2025-2026

Mathematics Course Guides
High School

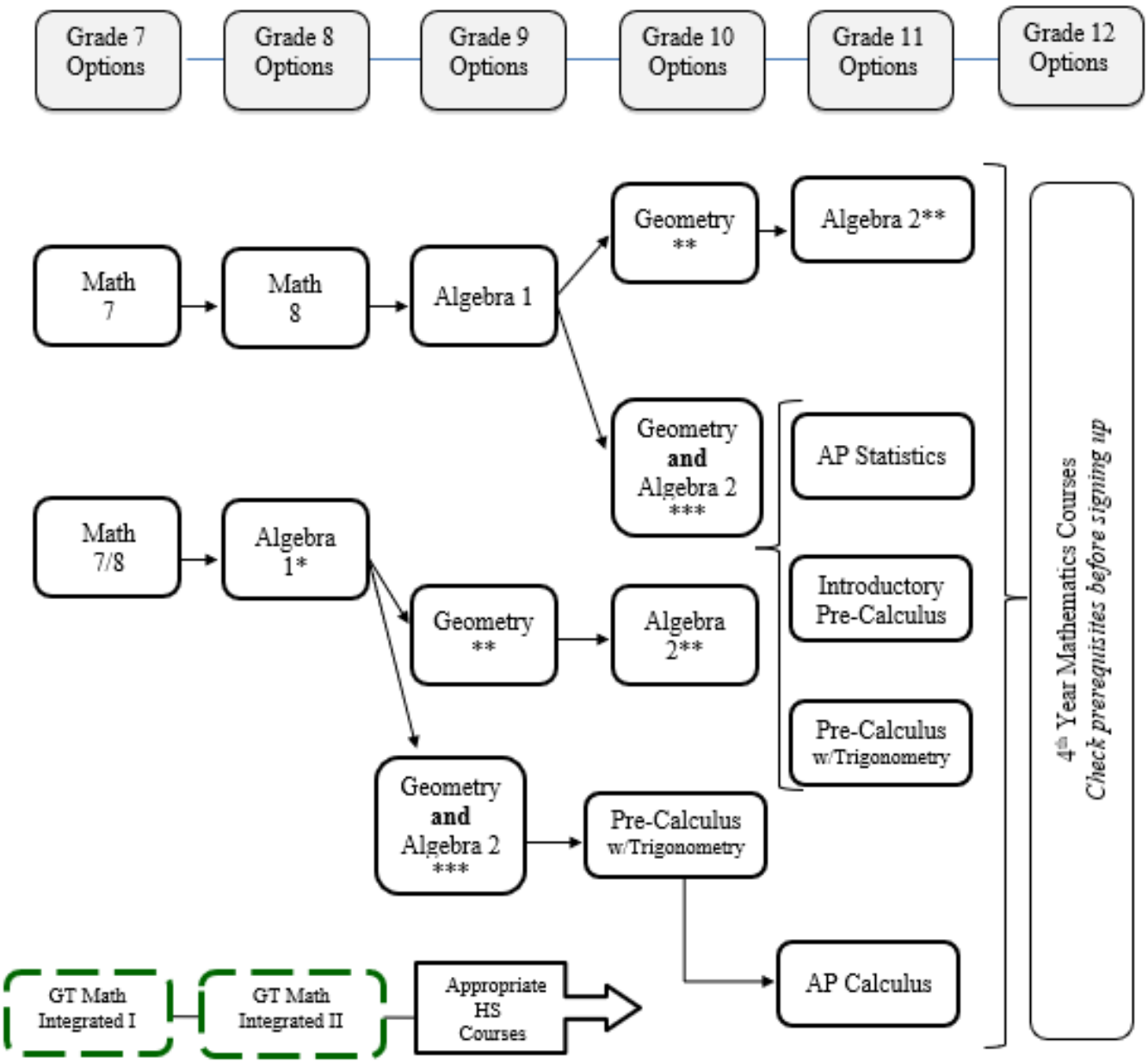
The Secondary Math Course Guides provide the standards aligned to topics and resources available in the currently adopted text. It is the teacher's professional responsibility to ensure that their students are prepared for the next course in the Pathway. This can only be accomplished when all grade level/course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

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

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy

MATHEMATICS COURSE SEQUENCE

This indicates the most common pathways and is not exhaustive



* 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 Geometry

** 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).

2025-2026: Recommendations for 6-12 Grading in Mathematics

Grading recommendations were established to provide those that need more specific direction somewhere to start. ***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. **Lesson Activities** 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. *Only grade-level lesson activities should be included int the gradebook*.
3. **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

Middle School

Grade-Level	Lesson Activities (at grade level)	Assessments
6th grade	30 – 40%	60 – 70%
7th grade	25 – 35%	65 – 75%
8th grade	20 – 30%	70 – 80%

High School

Courses	Lesson Activities (at grade level)	Assessments	Final
Algebra, Geometry, Algebra 2, non-honors 4th- year course	0 – 15%	75 – 90%	10 – 15%
Form Geo, Honors Alg2, AP/Honors 4th - year course	0 – 10%	70 – 85%	15 – 20%

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 $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. 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 2025

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

Spring 2026

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

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.

Statistical Reasoning in Sports **Course #2425-2426**

Full year = 1 credit

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

This class offers a unique and powerful way to introduce the principles of statistical reasoning. Statistical Reasoning is Sports makes learning statistics exciting with high interest sports (and life) examples that show how statistics is part of everyday life. This class examines fascinating questions about sports and life by investigating the underlying statistical questions and creating a fun atmosphere in the classroom in which students perform simulations, analyze data, and use simple randomization processes to develop and understanding of statistics.

Explorations in Data Science **Course #2235-2236**

Full Year = 1 credit

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

This class will introduce students to the main ideas in data science through tools such as Excel spreadsheets, Python, Data Commons and Tableau. Students will learn to be data explorers in project-based units, through which they will develop their understanding of data analysis, sampling, correlation/causation, bias and uncertainty, probability, modeling with data, making and evaluating data-based arguments, the power of data in society, and more. At the end of the course students will have a portfolio of their data science work to showcase their newly developed abilities.

College Concurrent Enrollment Courses

Concurrent Enrollment - Math 126 – Pre-Calculus I

One semester = 1 credit (Advanced Dual Credit) **Course #14226**

Full year = 1 credit (Advanced Dual Credit) **Course #14251/14252**

Prerequisite: Successful completion of all semesters of Algebra 2

This college course focuses on the study of functions, their properties, their graphs, and applications including polynomial, radical, rational, exponential, and logarithmic functions. The course also covers the solving of equations, systems of equations, and inequalities. Expectations for this course are determined by the partner University/College. To be enrolled in the class, students must maintain consistent attendance.

Concurrent Enrollment - Math 127 – Pre-Calculus II **Course #14227**

One semester = 1 credit (Advanced Dual Credit)

Prerequisite: Successful completion of Math 126 or Pre-Calculus with Trigonometry with a C or better.

This college course is a continuation of Math 126. It includes the study of circular functions, their graphs and applications, analytic trigonometry, the coordinate geometry of lines and conics and elementary vector algebra. Computer use and a graphing calculator may be required. Expectations for this course are determined by the partner University/College. To be enrolled in the class, students must maintain consistent attendance.

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.

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.

Financial Mathematics **Course #2423-2424**

Full year = 1 credit

Prerequisite: Completion of all semesters of Algebra 1 and Geometry, and current standing as a Junior or Senior. Students should have completed Algebra 2 or plan to take it after this course.

This one-year course connects practical mathematical concepts to personal and business settings. This course offers informative and highly useful lessons that challenge students to gain a deeper understanding of financial math. Relevant, project-based learning activities cover stimulating topics such as personal financial planning, budgeting and wise spending, banking, paying taxes, the importance of insurance, long-term investing, buying a house, consumer loans, economic principles, traveling abroad, starting a business, and analyzing business data. Offered as a two-semester course for high school students, this course encourages mastery of math skill sets, including percentages, proportions, data analysis, linear systems, and exponential functions. The primary instructional material for this class is the Edgenuity online platform.

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 labeled with an (*). Note: if a standard is essential in one Chapter it is labeled essential throughout all Topics/Chapters of the guide.**

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2025-2026

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)

Topic	Days	Topic	Days
1 – Solving Equations & Inequalities	18	6 – Exponents & Exponential Functions	18
2 – Linear Equations	13	7 – Polynomials & Factoring	21
Be here by Fall Break		Be here by Spring Break	
3 – Linear Functions	13	8 – Quadratic Functions	18
4 – Systems of Equations & Inequalities	17	9 – Solving Quadratic Equations	21
5 – Piecewise Functions	14		
Be here by end of Semester One		Be here by end of Semester Two	

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy

Solving Equations and Inequalities – Topic 1		
Lesson	Resource	Days
Supplement with simplify expressions and equations with more fractions. Solving Linear Equations (HSA.CED.A.1, HSA.REI.A.1, HSA.REI.B.3)	1.2	3
Solving Equation w/Variables (HSN.Q.A.2, HSA.CED.A.1, HSA.REI.A.1, HSA.REI.B.3)	1.3	3
Literal Equations and Formulas (HSN.Q.A.1, HSA.CED.A.1, HSA.CED.A.4) Prioritize transforming equations to slope-intercept form.	1.4	3
Solving Inequalities in One Variable (HSA.CED.A.1, HSA.CED.A.3, HSA.REI.B.3)	1.5	2
Collecting Cans - 3 Acts (HSA.CED.A.1, HSA.REI.A.1, HSA.REI.B.3)	TE p36	1-opt
Compound Inequalities (HSA.CED.A.1, HSA.CED.A.3, HSA.REI.B.3)	1.6	3
Review and Test		2
Essential Standards Reteaching and Intervention		1
		Total = 18

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.

Linear Equations – Topic 2		
Lesson	Resource	Days
Design a Pitched Roof - STEM Project (HSF.IF.B.4, HSS.ID.C.7)	TE p 56	1 -opt
Slope-Intercept Form (HSA.CED.A.2, HSS.ID.C.7)	2.1	2
Point Slope Form (Supplement (h, k) form) (HSA.CED.A.2, HSF.LE.A.2, HSS.ID.C.7)	2.2	2
Standard Form and convert to other forms: slope intercept, (h,k) form and point slope (HSA.CED.A.2, HSA.CED.A.3, HSS.ID.C.7)	2.3	3
How Tall is Tall? - 3 Acts (HSA.CED.A.1, HSA.CED.A.3, HSA.CED.A.4)	TE p75	1 -opt
Parallel and Perpendicular Lines --Introduce and identify Parallel and Perpendicular lines understanding slopes and graphs (HSA.CED.A.2, HSA.CED.A.4, HSF.IF.C.7a, HSG.GPE.B.5)	2.4	1
Review and Test		2
Essential Standards Reteaching and Intervention		1
Be here by Fall Break		**Total = 13**

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. 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.
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. *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).

Linear Functions – Topic 3		
Lesson	Resource	Days
Planning a Recycling Drive - STEM Project (HSF.BF.A.1a, HSF.IF.A.3)	TE p88	1 –opt
Relations and Functions (HSF.IF.A.1)	3.1	2
Linear Functions (HSF.IF.A.1, HSF.IF.A.2, HSF.IF.B.5, HSF.LE.A.2) Write Linear Functions from tables, ordered pairs, and with slope and intercept	3.2	2
Scatter plots and Lines of Fit (HSS.ID.B.6a, HSS.ID.B.6c, HSS.ID.C.7)	3.5	1
The Express Lane - 3 Acts (HSS.ID.B.6, HSS.ID.C.7)	TE p109	1 –opt
Arithmetic Sequence (emphasis on function notation, emphasis on explicit and how it relates to (h,k) form, expose to subscript notation and recursive) (HSF.BF.A.1a, HSF.BF.A.2, HSF.IF.A.3, HSF.LE.A.2)	3.4	3
Review and Quiz		2
Essential Standards Reteaching and Intervention		1
		Total = 13

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.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.

