***Cord Algebra 1, Learning in Context (3rd edition)*, *Cord Geometry, Learning in Context (3rd edition)*,**
Cord Algebra 2, Learning in Context
correlated to Kentucky High School – Mathematics Program of Studies

Big Idea: Number Properties and Operations
High school students should enter high school with a strong background in rational numbers and numerical operations and expand this to real numbers. Solving quadratic equations produces a working knowledge of complex numbers. This becomes the foundation for algebra and working with algebraic symbols. They understand large and small numbers and their representations, powers and roots. They compare and contrast properties of numbers and number systems and develop strategies to estimate the results of operations on real numbers. Students will use and understand the limitations of, graphing calculators and computer spreadsheets appropriately as learning tools.

Academic Expectations
2.7 Students understand number concepts and use numbers appropriately and accurately.
2.8 Students understand various mathematical procedures and use them appropriately and accurately.
2.12 Students understand mathematical structure concepts including the properties and logic of various mathematical systems.

Program of Studies: Understandings			
	Algebra 1 Lessons	**Geometry Lessons**	**Algebra 2 Lessons**
MA-HS-NPO-U-1 Students will understand that numbers, ways of representing numbers, relationships among numbers and number systems are means of representing real-world quantities.	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)
MA-HS-NPO-U-2 Students will understand that meanings of and relationships among operations provide tools necessary to solve realistic problems encountered in everyday life and problems encountered in mathematical situations.	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)
MA-HS-NPO-U-3 Students will understand that computing fluently and accurately with real numbers and making reasonable estimates increases the ability to solve realistic problems encountered in everyday life.	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)

MA-HS-NPO-U-4 Students will understand that problem solving and connections with other content areas require a strong sense of number, including applications of absolute value (magnitude) and the ordering of numbers.	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)
MA-HS-NPO-U-5 Students will understand that proportional reasoning is a tool for modeling and solving problems encountered in everyday situations.	2.2, 2.3, 3.2	4.1, 4.2, 4.3, 4.4, 4.5	1.4
Program of Studies: Skills and Concepts			
MA-HS-NPO-S-NS1 Students will compare real numbers using order relations.	1.1, 1.3	3.3	1.1
MA-HS-NPO-S-NS2 Students will locate the position of a real number on the number line, find its distance from the origin (absolute value/magnitude) and find the distance between two numbers on the number line (the absolute value of their difference).	1.1, 1.3, 13.3	1.2	1.1, 1.3
MA-HS-NPO-S-NS3 Students will determine the relative position on the number line of real numbers, including very large and very small numbers, and the relative magnitude of numbers expressed in fractional form, in decimal form, as roots or in scientific notation.	1.1, 1.7		1.1

MA-HS-NPO-S-NS4 Students will explore vectors and matrices as systems that have some of the properties of the real number system.	1.6	7.2, 11.2	3.1, 3.2, 3.3, 3.4, 3.5
MA-HS-NPO-S-NS5 Students will compare and contrast number systems, including complex numbers as solutions to quadratic equations that do not have real solutions.	1.1, 13.3		1.1, 5.5, 6.5, 6.6
MA-HS-NPO-S-E1 Students will use calculators appropriately and regularly make estimations without a calculator to detect potential errors.	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)
MA-HS-NPO-S-E2 Students will estimate solutions to problems with real numbers (including very large and very small quantities) in both realistic and mathematical situations.	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)
MA-HS-NPO-S-E3 Students will establish and apply benchmarks for real numbers in context.	1.1, 13.3		1.1
MA-HS-NPO-S-NO1 Students will add, subtract, multiply and divide real numbers.	1.4, 1.5		
MA-HS-NPO-S-NO2 Students will add, subtract and multiply complex numbers.			5.5
MA-HS-NPO-S-NO3 Students will multiply and divide numbers expressed in scientific notation.	1.7		

MA-HS-NPO-S-NO4 Students will apply absolute value, integer exponents, roots and factorials to solve problems.	1.3, 10.3, 13.3	5.1	1.3, 5.1, 5.3, 14.3, 14.4
MA-HS-NPO-S-NO5 Students will determine a specific term of a sequence given an explicit formula.	1.2	2.1	11.1, 11.2, 11.3, 11.4, 11.5
MA-HS-NPO-S-NO6 Students will describe and extend arithmetic and geometric sequences	1.2	2.1	11.1, 11.2, 11.3, 11.4
MA-HS-NPO-S-NO7 Students will determine an explicit rule for the nth term of an arithmetic sequence.	1.2	2.1	11.2
MA-HS-NPO-S-NO8 Students will apply sequences and arithmetic and geometric series to solve realistic problems.	1.2	2.1	11.1, 11.2, 11.3, 11.4, Chapter 11 Math Applications
MA-HS-NPO-S-NO9 Students will solve realistic problems to a specified degree of accuracy.	2.6, 2.7		
MA-HS-NPO-S-NO10 Students will judge the effects of multiplication, division and computing powers and roots on the magnitudes of quantities.	1.5, 10.3	5.1, 8.6, 10.8	5.1, 5.3

