world problems connected to multiple content areas. The course begins with a foundation in Pre-algebra and follows a logical path through High School Algebra 1 and Formal Geometry. Algebra and geometry topics are integrated to fully establish mathematical connections. Students who successfully complete Accelerated High School Integrated Math I may be recommended for Accelerated High School Integrated Math II. Students do NOT receive high school credit for this course.

Accelerated HS Integrated Math II **MS Course #773**

Prerequisite: Accelerated High School Integrated Math I. This course is the continuation of Accelerated High School Integrated Math I, offering an integrated approach to high school Algebra 1 and Formal Geometry. The course emphasizes connections between algebraic and geometric topics and includes the solution of real-world problems connected to multiple content areas. Upon completion of this course, students will take the Nevada State End of Course Exam for Math 1 (Algebra) and Math II (Geometry) required for graduation. Successful completion of this course is the equivalent of WCSD High School Algebra 1 and Formal Geometry courses. Students who successfully complete Accelerated High School Integrated Math II may be recommended for Accelerated High School Integrated Math III or Algebra 2 Honors. Students do NOT receive high school credit for this course.

Accelerated HS Integrated Math III **HS Course #2417/2418**

This is a one-year accelerated integrated course that will cover topics from Algebra 2 & trigonometry preparing scholars for Calculus the following year. The following Algebra 2 Honors topics will be covered: Parent functions; complex numbers; quadratic functions; polynomial functions; rational functions; function operations, inverses & radical equations; exponents & logarithms; systems; statistical data; and trig functions. In addition to the Algebra 2 concepts, this course will cover angles and radian measure; trig functions; vectors; laws and graphs of trig functions; polar coordinates and their graphs; and trig identities and equations. This course will strengthen the student's problem solving and algebraic skills in preparation for advanced mathematics courses. Throughout the year, students will be expected to continue to develop the ability to reason and communicate mathematically, applying learned concepts to new problems.