Systems of Linear Equations and Inequalities – Topic 4		
Lesson	Resource	Days
Growing Grain - STEM Project (HSA.CED.A.3, HSA.REI.C.6, HSA.REI.D.12)	TE p142	1 -opt
Solving Systems of Equations by Graphing (HSA.REI.C.6, HSA.REI.D.11, HSF.IF.C.9)	4.1	2
Solving Systems of Equations by Substitution (HSA.CED.A.3, HSA.REI.C.6, HSA.REI.D.11)	4.2	3
Solving Systems of Equations by Elimination (HSA.CED.A.3, HSA.REI.C.5)	4.3	3
Linear Inequalities in Two Variables (HSA.CED.A.3, HSA.REI.D.12)	4.4	2
Get Up There! – 3 Acts (HSA.CED.A.2, HSA.CED.A.3)	TE p170	1 -opt
Systems of Linear Inequalities (HSA.CED.A.3, HSA.REI.D.12)	4.5	2
Review and Test		2
Essential Standards Reteaching and Intervention		1
		Total = 17

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.
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.
Represent and solve equations and inequalities graphically.	
*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.

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Piecewise Functions – Topic 5		
Lesson	Resource	Days
Absolute Values Equations (HSA.CED.A.1, HSA.REI.D.11, HSF.IF.A.1)	1.7	2
The Absolute Value Function (HSF.IF.B.4, HSF.IF.C.7b) --all notations of end behavior	5.1	3
Piecewise-Defined Functions (linear pieces over a restricted domain, absolute value as a piecewise function) (HSF.IF.A.2, HSF.IF.B.4, HSF.IF.C.7b)	5.2	3 - opt
Transformations of (Piecewise-Defined) Absolute Value Functions (HSF.BF.B.3, HSF.IF.C.7b, HSF.IF.C.9)	5.4	3
Review and Test		2
Essential Standards Reteaching and Intervention		1
Be here by end of Semester One		**Total = 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.
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 soutions 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 of and x is an element of its domain, the $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the equation $y = f(x)$.
*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.
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.

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Exponents and Exponential Functions – Topic 6		
Lesson	Resource	Days
Supplement: Review exponent properties from grade 8.	Supplement	2
Rational Exponents and Properties of Exponents (HSN.RN.A.1, HSN.RN.A.2) Supplement: developmentally appropriate equations with exponents	6.1	3
Exponential Functions (HSF.BF.A.1a, HSF.IF.B.4, HSF.IF.B.5, HSF.LE.A.1)	6.2	3
Exponential Growth and Decay (HSA.CED.A.2, HSA.SSE.A.1b, HSA.SSE.B.3c, HSF.IF.C.8b, HSF.LE.A.1a-c, HSF.LE.A.2, HSF.LE.B.5) Omit Compound Interest	6.3	3
Geometric Sequences {recognize geometric sequence compared to other sequences, verify equation works for given sequence} (HSF.BF.A.2, HSF.IF.A.3, HSF.LE.A.2)	6.4	2
Transformations of Exponential Functions (use book section as a guide) (HSF.BF.B.3, HSF.IF.B.4, HSF.IF.C.9)	6.5 - opt	1 - opt
Big Time Pay Back - 3 Acts (HSF.BF.A.1a, HSF.LE.A.1, HSF.LE.A.2)	TE p252	1-opt
Review and Test		2
Essential Standards Reteaching and Intervention		1
		Total = 18

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. $(5^{1/3})^3$ equals 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.
Build new functions from existing functions.	

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*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.
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.
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.

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Polynomials and Factoring – Topic 7		
Lesson	Resource	Days
Make Business Decisions - STEM Project (HSA.APR.A.1)	TE p 258	1-opt
Adding and Subtracting Polynomials (HSA.APR.A.1)	7.1	2
Multiplying Polynomials (HSA.APR.A.1)	7.2	2
Multiplying Special Cases (HSA.APR.A.1)	7.3	1
Factoring Polynomials (Quadratics) (HSA.SSE.A.1, HSA.SSE.A.2)	7.4	3
Supplement: Factor by grouping	Supplement	2
Factoring $x^2 + bx + c$ (HSA.SSE.A.1)	7.5	2
Who's Right? - 3 Acts (HSA.APR.A.1)	TE p294	1-opt
Factoring $ax^2 + bx + c$ (HSA.SSE.A.1)	7.6	3
Factoring Special Cases (HSA.SSE.A.1, HSA.SSE.A.2)	7.7	1
Review and Test		2
Essential Standards Reteaching and Intervention		1
Be here by Spring Break		**Total = 21**

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.

Quadratic Functions – Topic 8		
Lesson	Resource	Days
Make Business Decisions - STEM Project (HSA.APR.A.1, HSA.CED.A.2, HSA.SSE.B.3a, HSA.SSE.B.3b, HSF.BF.A.1a, HSF.IF.B.4)	TE p314	1 -opt
Key Features of a Quadratic Function (HSA.CED.A.2, A.REI.D.10, HSF.BF.B.3, HSF.IF.B.4)	8.1	2
Quadratic Functions in Vertex Form (HSF.BF.B.3, HSF.IF.C.7a)	8.2	3
Quiz		1
Quadratic Functions in Standard Form (analyze and convert between vertex and standard form) (HSF.IF.B.4, HSF.IF.C.7a, HSF.IF.C.8a, HSF.IF.C.9)	8.3	3
Modeling with Quadratic Functions (HSF.IF.A.2) *No Regression	8.4 Ex 1&2	2
Linear, Exponential and Quadratic Models (HSF.LE.A.3) Examine Graphs and Tables (first and second differences and ratios)	8.5 Ex 1&3	2
The Long Shot - 3 Acts (HSA.REI.D.10, HSF.IF.B.4)	TE p343	1 -opt
Review and Test		2
Essential Standards Reteaching and Intervention		1
		Total = 18

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.
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).
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. *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.
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.
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.	

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*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
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.
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.

Solving Quadratic Equations – Topic 9		
Lesson	Resource	Days
Designing a T-shirt Launcher - STEM Project (HSA.CED.A.1, HSA.CED.A.2, HSA.REI.B.4, HSA.SSE.A.1),	TE p356	1 - opt
Solving Quadratic Equations using graphs and tables (HSA.CED.A.1, HSA.CED.A.2, HSA.REI.B.4b, HSA.REI.D.11)	9.1	2
Solving Quadratic Equations by Factoring (HSA.APR.B.3, HSA.REI.B.4b, HSA.SSE.B.3a, HSF.IF.C.8a)	9.2	2
Practice with radical properties, simplifying square roots	Supplement	2
Rewriting Radical Expressions (HSN.RN.A.2, HSA.SSE.A.2)	9.3	2
Solving Quadratic Equations Using Square Roots (HSA.CED.A.1, HSA.REI.B.4b, HSA.SSE.A.2)	9.4	2
Completing the Square (HSA.REI.B.4b, HSA.SSE.B.3b, HSF.IF.C.8a)	9.5	2
The Quadratic Formula and the Discriminant (HSA.REI.B.4, HSA.SSE.B.3)	9.6	2
Unwrapping Change - 3 Acts (HSA.CED.A.1, HSA.CED.A.2, HSA.REI.B.4)	TE p396	1 -opt
Solving Systems of Linear and Quadratic Equations (HSA.REI.C.7, HSA.REI.D.11)	9.7	2
Review and Test		2
Essential Standards Reteaching and Intervention		1
Be here by end of Semester Two		**Total = 21**

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.
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.

Algebra 1

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 soutions 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.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.
*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.

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2025-2026

Geometry
Course Guide

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

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

Chapter - Topic	Days	Chapter - Topic	Days
Warm Up - Review	3	6 - Quadrilaterals	10
1 - Tools of Geometry	11	7 - Similarity	13
2 - Logical Arguments and Line Relationships	16	8 - Right Triangles and Trigonometry	12
		9 - Circles	11
Be here by Fall Break		Be here by Spring Break	
3 - Rigid Transformations and Symmetry	10	10 - Extending Area	13
4 - Triangles and Congruence	15	11 - Extending Volume	10
5 - Relationships in Triangles	13	12 – Probability (optional)	12
Be here by end of Semester One		Be here by end of Semester Two	

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy



Geometry

Tools of Geometry – Ch. 1 Geometry begins w/Chapter 1 - *Only use Ch. 0 in remediation*			
Lesson	Resource	Study Guide & Intervention	Days
Get Ready for Chapter 1 – Concept Check, Review/New Vocab	TE p4		1
Points Lines and Planes (HSG.CO.1)	1.1	TE p5B	1
Line Segments and Distance (HSG.CO.1, HSG.CO.12)	1.2	TE p14B	2
Locating Points and Midpoints (HSG.CO.1, HSG.CO.12)	1.3	TE p26B	2
Angle Measure (HSG.CO.1, HSG.CO.12)	1.4	TE p36B	1
Angle Relationships (HSG.CO.1, HSG.CO.12)	1.5	TE p46B	2
Review and Test			2
			Total = 11

Experiment with transformations in the plane.	
*HSG.CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
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.

Geometry

Logical Arguments and Line Relationships – Ch. 2			
Lesson	Resource	Study Guide & Intervention	Days
Chapter 2 – Part 1			
Deductive Reasoning (HSG.CO.9)	2.3	TE p131B	2
Writing Proofs (write small proofs and practice 'fill in the blank' steps for larger proofs) (HSG.CO.9, HSG.MG.3)	2.4	TE p140B	2
Proving Segment Relationships (HSG.CO.9, HSG.CO.12)	2.5	TE p152B	2
Quiz			1
Chapter 2 – Part 2			
Proving Angle Relationships (HSG.CO.9, HSG.CO.12)	2.6	TE p159B	2
Parallel Lines and Transversals (HSG.CO.1, HSG.CO.9)	2.7	TE p111B	2
Slope and Equations of Lines (HSG.GPE.5)	2.8	TE p168B	1
Proving Lines Parallel (HSG.CO.9, HSG.CO.12, HSG.GPE.5)	2.9	TE p177B	1
Perpendiculars and Distance (HSG.CO.12, HSG.MG.3)	2.10	TE p186B	1
Review and Test			2
			Total = 16
Be here by Fall Break			

Experiment with transformations in the plane.	
*HSG.CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
Prove geometric theorems.	
*HSG.CO.9	Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.
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.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.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

Rigid Transformations and Symmetry – Ch. 3			
Lesson	Resource	Study Guide & Intervention	Days
Get Ready for Chapter 3 - Concept Check, Review/New Vocab	TE p218		1
Reflections (HSG.CO.3, HSG.CO.4, HSG.CO.5)	3.1	TE p219B	1
Translations (HSG.CO.3, HSG.CO.4, HSG.CO.5, HSG.CO.6)	3.2	TE p230B	1
Quiz			1
Rotations-(rotations at origin) (HSG.CO.4, HSG.CO.5, HSG.CO.6)	3.3	TE p239B	1
Compositions of Transformations (HSG.CO.2, HSG.CO.5)	3.4	TE p248B	2
Symmetry (HSG.CO.3)	3.5	TE p259B	1
Review and Test			2
			Total = 10

Experiment with transformations in the plane.	
HSG.CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).
HSG.CO.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.
HSG.CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
*HSG.CO.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure on to another.
Understand congruence in terms of rigid transformations.	
*HSG.CO.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.