MA-HS-NPO-S-NO11 Students will develop an understanding of the properties and representations for the addition and multiplication of vectors and matrices.	1.6	7.2, 11.4	3.1, 3.2
MA-HS-NPO-S-NO12 Students will develop fluency in operations with real numbers and matrices, using mental computation or paper-and-pencil calculations for simple cases and calculators and/or computers for more complicated cases.	1.4, 1.5, 1.6		3.1, 3.2
MA-HS-NPO-S-NO13 Students will use concrete, pictorial and abstract models to develop and/or generalize a procedure.	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)
MA-HS-NPO-S-RP1 Students will calculate and apply ratios, proportions, rates and percentages to solve problems.	2.2, 2.3, 3.2	4.1, 4.2, 4.3, 4.4, 4.5, Chapter 4 Math Applications	1.4
MA-HS-NPO-S-RP2 Students will translate real-world proportional relationships into mathematical expressions and vice versa.	2.2, 2.3, 3.2	4.1, 4.2, 4.3, 4.4, 4.5, Chapter 4 Math Applications	1.4
MA-HS-NPO-S-RP3 Students will represent slope graphically, numerically and symbolically and relate it to a graph of an equation based on a realistic situation.	4.2, 4.3, 4.4, 4.5, 4.6, 4.7	7.3, 7.4	1.4, 1.5, 1.6

MA-HS-NPO-S-PNO1 Students will identify and apply real number properties.	1.1, 3.1, 3.3	2.6	1.1
MA-HS-NPO-S-PNO2 Students will use equivalence relations of real numbers to solve problems.	3.1, 3.3		1.2
MA-HS-NPO-S-PNO3 Students will compare and contrast the number systems according to their properties.	1.1, 13.3		1.1, 5.5
MA-HS-NPO-S-PNO4 Students will justify the solution steps in simplifying expressions or solving an equation.	3.1, 3.2, 3.3, 3.4, 3.5	2.6	1.2

Related Core Content for Assessment			
MA-HS-1.1.2 *Students will demonstrate the relationships between different subsets of the real number system.*	1.1, 13.3		1.1, 5.5
MA-HS-1.1.3 *Students will use scientific notation to express very large or very small quantities.*	1.7		
MA-HS-1.3.2 **Students will:** • **describe and extend arithmetic and geometric sequences;** • **determine a specific term of a sequence given an explicit formula;** • **determine an explicit rule for the nth term of an arithmetic sequence and** • **apply sequences to solve real-world problems.** **DOK 3**	1.2	2.1	11.1, 11.2, 11.3, 11.4
MA-HS-1.3.3 *Students will write an explicit rule for the nth term of a geometric sequence.*	1.2	2.1	11.2
MA-HS-1.3.4 Students will recognize and solve problems that can be modeled using a finite geometric series, such as home mortgage problems and other compound interest problems.			11.3

MA-HS-4.1.3 *Students will represent real-world data using matrices and will use matrix addition, subtraction, multiplication (with matrices no larger than 2x2) and scalar multiplication to solve real-world problems.*	1.6		3.1, 3.2, 3.3
MA-HS-1.5.1 *Students will identify real number properties (commutative properties of addition and multiplication, associative properties of addition and multiplication, distributive property of multiplication over addition and subtraction, identity properties of addition and multiplication and inverse properties of addition and multiplication) when used to justify a given step in simplifying an expression or solving an equation.*	3.1, 3.3	2.6	1.2
MA-HS-1.5.2 *Students will use equivalence relations (reflexive, symmetric, transitive).*		2.6	
MA-HS-1.2.1 *Students will estimate solutions to problems with real numbers (including very large and very small quantities) in both real-world and mathematical problems, and use the estimations to check for reasonable computational results.*	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)	Used throughout the textbook, especially in Math Applications (every chapter)

MA-HS-1.3.1 **Students will solve real-world and mathematical problems to specified accuracy levels by simplifying expressions with real numbers involving addition, subtraction, multiplication, division, absolute value, integer exponents, roots (square, cube) and factorials.** **DOK 2**	1.3, 1.4, 1.5, 13.3	5.1	1.1, 5.1, 5.3, 14.3, 14.4
MA-HS-1.1.1 Students will compare real numbers using order relations (less than, greater than, equal to) and represent problems using real numbers.	1.1, 1.3	3.3	1.1
MA-HS-1.4.1 **Students will apply ratios, percents and proportional reasoning to solve real-world problems (e.g., those involving slope and rate, percent of increase and decrease) and will explain how slope determines a rate of change in linear functions representing real-world problems.** **DOK 2**	2.2, 2.3, 3.2, 4.2, 4.3, 4.4, 4.5, 4.6	4.1, 4.2, 4.3, 4.4, 4.5, 8.6, Chapter 4 Math Applications, 10.8, 11.7	

Big Idea: Measurement
High school students continue to measure and estimate measurements including fractions and decimals. They use formulas to find surface areas and volumes. They use US Customary and metric units of measurement. They use the Pythagorean theorem and other right triangle relationships to solve realistic problems.

Academic Expectations
2.9 Students understand space and dimensionality concepts and use them appropriately and accurately.
2.10 Students understand measurement concepts and use measurements appropriately and accurately.

Program of Studies: Understandings			
MA-HS-M-U-1 Students will understand that measurable attributes of objects and the units, systems and processes of measurement are powerful tools for making sense of the world around them.	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7	1.2, 1.3, 4.4, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 10.3, 10.4, 10.5, 10.6, 10.7	
MA-HS-M-U-2 Students will understand that numerical values associated with measurements of physical quantities must be assigned units of measurement or dimensions.	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7	1.2, 1.3, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 10.3, 10.4, 10.5, 10.6, 10.7	
MA-HS-M-U-3 Students will understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 13.2, 13.4, 13.5	1.2, 1.3, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 10.3, 10.4, 10.5, 10.6, 10.7	12.1, 13.1
Program of Studies: Skills and Concepts			
MA-HS-M-S-MPA1 Students will apply units of measurements of physical quantities correctly in expressions, equations and problem solutions that involve measurement.	2.1, 2.2, 2.3, 2.4, 2.5	1.2, 1.3, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 10.3, 10.4, 10.5, 10.6, 10.7	

MA-HS-M-S-MPA2 Students will analyze precision, accuracy and approximate error in measurement situations.	2.6, 2.7	1.2, 1.3	
MA-HS-M-S-MPA3 Students will determine the surface area and volume of right rectangular prisms, pyramids, cylinders, cones and spheres in realistic problems.	2.5	10.3, 10.4, 10.5, 10.6, 10.7	
MA-HS-M-S-MPA4 Students will describe how change in one or more dimensions of a geometric figure or object affects the perimeter, circumference, area and/or volume of the figure or object.		8.6, 10.6	
MA-HS-M-S-MPA5 Students will explore the relationships between the right triangle trigonometric functions, using technology (e.g., graphing calculator) as appropriate.	13.5	5.4, 5.5	12.1
MA-HS-M-S-MPA6 Students will apply definitions and properties of right triangle relationships (basic right triangle trigonometry and the Pythagorean theorem) to determine length and angle measures to solve realistic problems.	13.2, 13.4, 13.5	5.2, 5.3, 5.4, 5.5	12.1
MA-HS-M-S-MPA7 Students will apply special right triangles and the converse of the Pythagorean theorem to solve realistic problems.	13.2, 13.4	5.2, 5.3	

MA-HS-M-S-MPA8 Students will explore periodic real-world phenomena, using technology (e.g., graphing calculator) as appropriate.			13.1
MA-HS-M-S-SM1 Students will convert a measurement using one unit of measurement to another unit of measurement given the relationship between the units (e.g., miles per hour to feet per second, °F to °C).	2.1, 2.2, 2.3		
MA-HS-M-S-SM2 Students will apply to both real world and mathematical situations US Customary and metric systems of measurement.	2.1, 2.2	Used throughout the textbook.	
MA-HS-M-S-SM3 Students will make decisions about units and scales that are appropriate for problem solving situations involving measurement.	2.2	Used throughout the textbook, especially in Math Applications (every chapter)	
MA-HS-M-S-SM4 Students will use unit analysis to check measurement computations.	2.2		
MA-HS-M-S-SM5 Students will compare and contrast the use of US Customary and metric systems of measurement.	2.1		