Geometry

Triangles and Congruence - Ch. 4			
Lesson	Resource	Study Guide & Intervention	Days
Get Ready for Chapter 4 - Concept Check, Review/New Vocab	TE p280		1
Angles of Triangles (HSG.CO.10)	4.1	TE p281B	2
Congruent Triangles (HSG.CO.7, HSG.CO.10, HSG.SRT.5)	4.2	TE p291B	2
Proving Triangles Congruent – SSS, SAS (HSG.CO.8, HSG.CO.10, HSG.CO.12, HSG.SRT.5)	4.3	TE p300B	2
Proving Triangles Congruent – ASA, AAS (HSG.CO.8, HSG.CO.12, HSG.SRT.5)	4.4	TE p311B	2
Proving Right Triangles Congruent (HSG.CO.10, HSG.SRT.5)	4.5	TE p319B	1
Isosceles and Equilateral Triangles (HSG.CO.10, HSG.CO.12)	4.6	TE p325B	1
Triangles and Coordinate Proof (HSG.CO.10, HSG.GPE.4)	4.7	TE p334B	2
Review and Test			2
			Total = 15

Understand congruence in terms of rigid motions.	
*HSG.CO.7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
*HSG.CO.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.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.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.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Geometry

Relationships in Triangles - Ch. 5			
Lesson	Resource	Study Guide & Intervention	Days
Get Ready for Chapter 5 - Concept Check, Review/New Vocab	TE p352		1
Bisectors of Triangles (HSG.CO.9, HSG.CO.10, HSG.CO.12, HSG.MG.3)	5.1	TE p353B	2
Medians & Altitudes of Triangles (HSG.CO.10, HSG.CO.12, HSG.MG.3) **[No emphasis on points of concurrency]**	5.2	TE p364B	2
Inequalities in One Triangle (HSG.CO.10)	5.3	TE p374B	2
The Triangle Inequality (HSG.CO.10, HSG.CO.12, HSG.MG.3)	5.5	TE p393B	2
Inequalities in Two Triangles (HSG.CO.10)	5.6-optional	TE p401B	1
Review and Test			3
Be here by end of Semester One			**Total = 13**

Prove geometric theorems.	
*HSG.CO.9	Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.
*HSG.CO.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.
Apply geometric concepts in modeling situations.	
*HSG.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Geometry

Quadrilaterals - Ch. 6			
Lesson	Resource	Study Guide & Intervention	Days
Get Ready for Chapter 6 - Concept Check, Review/New Vocab	TE p422		1
Angles of Polygons (HSG.MG.1)	6.1	TE p423B	1
Parallelogram (HSG.CO.11, HSG.GPE.4)	6.2	TE p433B	1
Tests of Parallelograms (HSG.CO.11, HSG.CO.12, HSG.GPE.4, HSG.GPE.5)	6.3	TE p442B	2
Special Parallelograms: Rectangles (HSG.CO.11, HSG.CO.12, HSG.GPE.4)	6.4	TE p453B	1
Special Parallelograms: Rhombi, Squares (HSG.CO.11, HSG.CO.12, HSG.GPE.4)	6.5	TE p460B	1
Trapezoids and Kites (HSG.MG.3, HSG.GPE.4)	6.6	TE p469B	1
Review and Test			2
			Total = 10

Prove geometric theorems.	
*HSG.CO.11	Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.
Make geometric constructions.	
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.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.1	Use geometric shapes, their measures, and their properties to describe objects.
*HSG.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Geometry

Similarity - Ch. 7			
Lesson	Resource	Study Guide & Intervention	Days
Get Ready for Chapter 7 - Concept Check, Review/New Vocab	TE p490		1
Dilations (HSG.CO.2, HSG.SRT.1)	7.1	TE p491B	2
Similar Polygons (HSG.SRT.2)	7.2	TE p502B	1
Similar Triangles AA Similarity (HSG.SRT.2, HSG.SRT.3, HSG.SRT.5)	7.3	TE p511B	1
Similar Triangles SSS and SAS Similarity (HSG.SRT.2, HSG.SRT.4, HSG.SRT.5)	7.4	TE p521B	1
Parallel Lines and Proportional Parts (HSG.CO.12, HSG.SRT.4, HSG.SRT.5)	7.5	TE p534B	2
Parts of Similar Triangles (HSG.SRT.4, HSG.SRT.5)	7.6	TE p544B	2
Review and Test			3
			Total = 13

Experiment with transformations in the plane.	
HSG.CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).
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.
Understand similarity in terms of similarity transformations.	
*HSG.SRT.1	Verify experimentally the properties of dilations given by a center and a scale factor: a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. *b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
*HSG.SRT.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and proportionality of all corresponding pairs of sides.
*HSG.SRT.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.
Prove theorems involving similarity.	
*HSG.SRT.4	Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.
*HSG.SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Geometry

Right Triangles and Trigonometry - Ch. 8			
Lesson	Resource	Study Guide & Intervention	Days
Get Ready for Chapter 8 - Concept Check, Review/New Vocab Supplement Rationalizing Denominator $\frac{3}{\sqrt{2}} = \frac{3\sqrt{2}}{2}$	TE p564		1
Geometric Mean (HSG.SRT.4, HSG.SRT.5)	8.1	TE p565B	1
The Pythagorean Theorem and Its Converse (HSG.CO.10, HSG.SRT.8, HSG.MG.3)	8.2	TE p574B	2
Special Right Triangles (HSG.SRT.6)	8.3	TE p586B	2
Trigonometry (HSG.SRT.6, HSG.SRT.7)	8.4	TE p595B	2
Angles of Elevation and Depression (HSG.SRT.8)	8.5	TE p608B	2
Review and Test			2
			Total = 12

Prove geometric theorems.	
*HSG.CO.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.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.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.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.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.7	Explain and use the relationship between the sine and cosine of complementary angles.
*HSG.SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

Geometry

Circles - Ch. 9			
Lesson	Resource	Study Guide & Intervention	Days
Get Ready for Chapter 9 - Concept Check, Review/New Vocab	TE p642		1
Circles and Circumference (HSG.CO.1, HSG.MG.1)	9.1	TE p643B	1
Measuring Angles and Arcs (HSG.C.2, HSG.C.5)	9.2	TE p652B	1
Arcs and Chords (HSG.C.2, HSG.CO.12, HSG.MG.3)	9.3	TE p661B	1
Inscribed Angles (HSG.C.2, HSG.C.3, HSG.CO.13)	9.4	TE p669B	2
Tangents (HSG.C.2, HSG.C.4)	9.5	TE p678B	1
Secants, Tangents and Angle Measures (HSG.C.2)	9.6	TE p687B	1
Review and Test			3
Be here by Spring Break			**Total = 11**

Experiment with transformations in the plane.	
*HSG.CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
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.
Make geometric constructions.	
HSG.CO.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.
Understand and apply theorems about circles.	
*HSG.C.2	Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.
HSG.C.3	Construct the inscribed and circumscribed circles of a triangle and prove properties of angles for a quadrilateral inscribed in a circle.
HSG.C.4	(+) Construct a tangent line from a point outside a given circle to the circle.
*HSG.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.
Apply geometric concepts in modeling situations.	
*HSG.MG.1	Use geometric shapes, their measures, and their properties to describe objects.
*HSG.MG.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

Extending Area - Ch. 10			
Lesson	Resource	Study Guide & Intervention	Days
Get Ready for Chapter 10 - Concept Check, Review/New Vocab	TE p725		1
Areas of Parallelograms and Triangles (HSG.GPE.7, HSG.MG.1)	10.1	TE p725B	1
Areas of Trapezoids, Rhombi, and Kites (HSG.MG.3)	10.2	TE p733B	1
Areas of Circles and Sectors (HSG.C.5, HSG.GMD.1)	10.3	TE p743B	2
Areas of Regular Polygons and Composite Figures (HSG.MG.3)	10.4	TE p751B	2
Area of Nonrigid Transformations (HSG.GMD.1, HSG.MG.1)	10.5	TE p763B	1
Surface Area (HSG.MG.1, HSG.MG.3)	10.6	TE p770B	2
Review and Test			3
			Total = 13

Understand and apply theorems about circles.	
*HSG.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.
Explain volume formulas and use them to solve problems.	
*HSG.GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissections arguments, Cavalieri's Principle, and informal limit arguments.
Use coordinates to prove simple geometric theorems algebraically.	
*HSG.GPE.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.1	Use geometric shapes, their measures, and their properties to describe objects.
*HSG.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Geometry

Extending Volume - Ch. 11			
Lesson	Resource	Study Guide & Intervention	Days
Get Ready for Chapter 11 - Concept Check, Review/New Vocab	TE p794		1
Cross Sections and Solids of Revolution (HSG.GMD.4)	11.1	TE p795B	1
Volume of Prisms and Cylinders (HSG.GMD.1, HSG.GMD.3, HSG.MG.3)	11.2	TE p802B	1
Volumes of Pyramids and Cones (HSG.GMD.1, HSG.GMD.3)	11.3	TE p810B	2
Spheres (HSG.MG.3, HSG.GMD.3)	11.4	TE p818B	1
Volume of Nonrigid Transformations (HSG.GMD.1)	11.6	TE p834B	1
Review and Test			3
			Total = 10

Explain volume formulas and use them to solve problems.	
*HSG.GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissections arguments, Cavalieri's Principle, and informal limit arguments.
*HSG.GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.
Visualize relations between two-dimensional and three-dimensional objects.	
HSG.GMD.4	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.
Apply geometric concepts in modeling situations.	
*HSG.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Geometry

Probability - Ch. 12 (optional)			
Lesson	Resource	Study Guide & Intervention	Days
Representing Sample Spaces (HSS.CP.1)	12.1	TE p859B	1
Probability and Counting (HSS.CP.1)	12.2	TE p866B	1
Probability with Permutations and Combinations (HSS.CP.9)	12.3	TE p872B	1
Geometric Probability (HSS.MD.7)	12.4	TE p881B	1
Probability and the Multiplication Rule (HSS.CP.2, HSS.CP.8)	12.5	TE p889B	2
Probability and the Addition Rule (HSS.CP.1, HSS.CP.7)	12.6	TE p897B	2
Conditional Probability (HSS.CP.3, HSS.CP.5, HSS.CP.6)	12.7	TE p907B	2
Review and Test			2
Be here by end of Semester Two			**Total = 12**

Understand independence and conditional probability and use them to interpret data.	
HSS.CP.1	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).
HSS.CP.2	Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities and use this characterization to determine if they are independent.
HSS.CP.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.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.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.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.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.9	Use permutations and combinations to compute probabilities of compound events and solve problems.
Use probability to evaluate outcomes of decisions.	
HSS.MD.7	(+) Analyze decisions and strategies using probability concepts.

Geometry

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2025-2026

2025-2026

Formal Geometry Course Guide

#2215/2216 Formal Geometry

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

Chapter - Topic	Days	Chapter - Topic	Days
1 - Tools of Geometry	12	6 - Quadrilaterals	10
		7 - Similarity	13
2 - Logical Arguments and Line Relationships	22	8 - Right Triangles and Trigonometry	12
		9 - Circles	11
Be here by Fall Break		Be here by Spring Break	
3 - Rigid Transformations and Symmetry	10	10 - Extending Area	13
4 - Triangles and Congruence	15	11 - Extending Volume	10
5 - Relationships in Triangles	13	12 – Probability (Formal)	12
Be here by end of Semester One		Be here by end of Semester Two	

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy

Formal Geometry

Tools of Geometry – Ch. 1 Geometry begins w/Chapter 1 - *Only use Ch. 0 in remediation*			
Lesson	Resource	Extension	Days
Get Ready for Chapter 1 – Concept Check, Review/New Vocabulary	TE p4		1
Points Lines and Planes (HSG.CO.1)	1.1	TE p5B	1.5
Line Segments and Distance (HSG.CO.1, HSG.CO.12)	1.2	TE p14B	2
Locating Points and Midpoints (HSG.CO.1, HSG.CO.12)	1.3	TE p26B	2
Angle Measure (HSG.CO.1, HSG.CO.12)	1.4	TE p36B	1
Angle Relationships (HSG.CO.1, HSG.CO.12)	1.5	TE p46B	2.5
Review and Test			2
			Total = 12

Experiment with transformations in the plane.	
*HSG.CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
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.

Formal Geometry

Logical Arguments and Line Relationships – Ch. 2			
Lesson	Resource	Extension	Days
Chapter 2 – Part 1			
Conjectures and Counterexamples	2.1 (Formal)	TE p111B	1
Statements, Conditionals and BiConditionals	2.2 (Formal)	TE p119B	1
Deductive Reasoning (HSG.CO.9)	2.3	TE p131B	1
Writing Proofs (HSG.CO.9, HSG.MG.3) – *Formal Geometry students should be able to write proofs of any size.*	2.4	TE p140B	5 (Frml)
Proving Segment Relationships (HSG.CO.9, HSG.CO.12)	2.5	TE p152B	2
Proving Angle Relationships (HSG.CO.9, HSG.CO.12)	2.6	TE p159B	2
Review and Test			2
Chapter 2 – Part 2			
Parallel Lines and Transversals (HSG.CO.1, HSG.CO.9)	2.7	TE p111B	2
Slope and Equations of Lines (HSG.GPE.5)	2.8	TE p168B	1
Proving Lines Parallel (HSG.CO.9, HSG.CO.12)	2.9	TE p177B	2
Perpendiculars and Distance (HSG.CO.12, HSG.MG.3)	2.10	TE p186B	1
Review and Test			2
Be here by Fall Break			**Total = 22**

Experiment with transformations in the plane.	
*HSG.CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
Prove geometric theorems.	
*HSG.CO.9	Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.
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.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.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

Rigid Transformations and Symmetry – Ch. 3			
Lesson	Resource	Extension	Days
Get Ready for Chapter 3 – Concept Check, Review/New Vocabulary	TE p218		1
Reflections (HSG.CO.3, HSG.CO.4, HSG.CO.5)	3.1	TE p219B	1
Translations (HSG.CO.3, HSG.CO.4, HSG.CO.5, HSG.CO.6)	3.2	TE p230B	1
Rotations (rotations at origin & about a point) (HSG.CO.4, HSG.CO.5, HSG.CO.6)	3.3	TE p239B	1
Compositions of Transformations (HSG.CO.2, HSG.CO.5)	3.4	TE p248B	2
Symmetry (HSG.CO.3)	3.5	TE p259B	2
Review and Test			2
			Total = 10

Experiment with transformations in the plane.	
HSG.CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).
HSG.CO.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.
HSG.CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
*HSG.CO.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure on to another.
Understand congruence in terms of rigid transformations.	
*HSG.CO.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.

Formal Geometry

Triangles and Congruence - Ch. 4			
Lesson	Resource	Extension	Days
Get Ready for Chapter 4 – Concept Check, Review/New Vocabulary	TE p280		1
Angles of Triangles (HSG.CO.10)	4.1	TE p281B	2
Congruent Triangles (HSG.CO.7, HSG.CO.10, HSG.SRT.5)	4.2	TE p291B	2
Proving Triangles Congruent – SSS, SAS (HSG.CO.8, HSG.CO.10, HSG.CO.12, HSG.SRT.5)	4.3	TE p300B	2
Proving Triangles Congruent – ASA, AAS (HSG.CO.8, HSG.CO.12, HSG.SRT.5)	4.4	TE p311B	2
Proving Right Triangles Congruent (HSG.CO.10, HSG.SRT.5)	4.5	TE p319B	1
Isosceles and Equilateral Triangles (HSG.CO.10, HSG.CO.12)	4.6	TE p325B	1
Triangles and Coordinate Proof (HSG.CO.10, HSG.GPE.4)	4.7	TE p334B	1
Review and Test			3
			Total = 15

Understand congruence in terms of rigid motions.	
*HSG.CO.7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
*HSG.CO.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.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.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.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Formal Geometry

Relationships in Triangles - Ch. 5			
Lesson	Resource	Extension	Days
Get Ready for Chapter 5 - Concept Check, Review/New Vocabulary	TE p352		1
Bisectors of Triangles (HSG.CO.9, HSG.CO.10, HSG.CO.12, HSG.MG.3)	5.1	TE p353B	2
Medians & Altitudes of Triangles (HSG.CO.10, HSG.CO.12, HSG.MG.3) **[No emphasis on points of concurrency]**	5.2	TE p364B	2
Inequalities in One Triangle (HSG.CO.10)	5.3	TE p374B	1
Indirect Proof (HSG.CO.10)	5.4 (Formal)	TE p383B	1
The Triangle Inequality (HSG.CO.10, HSG.CO.12, HSG.MG.3)	5.5	TE p393B	2
Inequalities in Two Triangles (HSG.CO.10)	5.6 (Formal)	TE p401B	2
Review and Test			2
Be Here by end of Semester One			**Total = 13**

Prove geometric theorems.	
*HSG.CO.9	Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.
*HSG.CO.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.
Apply geometric concepts in modeling situations.	
*HSG.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Formal Geometry

Quadrilaterals - Ch. 6			
Lesson	Resource	Extension	Days
Get Ready for Chapter 6 – Concept Check, Review/New Vocabulary	TE p422		1
Angles of Polygons (HSG.MG.1)	6.1	TE p423B	1
Parallelogram (HSG.CO.11, HSG.GPE.4)	6.2	TE p433B	1
Tests of Parallelograms (HSG.CO.11, HSG.CO.12, HSG.GPE.4, HSG.GPE.5)	6.3	TE p442B	2
Special Parallelograms: Rectangles (HSG.CO.11, HSG.CO.12, HSG.GPE.4)	6.4	TE p453B	1
Special Parallelograms: Rhombi, Squares (HSG.CO.11, HSG.CO.12, HSG.GPE.4)	6.5	TE p460B	1
Trapezoids and Kites (HSG.MG.3, HSG.GPE.4)	6.6	TE p469B	1
Review and Test			2
			Total = 10

Prove geometric theorems.	
*HSG.CO.11	Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.
Make geometric constructions.	
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.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.1	Use geometric shapes, their measures, and their properties to describe objects.
*HSG.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Formal Geometry

Similarity - Ch. 7			
Lesson	Resource	Extension	Days
Get Ready for Chapter 7 – Concept Check, Review/New Vocabulary	TE p490		1
Dilations (HSG.CO.2, HSG.SRT.1)	7.1	TE p491B	2
Similar Polygons (HSG.SRT.2)	7.2	TE p502B	1
Similar Triangles AA Similarity (HSG.SRT.2, HSG.SRT.3, HSG.SRT.5)	7.3	TE p511B	1
Similar Triangles SSS and SAS Similarity (HSG.SRT.2, HSG.SRT.4, HSG.SRT.5)	7.4	TE p521B	1
Parallel Lines and Proportional Parts (HSG.CO.12, HSG.SRT.4, HSG.SRT.5)	7.5	TE p534B	2
Parts of Similar Triangles (HSG.SRT.4, HSG.SRT.5)	7.6	TE p544B	2
Review and Test			3
			Total = 13

Experiment with transformations in the plane.	
HSG.CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).
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.
Understand similarity in terms of similarity transformations.	
*HSG.SRT.1	Verify experimentally the properties of dilations given by a center and a scale factor: a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
*HSG.SRT.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and proportionality of all corresponding pairs of sides.
*HSG.SRT.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.
Prove theorems involving similarity.	
*HSG.SRT.4	Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.
*HSG.SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Formal Geometry

Right Triangles and Trigonometry - Ch. 8			
Lesson	Resource	Extension	Days
Get Ready for Chapter 8 - Concept Check, Review/New Vocabulary Supplement Rationalizing Denominator $\frac{3}{\sqrt{2}} = \frac{3\sqrt{2}}{2}$	TE p564		1
Geometric Mean (HSG.SRT.4, HSG.SRT.5)	8.1	TE p565B	1
The Pythagorean Theorem and Its Converse (HSG.CO.10, HSG.SRT.8, HSG.MG.3)	8.2	TE p574B	2
Special Right Triangles (HSG.SRT.6)	8.3	TE p586B	1
Trigonometry (HSG.SRT.6, HSG.SRT.7)	8.4	TE p595B	2
Angles of Elevation and Depression (HSG.SRT.8)	8.5	TE p608B	1
*The Law of Sines (HSG.SRT.10, HSG.SRT.11)	8.6 (Formal)	TE p616B	1
*The Law of Cosines (HSG.SRT.10, HSG.SRT.11)	8.7 (formal)	TE p624B	1
Review and Test			2
			Total = 12

Prove geometric theorems.	
*HSG.CO.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.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.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.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.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.7	Explain and use the relationship between the sine and cosine of complementary angles.
*HSG.SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.
HSG.SRT.10	Prove the Laws of Sines and Cosines and use them to solve problems.
HSG.SRT.11	Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

Formal Geometry

Circles - Ch. 9			
Lesson	Resource	Extension	Days
Get Ready for Chapter 9 - Concept Check, Review/New Vocabulary	TE p642		1
Circles and Circumference (HSG.CO.1, HSG.MG.1)	9.1	TE p643B	1
Measuring Angles and Arcs (HSG.C.2, HSG.C.5)	9.2	TE p652B	1
Arcs and Chords (HSG.C.2, HSG.CO.12, HSG.MG.3)	9.3	TE p661B	1
Inscribed Angles (HSG.C.2, HSG.C.3, HSG.CO.13)	9.4	TE p669B	2
Tangents (HSG.C.2, HSG.C.4)	9.5	TE p678B	1
Secants, Tangents and Angle Measures (HSG.C.2)	9.6	TE p687B	1
Review and Test			3
Be here by Spring Break			**Total = 11**

Experiment with transformations in the plane.	
*HSG.CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
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.
Make geometric constructions.	
HSG.CO.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.
Understand and apply theorems about circles.	
*HSG.C.2	Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.
HSG.C.3	Construct the inscribed and circumscribed circles of a triangle and prove properties of angles for a quadrilateral inscribed in a circle.
HSG.C.4	(+) Construct a tangent line from a point outside a given circle to the circle.
*HSG.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.
Apply geometric concepts in modeling situations.	
*HSG.MG.1	Use geometric shapes, their measures, and their properties to describe objects.
*HSG.MG.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

Extending Area - Ch. 10			
Lesson	Resource	Extension	Days
Get Ready for Chapter 10 – Concept Check, Review/New Vocabulary	TE p725		1
Areas of Parallelograms and Triangles (HSG.GPE.7, HSG.MG.1)	10.1	TE p725B	1
Areas of Trapezoids, Rhombi, and Kites (HSG.MG.3)	10.2	TE p733B	1
Areas of Circles and Sectors (HSG.C.5, HSG.GMD.1)	10.3	TE p743B	2
Areas of Regular Polygons and Composite Figures (HSG.MG.3)	10.4	TE p751B	2
Area of Nonrigid Transformations (HSG.GMD.1, HSG.MG.1)	10.5	TE p763B	1
Surface Area (HSG.MG.1, HSG.MG.3)	10.6	TE p770B	2
Review and Test			3
			Total = 13

Understand and apply theorems about circles.	
*HSG.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.
Explain volume formulas and use them to solve problems.	
*HSG.GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissections arguments, Cavalieri's Principle, and informal limit arguments*.
Use coordinates to prove simple geometric theorems algebraically.	
*HSG.GPE.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.1	Use geometric shapes, their measures, and their properties to describe objects.
*HSG.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Formal Geometry

Extending Volume - Ch. 11			
Lesson	Resource	Extension	Days
Get Ready for Chapter 11 - Concept Check, Review/New Vocabulary	TE p794		1
Cross Sections and Solids of Revolution (HSG.GMD.4)	11.1	TE p795B	1
Volume of Prisms and Cylinders (HSG.GMD.1, HSG.GMD.3, HSG.MG.3)	11.2	TE p802B	1
Volumes of Pyramids and Cones (HSG.GMD.1, HSG.GMD.3)	11.3	TE p810B	2
Spheres (HSG.MG.3, HSG.GMD.3)	11.4	TE p818B	1
Volume of Nonrigid transformations (HSG.GMD.1)	11.6	TE p834B	1
Review and Test			3
			Total = 10

Explain volume formulas and use them to solve problems.	
*HSG.GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissections arguments, Cavalieri's Principle, and informal limit arguments.
*HSG.GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.
Visualize relations between two-dimensional and three-dimensional objects.	
HSG.GMD.4	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.
Apply geometric concepts in modeling situations.	
*HSG.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Formal Geometry

Probability - Ch. 12 (Formal Geometry)			
Lesson	Resource	Study Guide & Intervention	Days
Representing Sample Spaces (HSS.CP.1)	12.1	TE p859B	1
Probability and Counting (HSS.CP.1)	12.2	TE p866B	1
Probability with Permutations and Combinations (HSS.CP.9)	12.3	TE p872B	1
Geometric Probability (HSS.MD.7)	12.4	TE p881B	1
Probability and the Multiplication Rule (HSS.CP.2, HSS.CP.8)	12.5	TE p889B	2
Probability and the Addition Rule (HSS.CP.1, HSS.CP.7)	12.6	TE p897B	2
Conditional Probability (HSS.CP.3, HSS.CP.5, HSS.CP.6)	12.7	TE p907B	2
Review and Test			2
Be here by end of Semester Two			**Total = 12**

Understand independence and conditional probability and use them to interpret data.	
HSS.CP.1	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).
HSS.CP.2	Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities and use this characterization to determine if they are independent.
HSS.CP.3	Understand the conditional probability of A given B as $\mathrm{P(A\ and\ B)/P(B)}$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.
HSS.CP.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.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.7	Apply the Addition Rule, $\mathrm{P(A\ or\ B) = P(A) + P(B) - P(A\ and\ B)}$, and interpret the answer in terms of the model.
HSS.CP.8	(+) Apply the general Multiplication Rule in a uniform probability model, $P(A\ and\ B) = P(A)P(B\|A) = P(B)P(A\|B)$, and interpret the answer in terms of the model.
HSS.CP.9	Use permutations and combinations to compute probabilities of compound events and solve problems.
Use probability to evaluate outcomes of decisions.	
HSS.MD.7	(+) Analyze decisions and strategies using probability concepts.