Related Core Content for Assessment			
MA-HS-2.1.2 **Students will describe how a change in one or more dimensions of a geometric figure affects the perimeter, area and volume of the figure.** **DOK 3**		8.6, 10.6	
MA-HS-2.2.1 *Students will continue to apply to both real-world and mathematical problems U.S. customary and metric systems of measurement.*	2.1, 2.2	Used throughout the textbook.	
MA-HS-2.1.1 **Students will determine the surface area and volume of right rectangular prisms, pyramids, cylinders, cones and spheres in real-world and mathematical problems.** **DOK 2**	2.5	10.3, 10.4, 10.5, 10.6, 10.7	
MA-HS-2.1.3 **Students will apply definitions and properties of right triangle relationships (right triangle trigonometry and the Pythagorean theorem) to determine length and angle measures to solve real-world and mathematical problems.** **DOK 3**	13.2, 13.4, 13.5	5.2, 5.3, 5.4, 5.5	12.1
MA-HS-2.1.4 Students will apply special right triangles and the converse of the Pythagorean theorem to solve real-world problems.	13.2, 13.4	5.2, 5.3	

Big Idea: Geometry
High school students expand analysis of two-dimensional figures and three-dimensional objects. They translate figures in a coordinate plane. They extend work with congruent and similar figures, including proportionality.

Academic Expectations
2.9 Students understand space and dimensionality concepts and use them appropriately and accurately.
2.10 Students understand measurement concepts and use them appropriately and accurately.
2.12 Students understand mathematical structure concepts including the properties and logic of various mathematical systems.

Program of Studies: Understandings			
MA-HS-G-U-1 Students will understand that characteristics and properties of two-dimensional figures and three-dimensional objects describe the world and are used to develop mathematical arguments about geometric relationships and to evaluate the arguments of others.		1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 8.1, 8.2, 8.3, 8.4, 8.5, 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 10.8, 10.9	
MA-HS-G-U-2 Students will understand that representational systems, including coordinate geometry, are means for specifying locations and describing spatial relationships and are organizers for making sense of the world around them.	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7	7.1, 7.3, 7.4, 7.5, 7.6, 9.1, 11.5	1.4, 1.5, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7
MA-HS-G-U-3 Students will understand that transformations and symmetry are used to analyze real-world situations (e.g., art, nature, construction and scientific exploration).		11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7	

MA-HS-G-U-4 Students will understand that similarity of figures and scale factors are used to analyze and solve problems.	2.3	4.2, 4.3, 4.4, 4.5, Chapter 4 Math Applications, 11.7	
MA-HS-G-U-5 Students will understand that visualization, spatial reasoning and geometric relationships model real-world situations		1.1, 1.2, 1.3, 1.4, 10.1, 10.2, 10.9	
Program of Studies: Skills and Concepts			
MA-HS-G-S-SR1 Students will identify and apply the definitions, properties and theorems about line segments, rays and angles and use them to prove theorems in Euclidean geometry, solve problems and perform basic geometric constructions using a straight edge and a compass.		1.1, 1.2, 1.3, 1.4, 1.5, 2.7, 2.8	
MA-HS-G-S-SR2 Students will identify and apply properties and theorems about parallel and perpendicular lines and use them to prove theorems and to perform constructions.		1.4, 1.5, 2.8	
MA-HS-G-S-SR3 Students will analyze and apply angle relationships (e.g., linear pairs, vertical, complementary, supplementary, corresponding and alternate interior angles) in real-world or mathematical situations.		1.3, 1.5, 2.7, 2.8	

MA-HS-G-S-SR4 Students will use the definitions, properties and theorems about congruent and similar triangles and other figures to prove additional theorems and apply these to solve real-world problems		3.4, 3.5, 3.6, 3.7, Chapter 3 Math Applications, 4.2, 4.3, 4.4, 4.5, Chapter 4 Math Applications	
MA-HS-G-S-SR5 Students will use the definitions and basic properties of a circle (e.g., arcs, chords, central angles, inscribed angles) to prove basic theorems and solve problems.		9.1, 9.2, 9.3, 9.4, 9.5, 9.6, Chapter 9 Math Applications	
MA-HS-G-S-SR6 Students will analyze and apply spatial relationships (not using Cartesian coordinates) among points, lines and planes (e.g., "betweenness" of points, midpoint, segment length, collinear, coplanar, parallel, perpendicular, skew).		1.1, 1.5	7.1
MA-HS-G-S-SR7 Students will classify, determine attributes of, analyze and apply properties of two-dimensional geometric figures and three-dimensional objects.		3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 4.2, 4.3, 4.4, 4.5, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 8.1, 8.2, 8.3, 8.4, 8.5, 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 10.8, 10.9	
MA-HS-G-S-SR8 Students will describe the intersection of lines, planes and solids and visualize three-dimensional objects and spaces from different perspectives and analyze their cross sections.		10.1, 10.2, 10.9	
MA-HS-G-S-SR9 Students will classify and apply properties of three-dimensional geometric figures.		10.3, 10.4, 10.5, 10.6, 10.7	