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2025-2026

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)

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	26	6 – Exponential & Logarithmic Functions	23
3 – Polynomial Functions	23	11 – Statistics (optional)	10
Be here by end of Semester One		Be here by end of Semester Two	

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy

Algebra 2

Linear Functions and Systems – Topic 1			
Lesson	Resource	Reteach & Build Understanding	Days
Key Features: Domain/Range, relative Max/Min and end behavior. Use interval notation and set-builder notation. Transformations of Absolute Value Functions (HSF.BF.B.3, HSF.IF.B.4, HSF.IF.B.5, HSF.IF.B.6, HSF.IF.C.7b)	Supplement 1.1		2
Piecewise-Defined Functions (HSF.IF.B.5, HSF.IF.C.7b, HSF.LE.A.2)	1.3	TE p30B	2
Solving Equations and Inequalities by Graphing (HSA.CED.A.1, HSA.REI.D.11)	1.5	TE p46B	2
Linear Systems – solve by graphing, substitution and elimination no matrices (HSA.CED.A.2, HSA.CED.A.3, HSA.REI.C.6)	1.6	TE p54B	3
Current Events - 3 Acts (HSA.CED.A.2, HSA.CED.A.3, HSA.REI.C.6)	TE p55		1
Review and Test			2
			Total = 12

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 soutions 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.

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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).

Algebra 2

Matrices – Topic 10			
Lesson	Resource	Reteach & Build Understanding	Days
Design Space Cities - STEM Project (HSN.VM.C.6, HSN.VM.C.8, HSN.VM.C.9)	TE p502		1
Operations with Matrices (HSN.VM.C.6, HSN.VM.C.7, HSN.VM.C.8)	10.1	TE p510B	2
Matrix Multiplication (HSN.VM.C.8, HSN.VM.C.9, HSN.VM.C.10)	10.2	TE p517B	2
Quiz			1
Inverses and Determinants (HSN.VM.C.10, HSA.REI.C.9)	10.4 Do Ex. 1-3	TE p536B	1
Inverse Matrices and System of Equations (HSA.CED.A.3, HSA.REI.C.8, HSA.REI.C.9)	10.5	TE p543B	2
The Big Burger - 3 Acts (optional) (HSN.VM.C.6, HSN.VM.C.8)	TE p544		1
Review and Test			2
Calculate using all operations (and determinants) by hand and with technology.			**Total = 12**

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 a square matrix is nonzero if and only if the matrix has a multiplicative inverse.

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Quadratic Functions and Equations – Topic 2			
Lesson	Resource	Reteach & Build Understanding	Days
Hit a Home Run - STEM Project (HSF.BF.B.3, HSF.IF.B.4, HSF.IF.C.7)	TE p73		1
Vertex Form of a Quadratic Function (HSA.CED.A.2, HSF.BF.B.3, HSF.IF.B.4)	2.1	TE p79B	3
Standard Form of a Quadratic Function (HSA.CED.A.2, HSF.IF.B.4)	2.2	TE p87B	3
Quadratic Form of a Quadratic Function (HSA.APR.B.3, HSA.SSE.A.2, HSA.SSE.B.3a-b)	2.3	TE p94B	3
Review and Test			2
Complex Numbers and Operations (HSN.CN.A.1, HSN.CN.A.2, HSN.CN.A.3) - Review simplifying square roots	2.4	TE p101B	3
Swift Kick - 3 Acts (optional) (HSA.CED.A.2, HSF.IF.B.4)	TE p102		1
Completing the Square (HSN.CN.C.7, HSA.REI.B.4, HSA.SSE.B.3b)	2.5	TE p109B	3
The Quadratic Formula (HSN.CN.C.7, HSA.REI.B.4)	2.6	TE p116B	3
Linear-Quadratic Systems (HSN.CN.C.7, HSA.REI.C.7, HSA.REI.D.11)	2.7	TE p123B	2
Review and Test			2
No horizontal stretch or compressions for any families			**Total = 26**

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.

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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 $a \pm bi$ 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.
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 soutions of the equation $f(x) = g(x)$
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.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

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Polynomial Functions – Topic 3			
Lesson	Resource	Reteach & Build Understanding	Days
Design a Stadium - STEM Project (HSA.CED.A.2, HSF.BF.A.1, HSF.IF.A.2, HSF.IF.C.7, HSF.LE.A.3)	TE p130		1
Graphing Polynomial Functions (HSF.IF.B.4, HSF.IF.B.6, HSF.IF.C.7c)	3.1	TE p139B	3
Adding, Subtracting and Multiplying Polynomials (HSA.APR.A.1, HSF.BF.B.1b, HSF.IF.C.9)	3.2	TE p145B	2
Polynomial Identities (HSA.APR.C.4, HSA.SSE.A.2)	3.3	TE p153B	2
Dividing Polynomials (HSA.APR.B.2, HSA.APR.D.6, HSA.SSE.A.2)	3.4	TE p161B	3
Zeros of Polynomial Functions (HSA.APR.B.3, HSA.SSE.A.2, HSF.IF.C.7c)	3.5	TE p169B	3
Polynomial Rollercoasters – 3 Acts	Math Res		2
Theorems About Roots of Polynomial Equations (HSN.CN.C.8, HSN.CN.C.9, HSA.APR.B.2, HSA.APR.B.3)	3.6	TE p178B	2
Transformations of Polynomial Functions (HSF.BF.B.3)	3.7	TE p186B	3
Review and Test			2
Be here by end of Semester One			**Total = 23**

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 Theorem: For a polynomial p(x) and a number a, the remainder on division by $x - a$ is p(a), so $p(a) = 0$ if and only if $(x - a)$ is a factor of p(x).
*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.

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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.
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.
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; 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).
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.

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Rational Functions – Topic 4			
Lesson	Resource	Reteach & Build Understanding	Days
Review Fractions and Factoring Quadratics	Supplement		1
Manufacturing Costs - STEM Project (HSA.CED.A.1, HSA.CED.A.2, HSA.REI.D.11, HSF.IF.C.7d)	TE p192		1
Inverse Variation and the Reciprocal Function (HSA.CED.A.2, HSF.BF.B.3, HSF.IF.C.7d)	4.1	TE p200B	3
Graphing Rational Functions (transformation of rational functions) (HSA.APR.D.6, HSA.REI.D.11, HSF.BF.B.3, HSF.IF.C.7d)	4.2	TE p209B	4
Multiplying and Dividing Rational Expressions (HSA.APR.D.6, HSA.APR.D.7, HSA.SSE.A.2)	4.3	TE p216B	3
Adding and Subtracting Rational Expressions (HSA.APR.D.7, HSA.SSE.A.2)	4.4	TE p223B	5
Solving Rational Equations (HSA.CED.A.1, HSA.REI.A.1, HSA.REI.A.2)	4.5	TE p231B	5
Real Cool Waters - 3 Acts	TE p232		1
Review and Test			2
			Total = 25

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.

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*HSA.REI.A.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
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 soutions 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 it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.
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

Rational Exponents and Radical Functions – Topic 5			
Lesson	Resource	Reteach & Build Understanding	Days
Tune a Piano - STEM Project (HSN.RN.A.2, HSA.CED.A.1, HSA.REI.A.1, HSA.SSE.A.1)	TE p239		1
nth Roots, Radicals, Rational Exponents (HSN.RN.A.1, HSN.RN.A.2, HSA.REI.A.1) Use of absolute value and $\pm$ are both used in this text. However, in this class and on assessments the absolute value will be used when simplifying expressions. $\sqrt[4]{625x^{24}y^{28}} = \lvert 5x^6y^7 \rvert$ Use $\pm$ if $x^2 = 36$, then $x = \pm 6$.	5.1	TE p246B	4
Properties of Exponents and Radicals (HSA.SSE.A.1, HSA.SSE.A.2)	5.2	TE p254B	4
Graphing Radical Functions (HSF.BF.B.3, HSF.IF.B.4, HSF.IF.C.7d)	5.3	TE p262B	3
Solving Radical Equations (HSA.CED.A.4, HSA.REI.A.1, HSA.REI.A.2)	5.4	TE p271B	2
The Snack Shack - 3 Acts (HSA.CED.A.1, HSA.CED.A.4, HSA.REI.A.2)	TE p272		1
Function Operations (HSF.BF.A.1b, HSF.BF.A.1c)	5.5	TE p280B	2
Inverse Relations and Functions (HSF.BF.B.4a-d)	5.6	TE p289B	2
Review and Test			2
			Total = 21

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 the parts as a single entity. For example, interpret $\mathrm{P}(1+\mathrm{r})^{\mathrm{t}}$ 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. c. (+) Compose 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. 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.

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Exponential and Logarithmic Functions – Topic 6			
Lesson	Resource	Reteach & Build Understanding	Days
Analyze Elections - STEM Project (HSA.CED.A.1, HSF.BF.B.5, HSF.IF.C.8, HSF.LE.A.4)	TE p297		1
Key Features of Exponential Functions (supplement transformations (h,k) and a, $f(x) = a(b)^{(x-h)} + k$) (HSF.BF.B.3, HSF.IF.B.4, HSF.IF.B.6, HSF.IF.C.7e, HSF.IF.C.9, HSF.LE.A.2, HSF.LE.B.5)	6.1	TE p304B	4
Exponential Models (HSA.SSE.B.3c, HSF.IF.C.8b, HSF.LE.B.5)	6.2	TE p312B	3
Buying a Car – 3 Acts	Math Res		2
Logarithms (HSF.BF.B.4a, HSF.BF.B.5, HSF.LE.A.4)	6.3	TE p320B	3
Logarithmic Functions (HSF.BF.B.3, HSF.BF.B.5, HSF.IF.B.5, HSF.IF.B.6, HSF.IF.C.7e, HSF.IF.C.9)	6.4	TE p326B	3
Properties of Logarithms (HSF.LE.A.4)	6.5	TE p332B	3
Exponential and Logarithmic Equations (HSA.CED.A.1, HSA.REI.A.1, HSA.REI.D.11, HSA.SSE.A.2, HSF.LE.A.4)	6.6	TE p339B	2
Review and Test			2
			Total = 23

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 method.
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 soutions 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.

Algebra 2

	c. Use the properties of exponents to transform expressions for exponential functions. For example, the expression 1.15^{t} can be rewritten as $\left(1.15^{1/12}\right)^{12t}$ 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 $f(x)+k,\ k\cdot f(x),\ f(kx),$ $and\ f(x+k)$ 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.
*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. b. (+) Verify by composition that one function is the inverse of another. c. (+) Read values of an inverse function from a graph or table, given that the function has an inverse. d. (+) Produce an invertible function from a non-invertible function by restricting the domain.
HSF.BF.B.5	(+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.
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. Estimate 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. *e. Graph exponential and logarithmic functions, showing intercepts and end behavior.
*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 properties of exponents to interpret expressions for exponential functions.
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 rational function and an algebraic expression for another compare features.
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.