MA-HS-G-S-SR10 Students will visualize solids and surfaces in three-dimensional space when given two-dimensional representations and create two-dimensional representations for the surfaces of three-dimensional objects.		10.1, 10.2, 10.3, 10.5	
MA-HS-G-S-SR11 Students will draw and construct representations of two-dimensional figures and three-dimensional objects using a variety of tools.		1.4, 10.1, 10.2, 10.3, 10.5	
MA-HS-G-S-SR12 Students will use geometric models and ideas to gain insights into and answer questions in other areas of mathematics and into other disciplines and areas of interest, such as art and architecture.	2.3, 2.4, 2.5	Used throughout the textbook	7.1, 7.2, 7.3, 7.4, 7.5, 7.6
MA-HS-G-S-SR13 Students will explore geometry to make and test conjectures using geometric tools and technology.		Used throughout the textbook, especially in Activities and Math Labs (every chapter)	
MA-HS-G-S-TS1 Students will understand and represent transformations within a plane (translations, reflections, rotations and dilations) of figures by using sketches, coordinates, vectors, function notation, matrices and technology.		11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7	
MA-HS-G-S-TS2 Students will use various representations, including electronic displays, to understand the effects of simple transformations within a plane and compositions of transformations.		11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, Chapter 11 Math Labs	

MA-HS-G-S-CG1 Students will express the intuitive concept of the "slant" of a line as slope, use the coordinates of two points on a line to determine its slope and use slope to express the parallelism and perpendicularity of lines.	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7	7.3, 7.4	1.4, 1.5, 1.6
MA-HS-G-S-CG2 Students will describe a line by a linear equation.	4.3, 4.4, 4.5, 4.6, 4.7	7.4	1.4, 1.5
MA-HS-G-S-CG3 Students will find the distance between two points using their coordinates and the Pythagorean theorem or the distance formula.		7.1	7.1
MA-HS-G-S-CG4 Students will find the equation of a circle given its center and radius; given the equation of a circle, find its center and radius.		9.1	7.5
MA-HS-G-S-CG5 Students will find the midpoint of a segment when the coordinates of the endpoints are identified.	4.1	7.1	7.1
MA-HS-G-S-CG6 Students will use Cartesian coordinates and other coordinate systems (e.g., navigational, polar, spherical systems) to analyze geometric situations.		7.1, 7.2, 7.3, 7.4, 7.5	

MA-HS-G-S-CG7 Students will investigate conjectures and solve problems involving two-dimensional figures and three dimensional objects represented graphically.		3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 4.2, 4.3, 4.4, 4.5, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 8.1, 8.2, 8.3, 8.4, 8.5, 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 10.8, 10.9	
MA-HS-G-S-CG8 Students will use a variety of technological tools to explore and test conjectures about slope, midpoints and other geometric ideas that can be expressed using the Cartesian plane.	4.1	7.1, 7.2, 7.3, 7.4, 7.5, 7.6	7.1
MA-HS-G-S-FS1 Students will identify, explain the necessity of and give examples of definitions, axioms and theorems.		1.1, 1.3, 1.5, 2.5, 2.6, 2.7, 2.8	
MA-HS-G-S-FS2 Students will explore geometries other than Euclidean geometry, in which the parallel postulate is not true.		Cultural Connection, p. 147	
MA-HS-G-S-FS3 Students will establish the validity of geometric conjectures using deduction, prove theorems and critique arguments made by others.		2.2, 2.4, 2.5, 2.6, 2.7, 2.8	
MA-HS-G-S-FS4 Students will perform constructions such as a line parallel to a given line through a point not on the line, the perpendicular bisector of a line segment and the bisector of an angle.		1.4	

Related Core Content for Assessment			
MA-HS-3.1.1 **Students will analyze and apply spatial relationships (not using Cartesian coordinates) among points, lines and planes (e.g., betweenness of points, midpoint, segment length, collinear, coplanar, parallel, perpendicular, skew).** **DOK 2**		1.1, 1.5	
MA-HS-3.1.2 Students will use spatial relationships to prove basic theorems.		2.1, 2.2, 2.4, 2.5, 2.6, 2.7, 2.8, 3.5	
MA-HS-3.1.3 **Students will analyze and apply angle relationships (e.g., linear pairs, vertical, complementary, supplementary, corresponding and alternate interior angles) in real-world and mathematical problems.** **DOK 2**		1.3, 1.5, 2.7, 2.8	
MA-HS-3.1.4 Students will use angle relationships to prove basic theorems.		2.7, 2.8	
MA-HS-3.1.5 **Students will classify and apply properties of two-dimensional geometric figures (e.g., number of sides, vertices, length of sides, sum of interior and exterior angle measures).** **DOK 2**		3.1, 3.2, 3.3, 3.7, 6.1, 6.3, 6.4, 6.5, 6.6	