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Statistics – Topic 11 (optional)			
Lesson	Resource	Reteach & Build Understanding	Days
Statistical Questions and Variables (HSS.IC.A.1)	11.1	p557B	2
Statistical Studies and Sampling Methods (HSS.IC.A.1, HSS.IC.B.3, HSS.IC.B.6)	11.2	p564B	2
Data Distributions (HSS.IC.A.2, HSS.ID.A.1, HSS.ID.A.2)	11.3	p572B	2
Normal Distributions (HSS.IC.B.6, HSS.ID.A.4)	11.4	p580B	2
Review and Test			2
Be here by end of Semester Two			**Total = 10**

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. Would a result of 5 tails in a row cause you to question the model?
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, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
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.

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2025-2026

Algebra 2 Honors Course Guide

#2227/2228 Algebra 2 Honors

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

Topic	Days	Topic	Days
1 – Linear Functions & Systems	12	4 – Rational Functions	25
10 - Matrices	14	5 – Rational Exponents & Radical Functions	21
2 – Quadratic Functions & Equations	26	6 – Exponential & Logarithmic Functions	23
3 – Polynomial Functions	23	11 – Statistics (Optional Honors)	10
		7 – Trigonometry (Optional Honors)	10
Be here by end of Semester One		Be here by end of Semester Two	

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy



Honors Algebra 2

Linear Functions and Systems – Topic 1			
Lesson	Resource	Enrichment	Days
Key Features: Domain/Range, relative Max/Min, intervals where function is increasing/decreasing, positive/negative, symmetries and end behavior. Use interval notation and set-builder notation. Transformations of Absolute Value Functions (HSF.BF.B.3, HSF.IF.B.4, HSF.IF.B.5, HSF.IF.B.6, HSF.IF.C.7b)	Supplement 1.1		2
Piecewise-Defined Functions (HSF.IF.B.5, HSF.IF.C.7b, HSF.LE.A.2)	1.3	TE p30B	2
Solving Equations and Inequalities by Graphing (HSA.CED.A.1, HSA.REI.D.11)	1.5	TE p46B	2
Linear Systems – solve by graphing, substitution and elimination no matrices (HSA.CED.A.2, HSA.CED.A.3, HSA.REI.C.6)	1.6	TE p54B	3
Current Events - 3 Acts (HSA.CED.A.2, HSA.CED.A.3, HSA.REI.C.6)	TE p55		1
Review and Test			2
			Total = 12

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 soutions 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.

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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).

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Matrices – Topic 10			
Lesson	Resource	Enrichment	Days
Design Space Cities - STEM Project (HSN.VM.C.6, HSN.VM.C.8, HSN.VM.C.9)	TE p502		1
Operations with Matrices (HSN.VM.C.6, HSN.VM.C.7, HSN.VM.C.8)	10.1	TE p510B	2
Matrix Multiplication (HSN.VM.C.8, HSN.VM.C.9, HSN.VM.C.10)	10.2	TE p517B	2
Vectors (HSN.VM.A.1, HSN.VM.B.4, HSN.VM.B.5, HSN.VM.C.11)	10.3 (H)		2
Quiz			1
Inverses and Determinants (HSN.VM.C.10, HSA.REI.C.9)	10.4 **Ex. 1-5**	TE p536B	1
Inverse Matrices and System of Equations (HSA.CED.A.3, HSA.REI.C.8, HSA.REI.C.9)	10.5	TE p543B	2
The Big Burger - 3 Acts (HSN.VM.C.6, HSN.VM.C.8)	TE p544		1
Review and Test			2
Calculate using all operations (and determinants) by hand and with technology.			**Total =14**

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.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	(+) Multiply a vector by a scalar.

	a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise. $c(v_x, v_y) = (cv_x, cv_y)$. b. 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 is either along v $(c > 0)$ or against v $(c < 0)$.
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 a square matrix is nonzero if and only if the matrix has a multiplicative inverse.
HSN.VM.C.11	(+) Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.

Honors Algebra 2

Quadratic Functions and Equations – Topic 2			
Lesson	Resource	Enrichment	Days
Hit a Home Run - STEM Project (HSF.BF.B.3, HSF.IF.B.4, HSF.IF.C.7)	TE p73		1
Vertex Form of a Quadratic Function (HSA.CED.A.2, HSF.BF.B.3, HSF.IF.B.4)	2.1	TE p79B	3
Standard Form of a Quadratic Function (HSA.CED.A.2, HSF.IF.B.4)	2.2	TE p87B	3
Quadratic Form of a Quadratic Function (HSA.APR.B.3, HSA.SSE.A.2, HSA.SSE.B.3a-b)	2.3	TE p94B	3
Review and Test			2
Complex Numbers and Operations (HSN.CN.A.1, HSN.CN.A.2, HSN.CN.A.3) Review simplifying square roots	2.4	TE p101B	3
Swift Kick - 3 Acts (optional) (HSA.CED.A.2, HSF.IF.B.4)	TE p102		1
Completing the Square (HSN.CN.C.7, HSA.REI.B.4, HSA.SSE.B.3b)	2.5	TE p109B	3
The Quadratic Formula (HSN.CN.C.7, HSA.REI.B.4)	2.6	TE p116B	3
Linear-Quadratic Systems (HSN.CN.C.7, HSA.REI.C.7, HSA.REI.D.11,)	2.7	TE p123B	2
Review and Test			2
NOTE: no horizontal stretch or compressions for any families			**Total = 26**

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.

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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 $a \pm bi$ 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.
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 soutions of the equation $f(x) = g(x)$
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.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

Honors Algebra 2

Polynomial Functions – Topic 3			
Lesson	Resource	Enrichment	Days
Design a Stadium - STEM Project (HSA.CED.A.2, HSF.BF.A.1, HSF.IF.A.2, HSF.IF.C.7, HSF.LE.A.3)	TE p130		1
Graphing Polynomial Functions (HSF.IF.B.4, HSF.IF.B.6, HSF.IF.C.7c)	3.1	TE p139B	3
Adding, Subtracting and Multiplying Polynomials (HSA.APR.A.1, HSF.BF.A.1b , HSF.IF.C.9)	3.2	TE p145B	2
Polynomial Identities (HSA.APR.C.4, HSA.SSE.A.2)	3.3	TE p153B	2
Dividing Polynomials (HSA.APR.B.2, HSA.SSE.A.2. HSA.APR.D.6)	3.4	TE p161B	3
Zeros of Polynomial Functions (HSA.APR.B.3, HSA.SSE.A.2, HSF.IF.C.7c)	3.5	TE p169B	3
Polynomial Rollercoasters – 3 Acts	Math Res		2
Theorems About Roots of Polynomial Equations (HSN.CN.C.8, HSN.CN.C.9, HSA.APR.B.2, HSA.APR.B.3)	3.6	TE p178B	2
Transformations of Polynomial Functions (HSF.BF.B.3)	3.7	TE p186B	3
Review and Test			2
Be here by end of Semester One			**Total= 23**

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 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.

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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.
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).
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.

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Rational Functions – Topic 4			
Lesson	Resource	Enrichment	Days
Review Fractions and Factoring Quadratics	Supplement		1
Manufacturing Costs - STEM Project (HSA.CED.A.1, HSA.CED.A.2, HSA.REI.D.11, HSF.IF.C.7d)	TE p192		1
Inverse Variation and the Reciprocal Function (HSA.CED.A.2, HSF.BF.B.3, HSF.IF.C.7d)	4.1	TE p200B	3
Graphing Rational Functions (transformation of rational functions) (HSA.APR.D.6, HSA.REI.D.11, HSF.BF.B.3, HSF.IF.C.7d)	4.2	TE p209B	4
Multiplying and Dividing Rational Expressions (HSA.APR.D.6, HSA.APR.D.7, HSA.SSE.A.2)	4.3	TE p216B	3
Adding and Subtracting Rational Expressions (HSA.APR.D.7, HSA.SSE.A.2)	4.4	TE p223B	5
Solving Rational Equations (HSA.CED.A.1, HSA.REI.A.1, HSA.REI.A.2)	4.5	TE p231B	5
Real Cool Waters - 3 Acts	TE p232		1
Review and Test			2
			Total = 25

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 showing how extraneous solutions may arise.

Honors 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 soutions 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 it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.
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.

Honors Algebra 2

Rational Exponents and Radical Functions – Topic 5			
Lesson	Resource	Enrichment	Days
Tune a Piano - STEM Project (HSN.RN.A.2, HSA.CED.A.1, HSA.REI.A.1, HSA.SSE.A.1)	TE p239		1
nth Roots, Radicals, Rational Exponents (HSN.RN.A.1, HSN.RN.A.2, HSA.REI.A.1) Use of absolute value and $\pm$ are both used in this text. However, in this class and on assessments the absolute value will be used when simplifying expressions $\sqrt[4]{625x^{24}y^{28}} = \lvert 5x^6y^7 \rvert$ Use $\pm$ if $x^2 = 36$, then $x = \pm 6$.	5.1	TE p246B	4
Properties of Exponents and Radicals (HSA.SSE.A.1, HSA.SSE.A.2)	5.2	TE p254B	4
Graphing Radical Functions (HSF.BF.B.3, HSF.IF.B.4, HSF.IF.C.7d)	5.3	TE p262B	3
Solving Radical Equations (HSA.CED.A.4, HSA.REI.A.1, HSA.REI.A.2)	5.4	TE p271B	2
The Snack Shack - 3 Acts (HSA.CED.A.1, HSA.CED.A.4, HSA.REI.A.2)	TE p272		1
Function Operations (HSF.BF.A.1b, HSF.BF.A.1c)	5.5	TE p280B	2
Inverse Relations and Functions (HSF.BF.B.4a-d)	5.6	TE p289B	2
Review and Test			2
			Total = 21

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 method.
*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.	

Honors Algebra 2

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 the parts as a single entity. For example, interpret $P(1+r)^t$ 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. c. (+) Compose 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. 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. 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.

Honors Algebra 2

Exponential and Logarithmic Functions – Topic 6			
Lesson	Resource	Enrichment	Days
Analyze Elections - STEM Project (HSA.CED.A.1, HSF.BF.B.5, HSF.IF.C.8, HSF.LE.A.4)	TE p297		1
Key Features of Exponential Functions (supplement transformations (h,k) and a, $f(x) = a(b)^{(x-h)} + k$) (HSF.BF.B.3, HSF.IF.B.4, HSF.IF.B.6, HSF.IF.C.7e, HSF.IF.C.9, HSF.LE.A.2, HSF.LE.B.5)	6.1	TE p304B	4
Exponential Models (HSA.SSE.B.3c, HSF.IF.C.8b, HSF.LE.B.5)	6.2	TE p312B	3
Buying a Car – 3 Acts	Math Res		2
Logarithms (HSF.BF.B.4a, HSF.BF.B.5, HSF.LE.A.4)	6.3	TE p320B	3
Logarithmic Functions (HSF.BF.B.3, HSF.BF.B.5, HSF.IF.B.5, HSF.IF.B.6, HSF.IF.C.7e, HSF.IF.C.9)	6.4	TE p326B	3
Properties of Logarithms (HSF.LE.A.4)	6.5	TE p332B	3
Exponential and Logarithmic Equations (HSA.CED.A.1, HSA.REI.A.1, HSA.REI.D.11, HSA.SSE.A.2, HSF.LE.A.4)	6.6	TE p339B	2
Review and Test			2
			Total = 23

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 method.
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 soutions 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 $\left(1.15^{1/12}\right)^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

Honors 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.
*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. b. (+) Verify by composition that one function is the inverse of another. c. (+) Read values of an inverse function from a graph or table, given that the function has an inverse. d. (+) Produce an invertible function from a non-invertible function by restricting the domain.
HSF.BF.B.5	(+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.
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. Estimate 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. *e. Graph exponential and logarithmic functions, showing intercepts and end behavior.
*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 properties of exponents to interpret expressions for exponential functions.
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 rational function and an algebraic expression for another compare features.
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.