MA-HS-3.1.6 Students will know the definitions and basic properties of a circle and will use them to prove basic theorems and solve problems.		9.1, 9.2, 9.3, 9.4, 9.5, 9.6, Chapter 9 Math Applications	
MA-HS-3.1.7 **Students will solve real-world and mathematical problems by applying properties of triangles (e.g., Triangle Sum theorem and Isosceles Triangle theorems).** **DOK 2**		3.1, 3.2, 3.3, 3.4, 3.7, 4.3, 4.4, 4.5, 5.2, 5.3, 5.4, 5.5, 5.6	
MA-HS-3.1.8 Students will use the properties of triangles to prove basic theorems.		3.5, 3.6, 3.7	
MA-HS-3.1.9 **Students will classify and apply properties of three-dimensional geometric figures.** **DOK 2**		10.3, 10.4, 10.5, 10.6, 10.7	
MA-HS-3.1.10 *Students will describe the intersection of a plane with a three-dimensional figure.*		10.9	
MA-HS-3.4.1 Students will identify definitions, axioms and theorems, explain the necessity for them and give examples of them.		1.1, 1.3, 1.5, 2.5, 2.6, 2.7, 2.8	
MA-HS-3.4.2 Students will recognize that there are geometries, other than Euclidean geometry, in which the parallel postulate is not true.		Cultural Connection, p. 147	

MA-HS-3.3.1 **Students will apply algebraic concepts and graphing in the coordinate plane to analyze and solve problems (e.g., finding the final coordinates for a specified polygon, midpoints, between-ness of points, parallel and perpendicular lines, the distance between two points, the slope of a segment).** **DOK 2**		7.1, 7.2, 7.3, 7.4, 7.5	
MA-HS-3.2.1 **Students will identify and describe properties of and apply geometric transformations within a plane to solve real-world and mathematical problems.** **DOK 3**		11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, Chapter 11 Math Labs	
MA-HS-3.1.12 **Students will apply the concepts of congruence and similarity to solve real-world and mathematical problems.** **DOK 3**	2.3	3.4, 3.5, 3.6, 3.7, 4.2, 4.3, 4.4, 4.5	
MA-HS-3.1.13 Students will prove triangles congruent and similar.		3.4, 3.5, 3.6, 3.7, 4.2, 4.3, 4.4, 4.5	
MA-HS-3.1.11 Students will visualize solids and surfaces in three-dimensional space when given two-dimensional representations (e.g., nets, multiple views) and create two-dimensional representations for the surfaces of three-dimensional objects.		10.1, 10.2, 10.3, 10.5	

MA-HS-3.4.3 *Students will be able to perform constructions such as a line parallel to a given line through a point not on the line, the perpendicular bisector of a line segment and the bisector of an angle.*		1.4	

Big Idea: Data Analysis and Probability
High school students extend data representations, interpretations and conclusions. They describe data distributions in multiple ways and connect data gathering issues with data interpretation issues. They relate curve-of-best-fit with two-variable data and determine a line-of-best-fit for a given set of data. They distinguish between combinations and permutations and compare and contrast theoretical and experimental probability.

Academic Expectations
2.8 Students understand various mathematical procedures and use them appropriately and accurately.
2.13 Students understand and appropriately use statistics and probability.

Program of Studies: Understandings			
MA-HS-DAP-U-1 Students will understand that quantitative literacy is a necessary tool to be an intelligent consumer and citizen.	6.6, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6		
MA-HS-DAP-U-2 Students will understand that data analysis requires developing a plan for collecting, organizing and analyzing data in order to make decisions.	7.1, 7.2, 7.3, 7.4, 7.5, 7.6, Chapter 7 Math Labs		
MA-HS-DAP-U-3 Students will understand that graphical and numerical techniques can be used to study patterns and analyze data.	7.1, 7.2, 7.3, 7.4, 7.5, 7.6		
MA-HS-DAP-U-4 Students will understand that the choice of data display can affect the visual message communicated.	7.2, 7.3, 7.4, 7.5		
MA-HS-DAP-U-5 Students will understand that inferences and predictions from data are used to make critical and informed decisions.	6.6, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6		