Honors Algebra 2

Statistics – Topic 11 (Optional)			
Lesson	Resource	Enrichment	Days
Statistical Questions and Variables (HSS.IC.A.1)	11.1	p557B	2
Statistical Studies and Sampling Methods (HSS.IC.A.1, HSS.IC.B.3, HSS.IC.B.6)	11.2	p564B	2
Data Distributions (HSS.ID.A.1, HSS.ID.A.2, HSS.IC.A.2)	11.3	p572B	2
Normal Distributions (HSS.ID.A.4, HSS.IC.B.6)	11.4	p580B	2
Review and Test			2
			Total = 10

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. Would a result of 5 tails in a row cause you to question the model?
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, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
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.

Trigonometry – Topic 7 (Optional)			
Topics	Resource	Packet	Days
Trigonometric Functions and Acute Angles	7.1 Text		
Angles and the Unit Circle	7.2 Text		
○ Right Triangle Trigonometry		9.1	1
○ Oblique Triangle Trigonometry		9.2	1
○ Special Right Triangles		9.3	1
○ The Unit Circle		9.4	2
○ Radian and Degrees		9.5	2
○ Reciprocal Trig Functions		9.6	1
Review and Test			2
Be here by end of Semester Two			**Total = 10**

2025-2026

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.

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy



Intro to Pre-Calculus

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		

Intro to Pre-Calculus

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		

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2025-2026

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.

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy

Pre-Calc w/Trig

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		

Pre-Calc w/Trig

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		

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2025-2026

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.

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy



Adv Algebra 3

2025-2026 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 weeks	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

2025-2026 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

Adv Algebra 3

Project Based Finance Find Guest Speakers	Life After High School ○ Job possibilities immediately after HS ○ Summer School Opportunities ○ Community Volunteering ○ Career Choices* ○ College/trade/certification for those career choices	
	Location ○ Cost of living around the nation ○ Population statistics ○ Renting an Apartment ○ Cost of moving	
	Budgeting ○ Salary comparison with different education levels ○ Grocery shopping budgeting ○ Monthly luxury budgeting	
	Buying a Car ○ Cost of a car	
	Scenarios (Students are given 4 scenarios of different lives: - education level, careers, location, and budget)	

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

Adv Algebra 3

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

2025-2026

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.

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy

Prob/Stat/Discrete

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

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 Option 1	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 Option 1	Number bases in positional systems Computation in positional systems	Chapter 4 Thinking Mathematically
Unit 13 5 weeks Option 2	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

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2025-2026

PreCollege Math Course Guide

#2229/2230

Course Description

PreCollege Math is the first of the College Remediation classes, the intent is 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 classes.

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy

Pre-College 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

Pre-College Math

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

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2025-2026

Financial Math Course Guide w/Edgenuity

#12483/12484

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 financial contexts to strengthen and expand problem solving. Students will receive teacher led instruction in class and use Edgenuity as a tool for receiving content. Students will increase their understanding of the course material by participating in homework on Edgenuity, class work, quizzes and tests on Edgenutiy or in class, group and individual tasks, and independent problem solving. Calculators are required.

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy

Financial Math

2022-2023 Financial Math – Semester 1	
Income	
Sources of Income	
Variable Earnings	
Gross Pay vs Net Pay	
Employee Benefits	
Budgeting and Wise Spending	
Personal Budget	
Financial Reserves	
Keeping Financial Records	
Tax and Gratuities	
Discounts	
Unit Prices	
Banking	
Selecting a Bank	
Checking Accounts	
Using a Debit Card	
Savings Accounts	
Simple Interest	
Compound Interest	
Paying Taxes	
Tax Basics	
Social Security and Medicare	
Personal Income and Property Taxes	
Tax Returns	
Buying a House	
Qualifying for a Home Loan	
Other Costs of Buying a Home	
Mortgages	
Buying vs Renting a Home	
Home Ownership	

Financial Math

2022-2023 Financial Math – Semester 2	
Consumer Loans	
Interest Rates	
Borrowing Money	
Personal Loans	
Financing a Car	
Leasing vs Buying a Car	
Applying for a Loan	
Consumer Credit	
Using Credit	
Credit vs Cash	
Long Term Purchases	
Credit Scores and Reports	
Finance Charges	
Consumer Debt	
Paying off Debt	
Debt Management	
Bankruptcy	
Consumer Responsibilities	
Identity Theft	
Starting a Business	
The Business Plan	
Business Income Statements	
Break-Even Analysis	
Markup and Markdown	
Analyzing Business Data	
Using Graphs to Advertise	
Data-Based Business Decisions	
Business Summary Statistics	
Probability in the Business Setting	

2025-2026

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 SPED students for Algebra 1)

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

Chapter - Topic	Days	Chapter - Topic	Days
1 – The Language of Algebra	22	5 – Ratio, Proportion & Similar Figures	25
2 – Operations with Integers	17	6 – Percents	16
Fall Break		Spring Break	
3 – Operations w/Rational Numbers	21	7 – Algebraic Expressions	16
4 – Powers and Roots	18	8 – Equations and Inequalities	27
End of Semester 1		End of Semester 2	

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy



Bridge to Algebra

The Language of Algebra – Ch. 1		
Lessons	Resources	Days
A Plan for Problem Solving	Example 1, 2	1
Words and Expressions	Example 1, 2, 3	3
Inquiry Lab: Rules and Exponents	Toothpicks	1
Variables and Expressions	Example 1, 2, 3, 4	3
Properties of numbers	Example 2, 3	2
Problem Solving Strategies	Example 1, 2, 3, 4	2
Ordered Pairs and Relations	Example 1, 2, 3, 4	4
Words, Equations, Tables	Example 1, 2	4
Review and Test		2
		Total = 22

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
*7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
Use properties of operations to generate equivalent expressions.	
*7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
*7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."
Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
*7.EE.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations as strategies to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.
*7.EE.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. *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.

Bridge to Algebra

Operations with Integers – Ch. 2		
Lessons	Resources	Days
Integers and Absolute Value	Examples 1 - 5	2
Inquiry Lab: Adding Integers	Algebra Tiles	1
Adding Integers	Examples 1 - 5	2
Inquiry Lab: Subtracting Integers	Algebra Tiles	1
Subtracting Integers	Example 1 - 4	2
Inquiry Lab: Multiplying Integers	Algebra Tiles	1
Multiplying Integers	Example 1 - 6	2
Dividing Integers	Example 1 - 4	2
Graphing in Four Quadrants	Example 1 - 3	2
Review and Test		2
Be Here By Fall Break		**Total = 17**

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
*7.NS.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. *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.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.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.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.

Bridge to Algebra

Operations with Rational Numbers – Ch. 3		
Lessons	Resources	Days
Inquiry Lab: Fractions and Decimals	Number Line	2
Fractions and Decimals (practice by hand and with a calculator)	Examples 1 - 5	3
Rational Numbers	Examples 1 – 4	2
Multiplying Rational Numbers (use area models, not tricks)	Examples 1 – 4	3
Dividing Rational Numbers (use strategies for division, not tricks)	Examples 1 - 5	3
Adding and Subtracting like Fractions	Examples 1 – 6	1
Adding and Subtracting unlike Fractions	Examples 1 - 4	5
Review and Test		2
		Total = 21

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
*7.NS.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. *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.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.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.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.

Bridge to Algebra

Powers and Roots – Ch. 4		
Lessons	Resources	Days
Powers and Exponents	Examples 1 – 3	2
Negative Exponents	Examples 1 – 4	2
Multiplying and Dividing Monomials	Examples 1 – 5	2
Scientific Notation	Examples 1 – 5	2
Compute with Scientific Notation	Examples 1 – 4	2
Inquiry Lab: Scientific Notation Using Technology	Calculator	2
Square Roots	Examples 1 - 3	2
The Real Number System	Examples 1 – 3, 4a	2
Review and Test		2
Be Here By End of Semester 1		**Total = 18**

Know that there are numbers that are not rational, and approximate them by rational numbers.	
8.NS.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.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.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = \frac{1}{3^3} = \frac{1}{27}$
8.EE.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.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.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.

Bridge to Algebra

Ratio, Proportion, and Similar Figures – Ch. 5		
Lessons	Resources	Days
Ratios (discuss equivalence that they may not know, 12 inches = 1 foot....)	Examples 1 – 3	3
Unit Rates (Use double number lines from grade 6 to assist with reasoning)	Examples 1 – 3	4
Complex Fractions and Unit Rates	Examples 1 – 4	4
Proportional and Nonporportional Relationships	Examples 1 – 3	2
Graphing Proportional Relationships	Examples 1 – 2	3
Solving Proportions (Use double number lines from grade 6)	Examples 1 – 3	4
Scale Drawings and Models	Examples 1 – 3	3
Don't teach Lessons 5.4, 5.9, 5.10		
Review and Test		2
		Total = 25

Analyze proportional relationships and use them to solve real-world and mathematical problems.	
*7.RP.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour
*7.RP.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.
*7.RP.3	Use proportional relationships to solve multistep ratio and percent problems.
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
*7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
Draw, construct, and describe geometrical figures and describe the relationships between them.	
*7.G.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

Bridge to Algebra

Percents – Ch. 6		
Lessons	Resources	Days
Inquiry Lab: Percent Models	Double number lines	2
Using the Percent Proportion	Examples 1 – 4	2
Find Percent of a Number Mentally	Examples 1 - 5	2
Using the Percent Equation (make use of double number lines for understanding)	Examples 1 – 5	2
Inquiry Lab: Percent of Change	Double number lines	1
Percent of Change	Examples 1 – 3	2
Discount and Markup	Examples 1 - 4	3
Don't teach Lessons 6.5, 6.6		
Review and Test		2
Be Here By Spring Break		**Total = 16**

Analyze proportional relationships and use them to solve real-world and mathematical problems.	
*7.RP.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.
*7.RP.3	Use proportional relationships to solve multistep ratio and percent problems.
Use properties of operations to generate equivalent expressions.	
*7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."
Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
*7.EE.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations as strategies to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an121ndistrinal 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 ¾ inches long in the center of a door that is 27 ½ 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.

Bridge to Algebra

Algebraic Expressions – Ch. 7		
Lessons	Resources	Days
The Distributive Property	Examples 1 – 4	1
Inquiry Lab: Simplifying Algebraic Expressions	Algebra Tiles	2
Simplifying Algebraic Expression	Examples 1 – 4	3
Adding Linear Expressions (with Algebra Tiles)	Examples 1 – 3	2
Subtracting Linear Expressions (with Algebra Tiles)	Examples 1 – 3	2
Inquiry Lab: Factoring Linear Expressions (undistribute)	Algebra Tiles	2
Factoring Linear Expressions (with Algebra Tiles)	Examples 1 – 2	2
Review and Test		2
		Total = 16

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
*7.NS.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.
Use properties of operations to generate equivalent expressions.	
*7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
*7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."

Bridge to Algebra

Equations and Inequalities – Ch. 8		
Lessons	Resources	Days
Solving Equations with Rational Coefficients	Examples 1 – 3	3
Inquiry Lab: Solving Two-Step Equations	Algebra Tiles	3
Solving Two-Step Equations (with Algebra Tiles)	Examples 1 – 5	3
Writing Equations	Examples 1 – 3	3
Inquiry Lab: More Two-Step Equations	Algebra Tiles	1
More Two-Step Equations (with Algebra Tiles)	Examples 1 – 3	2
Inquiry Lab: Solving Equations with Variables on Each Side	Algebra Tiles	1
Solving Equations with Variables on Each Side (with Algebra Tiles)	Examples 1 – 3	2
Inequalities (with Number Lines)	Examples 1 - 5	2
Solving Inequalities (with Number Lines)	Examples 1 - 3	2
Solving Multi-Step Equations	Examples 1 & 2	3
Review and Test		2
Be here by End of Semester 2		**Total = 27**

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
*7.EE.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. *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.
*8.EE.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

2025-2026

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

SPED Two - Year Algebra 1 Pacing

Year One (S1 Content) Algebra 1		Year Two (S2 Content) Algebra 1	
S1-Topics	Days	S1-Topics	Days
1 - Solving Equations & Inequalities	21	6 – Exponents & Exponential Functions	30
2 - Linear Equations	10		
Fall Break		Fall Break	
2 - Linear Equations	20	7 - Polynomials and Factoring	30
3 - Linear Functions	18		
End of Semester 1 Year One		End of Semester 1 Year Two	
S2-Topics	Days	S2-Topics	Days
3 - Linear Functions	12	8 - Quadratic Functions	22
4 - Systems of Equations & Inequalities	29	9 – Solving Quadratic Equations	11
Spring Break		Spring Break	
5 – Piecewise Functions	22	9 - Solving Quadratic Equations	31
End of Semester 2 Year One		End of Semester 2 Year Two	

Instructional Materials Feedback:
https://forms.office.com/r/MjRCBTmDRy

SPED Year One Algebra 1 (S1)

Solving Equations and Inequalities – Topic 1		
Lesson	Resource	Days
Supplement with simplify expressions and equations with more fractions. Solving Linear Equations (HSA.CED.A.1, HSA.REI.A.1, HSA.REI.B.3)	1.2	3
Solving Equation w/Variables (HSN.Q.A.2, HSA.CED.A.1, HSA.REI.A.1, HSA.REI.B.3)	1.3	3
Literal Equations and Formulas (HSN.Q.A.1, HSA.CED.A.1, HSA.CED.A.4) Prioritize transforming equations to slope-intercept form.	1.4	3
Solving Inequalities in One Variable (HSA.CED.A.1, HSA.CED.A.3, HSA.REI.B.3)	1.5	3
Collecting Cans - 3 Acts (HSA.CED.A.1, HSA.REI.A.1, HSA.REI.B.3)	TE p36	1-opt
Compound Inequalities (HSA.CED.A.1, HSA.CED.A.3, HSA.REI.B.3)	1.6	3
Review and Test		3
Essential Standards Reteaching and Intervention		2
		Total = 21

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.

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Linear Equations – Topic 2		
Lesson	Resource	Days
Design a Pitched Roof - STEM Project (HSF.IF.B.4, HSS.ID.C.7)	TE p 56	1-opt
Slope-Intercept Form (HSA.CED.A.2, HSS.ID.C.7) – Graph and understand parts of $y = mx + b$	2.1	6
Review and Quiz		3
Be Here by Fall Break Year One		**Total = 10**
Point Slope Form (Supplement (h, k) form) (HSA.CED.A.2, HSF.LE.A.2, HSS.ID.C.7)	2.2	4
Standard Form and convert to other forms: slope intercept, (h,k) form and point slope (HSA.CED.A.2, HSA.CED.A.3, HSS.ID.C.7)	2.3	4
How Tall is Tall? - 3 Acts (HSA.CED.A.1, HSA.CED.A.3, HSA.CED.A.4)	TE p75	2-opt
Parallel and Perpendicular Lines --Introduce and identify Parallel and Perpendicular lines understanding slopes and graphs (HSA.CED.A.2, HSA.CED.A.4, HSF.IF.C.7a)	2.4	4
Review and Test		4
Essential Standards Reteaching and Intervention		2
		Total = 20

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. 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.
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. 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.

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Linear Functions – Topic 3		
Lesson	Resource	Days
Topic 3 Part 1		
Planning a Recycling Drive - STEM Project (HSF.BF.A.1, HSF.IF.A.3)	TE p88	1-opt
Relations and Functions (HSF.IF.A.1)	3.1	5
Linear Functions (HSF.IF.A.1, HSF.IF.A.2, HSF.IF.B.5, HSF.LE.A.2) Write Linear Functions from tables, ordered pairs, and with slope and intercept	3.2	5
Scatter plots and Lines of Fit (HSS.ID.B.6a, HSS.ID.B.6c, HSS.ID.C.7)	3.5	4
Review and Test		2
Essential Standards Reteaching and Intervention		2
Be Here By End Of Semester 1 Year One		**Total = 18**
Topic 3 Part 2		
The Express Lane - 3 Acts (HSS.ID.B.6, HSS.ID.C.7)	TE p109	2
Arithmetic Sequence (emphasis on function notation, emphasis on explicit and how it relates to (h,k) form, expose to subscript notation and recursive) (HSF.BF.A.1, HSF.BF.A.2, HSF.IF.A.3, HSF.LE.A.2)	3.4	4
Review and Quiz		4
Essential Standards Reteaching and Intervention		2
		Total = 12

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.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, description of a relationship, or two input-output pairs (including reading table)
Summarize, represent and interpret data on two categorical and quantitative variables.	
HSS.ID.B.6	Represent data of two quantitative variables on a scatter plot & describe how the variables are related.

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	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.

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Systems of Linear Equations and Inequalities – Topic 4		
Lesson	Resource	Days
Growing Grain - STEM Project (HSA.CED.A.3, HSA.REI.C.6, HSA.REI.D.12)	TE p142	1-opt
Solving Systems of Equations by Graphing (HSA.REI.C.6, HSA.REI.D.11, HSF.IF.C.9)	4.1	4
Solving Systems of Equations by Substitution (HSA.CED.A.3, HSA.REI.C.6, HSA.REI.D.11)	4.2	4
Solving Systems of Equations by Elimination (HSA.CED.A.3, HSA.REI.C.5)	4.3	4
Review and Test		2
Linear Inequalities in Two Variables (HSA.CED.A.3, HSA.REI.D.12)	4.4	4
Get Up There! – 3 Acts (HSA.CED.A.2, HSA.CED.A.3)	TE p170	2-opt
Systems of Linear Inequalities (HSA.CED.A.3, HSA.REI.D.12)	4.5	4
Review and Test		2
Essential Standards Reteaching and Intervention		2
Be Here By Spring Break Year One		**Total = 29**

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.
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.
Represent and solve equations and inequalities graphically.	
*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.

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Piecewise Functions – Topic 5		
Lesson	Resource	Days
Absolute Values Equations (HSA.CED.A.1, HSA.REI.D.11, HSF.IF.A.1)	1.7	3
The Absolute Value Function (HSF.IF.B.4, HSF.IF.C.7b) --all notations of end behavior	5.1	6
Piecewise-Defined Functions (linear pieces over a restricted domain, absolute value as a piecewise function) (HSF.IF.A.2, HSF.IF.B.4, HSF.IF.C.7b)	5.2	3-opt
Transformations of (Piecewise-Defined) Absolute Value Functions (HSF.BF.B.3, HSF.IF.C.7b, HSF.IF.C.9)	5.4	6
Review and Test		2
Essential Standards Reteaching and Intervention		2
Be Here By End of Year One		**Total = 22**

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 soutions 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 of and x is an element of its domain, the $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the equation $y = f(x)$.
*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.
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.

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Exponents and Exponential Functions – Topic 6		
Lesson	Resource	Days
Supplement: Review exponent properties from grade 8.	Supplement	3
Rational Exponents and Properties of Exponents (HSN.RN.A.1, HSN.RN.A.2) Supplement: developmentally appropriate equations with exponents	6.1	4
Exponential Functions (HSF.BF.A.1, HSF.IF.B.4, HSF.IF.B.5, HSF.LE.A.1)	6.2	4
Exponential Growth and Decay (HSA.CED.A.2, HSA.SSE.A.1b, HSA.SSE.B.3c, HSF.IF.C.8b, HSF.LE.A.1a-c, HSF.LE.A.2, HSF.LE.B.5) Omit Compound Interest	6.3	4
Review and Quiz		2
Geometric Sequences {recognize geometric sequence compared to other sequences, verify equation works for given sequence} (HSF.BF.A.2, HSF.IF.A.3, HSF.LE.A.2)	6.4	4
Transformations of Exponential Functions (use book section as a guide) (HSF.BF.B.3, HSF.IF.B.4, HSF.IF.C.9)	6.5	4
Big Time Pay Back - 3 Acts (HSF.BF.A.1, HSF.LE.A.1, HSF.LE.A.2)	TE p252	1-opt
Review and Test		2
Essential Standards Reteaching and Intervention		2
Be Here By Fall Break Year Two		**Total = 30**

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* $\left(5^{1/3}\right)^3 = 5^{(1/3)3}$ *to hold, so.* $\left(5^{1/3}\right)^3$ equals 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.
Build new functions from existing functions.	

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*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.
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.
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.

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Polynomials and Factoring – Topic 7		
Lesson	Resource	Days
Make Business Decisions - STEM Project (HSA.APR.A.1)	TE p 258	1-opt
Adding and Subtracting Polynomials (HSA.APR.A.1)	7.1	2
Multiplying Polynomials (HSA.APR.A.1)	7.2	2
Multiplying Special Cases (HSA.APR.A.1)	7.3	2
Review and Quiz		2
Factoring Polynomials (Quadratics) (HSA.SSE.A.1, HSA.SSE.A.2)	7.4	3
Supplement: Factor by grouping	Supplement	3
Factoring $x^2 + bx + c$ (HSA.SSE.A.1)	7.5	3
Factoring $ax^2 + bx + c$ (HSA.SSE.A.1)	7.6	4
Factoring Special Cases (HSA.SSE.A.1, HSA.SSE.A.2)	7.7	4
Review and Test		2
Essential Standards Reteaching and Intervention		2
Be Here By End Of Semester One Year Two		**Total = 30**

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.

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Quadratic Functions – Topic 8		
Lesson	Resource	Days
Key Features of a Quadratic Function (HSA.CED.A.2, A.REI.D.10, HSF.BF.B.3, HSF.IF.B.4)	8.1	4
Quadratic Functions in Vertex Form (HSF.BF.B.3, HSF.IF.C.7a)	8.2	5
Quadratic Functions in Standard Form (analyze and convert between vertex and standard form) (HSF.IF.B.4, HSF.IF.C.7a, HSF.IF.C.8a, HSF.IF.C.9)	8.3	4
Modeling with Quadratic Functions (HSF.IF.A.2) *No Regression	8.4 Ex 1&2	4
Review and Test		3
Essential Standards Reteaching and Intervention		2
		Total = 22

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*
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.

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Solving Quadratic Equations – Topic 9		
Lesson	Resource	Days
Designing a T-shirt Launcher - STEM Project (HSA.CED.A.1, HSA.CED.A.2, HSA.REI.B.4, HSA.SSE.A.1),	TE p356	1-opt
Solving Quadratic Equations using graphs and tables (HSA.CED.A.1, HSA.CED.A.2, HSA.REI.B.4b, HSA.REI.D.11)	9.1	4
Solving Quadratic Equations by Factoring (HSA.APR.B.3, HSA.REI.B.4b, HSA.SSE.B.3a, HSF.IF.C.8a)	9.2	4
Review and Quiz		2
Be Here By Spring Break Year Two		**Total = 11**
Practice with radical properties, simplifying square roots	Supplement	2
Rewriting Radical Expressions (HSN.RN.A.2, HSA.SSE.A.2)	9.3	4
Review and Quiz		2
Solving Quadratic Equations Using Square Roots (HSA.CED.A.1, HSA.REI.B.4b, HSA.SSE.A.2)	9.4	4
Completing the Square (HSA.REI.B.4b, HSA.SSE.B.3b, HSF.IF.C.8a)	9.5	4
The Quadratic Formula and the Discriminant (HSA.REI.B.4, HSA.SSE.B.3)	9.6	4
Unwrapping Change - 3 Acts (HSA.CED.A.1, HSA.CED.A.2, HSA.REI.B.4)	TE p396	1-opt
Solving Systems of Linear and Quadratic Equations (HSA.REI.C.7, HSA.REI.D.11)	9.7	6
Review and Test		2
Essential Standards Reteaching and Intervention		2
Be Here By End of Year Two		**Total = 31**

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.
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.	

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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 soutions 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.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.
*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.