MA-HS-DAP-U-6 Students will understand that probability can be used to make decisions or predictions or to draw conclusions.	6.1, 6.2, 6.3, 6.4, 6.5, 6.6		14.1, 14.2
Program of Studies: Skills and Concepts			
MA-HS-DAP-S-DR1 Students will be familiar with the definitions of measurement data and categorical data, univariate and bivariate data and the term variable.	7.1		
MA-HS-DAP-S-DR2 Students will apply histograms, parallel box plots and scatterplots to display data.	6.2, 7.3, 7.5		1.6
MA-HS-DAP-S-DR3 Students will display the distribution, analyze patterns and describe relationships in paired data for univariate measurement data.	7.3, 7.6		
MA-HS-DAP-S-DR4 Students will display a scatterplot and describe its shape for bivariate data.	7.3		1.6
MA-HS-DAP-S-DR5 Students will display and discuss bivariate data where at least one variable is categorical.	7.2		
MA-HS-DAP-S-DR6 Students will organize and display data using appropriate methods (e.g., spreadsheets and graphing calculators) to detect patterns and departures from patterns.	7.1, 7.2, 7.3, 7.4, 7.5, 7.6		

MA-HS-DAP-S-DR7 Students will identify and explain misleading uses of data displays.	7.2, Chapter 7 Math Lab Activity 3		
MA-HS-DAP-S-CDS1 Students will understand the distinction between a statistic and a parameter.	6.6		
MA-HS-DAP-S-CDS2 Students will describe the shape and select and calculate summary statistics for univariate measurement data, using technological tools as necessary.	not covered		
MA-HS-DAP-S-CDS3 Students will recognize how linear transformations of univariate data affect shape, center and spread.	not covered		
MA-HS-DAP-S-CDS4 Students will determine regression coefficients, regression equations and correlation coefficients for bivariate data using technological tools.			1.6
MA-HS-DAP-S-CDS5 Students will apply line-of-best fit equations for a set of two-variable data to make predictions.	7.3		1.6
MA-HS-DAP-S-CDS6 Students will collect, organize and display bivariate data and use a curve of best fit as a model to make predictions.	not covered		

MA-HS-DAP-S-CDS7 Students will identify trends in bivariate data and find functions that model the data or transform the data, so that they can be modeled	7.3		1.6
MA-HS-DAP-S-CDS8 Students will understand how simple statistics reflect the values of population parameters and use sampling distributions as the basis for informal inference.	6.6		
MA-HS-DAP-S-CDS9 Students will explore how basic statistical techniques monitor process characteristics in the workplace.	6.6		
MA-HS-DAP-S-CDS10 Students will compare data sets using graphs and summary statistics.	7.1, 7.2, 7.3, 7.4, 7.5, 7.6, Chapter 7 Math Applications		
MA-HS-DAP-S-CDS11 Students will know the characteristics of the Gaussian normal distribution (bell-shaped curve).	not covered		
MA-HS-DAP-S-CDS12 Students will evaluate reports based on data published in the media by considering the source of the data, the design of the study and the way the data are displayed and analyzed.	6.6		
MA-HS-DAP-S-CDS13 Students will identify and explain misleading uses of data.	6.6		

MA-HS-DAP-S-ES1 Students will understand and explain the differences among various kinds of studies (e.g., randomized experiments and observational studies) and which types of inferences can be legitimately be drawn from each.	6.6		
MA-HS-DAP-S-ES2 Students will know the characteristics of well-designed studies, including the role of randomization in surveys and experiments.	6.2, 6.6		
MA-HS-DAP-S-ES3 Students will use simulations to explore the variability of sample statistics from a known population and to construct sampling distributions.	not covered		
MA-HS-DAP-S-ES4 Students will evaluate published reports that are based on interpretations of data by examining the design of the study, the appropriateness of the data analysis and the validity of the conclusions.	not covered		
MA-HS-DAP-S-ES5 Students will explain the impact of sampling methods, bias and the phrasing of questions asked during data collection and the conclusions that can be justified.	6.6		
MA-HS-DAP-S-ES6 Students will design and conduct simple experiments or investigations to collect data to answer student generated questions.	Chapter 6 Math Labs		

MA-HS-DAP-S-P1 Students will design and conduct probability simulations and interpret the results.	Chapter 6 Math Labs	8.7,	
MA-HS-DAP-S-P2 Students will apply the concepts of sample space and probability distribution to construct sample spaces and distributions in simple cases.	6.1, 6.2		
MA-HS-DAP-S-P3 Students will design simulations to construct empirical probability distributions and report/interpret the results.	6.1, 6.2, Chapter 6 Math Labs		
MA-HS-DAP-S-P4 Students will compute and interpret the expected value of random variables in simple cases.	not covered		
MA-HS-DAP-S-P5 Students will apply the concepts of conditional probability and independent events and be able to compute those probabilities.	6.3, 6.4, 6.5		14.1, 14.2
MA-HS-DAP-S-P6 Students will compute the probability of a compound event.	6.4, 6.5		14.2
MA-HS-DAP-S-P7 Students will explain how probability quantifies the likelihood that an event occurs in terms of numbers.	6.1, 6.2, 6.3, 6.4, 6.5		14.1, 14.2

MA-HS-DAP-S-P8 Students will explain how the relative frequency of a specified outcome of an event can be used to estimate the probability of the outcome.	6.1, 6.2, 6.3, 6.4, 6.5		14.1, 14.2
MA-HS-DAP-S-P9 Students will explain how the law of large numbers can be applied in simple examples.	not covered		
MA-HS-DAP-S-P10 Students will determine and compare theoretical and experimental probabilities.	6.2		
MA-HS-DAP-S-P11 Students will determine the probability of an event and the probability of its complement.	6.1, 6.2		14.1, 14.2
MA-HS-DAP-S-P12 Students will make predictions and draw inferences from probabilities. And apply probability concepts to practical situations to make informed decisions.	Chapter 6 Math Applications	8.7	Chapter 14 Math Applications
MA-HS-DAP-S-P13 Students will determine probabilities involving replacement and non-replacement.	6.5		14.1, 14.2
MA-HS-DAP-S-P14 Students will recognize and identify the differences between combinations and permutations and use them to count discrete quantities.			14.3, 14.4

MA-HS-DAP-S-P15 Students will represent probabilities in multiple ways (e.g., fractions, decimals, percentages, geometric area models).	6.1, 6.2, 6.3, 6.4, 6.5	8.7	14.1, 14.2
Related Core Content for Assessment			
MA-HS-4.3.1 **Students will recognize potential for bias resulting from the misuse of sampling methods (e.g., non-random sampling, polling only a specific group of people, using limited or extremely small sample sizes) and explain why these samples can lead to inaccurate inferences.** **DOK 2**	6.6		
MA-HS-4.3.2 *Students will design simple experiments or investigations to collect data to answer questions of interest.*	Chapter 6 Math Labs		
MA-HS-4.3.3 Students will explain the differences between randomized experiments and observational studies.	6.6		
MA-HS-4.1.1 **Students will analyze and make inferences from a set of data with no more than two variables, and will analyze problems for the use and misuse of data representations.** **DOK 3**	7.1, 7.2, 7.3, 7.4, 7.5, 7.6		

MA-HS-4.1.2 **Students will construct data displays for data with no more than two variables.** **DOK 2**	7.2, 7.3, 7.4, 7.5		1.6
MA-HS-4.2.3 **Students will:** **• identify an appropriate curve of best fit (linear, quadratic, exponential) for a set of two-variable data;** **• determine a line of best fit equation for a set of linear two-variable data and** **• apply a line of best fit to make predictions within and beyond a given set of two-variable data.** **DOK 3**	7.3		1.6
MA-HS-4.2.1 **Students will describe and compare data distributions and make inferences from the data based on the shapes of graphs, measures of center (mean, median, mode) and measures of spread (range, standard deviation).** **DOK 2**	7.1, 7.6		
MA-HS-4.2.2 Students will know the characteristics of the Gaussian normal distribution (bell-shaped curve).	not covered		
MA-HS-4.2.4 Students will recognize when arguments based on data confuse correlation and causation.	not covered		

MA-HS-4.4.1 **Students will:** **• determine theoretical and experimental (from given data) probabilities;** **• make predictions and draw inferences from probabilities;** **• compare theoretical and experimental probabilities and** **• determine probabilities involving replacement and non-replacement.** **DOK 3**	6.1, 6.2, 6.3, 6.4, 6.5		14.1, 14.2
MA-HS-4.4.2 *Students will recognize and identify the differences between combinations and permutations and use them to count discrete quantities.*			14.3, 14.4
MA-HS-4.4.3 *Students will represent probabilities in multiple ways, such as fractions, decimals, percentages and geometric area models.*	6.1, 6.2, 6.3, 6.4, 6.5		14.1, 14.2
MA-HS-4.4.4 Students will explain how the law of large numbers can be applied in simple examples.	not covered		

Big Idea: Algebraic Thinking
High school students extend analysis and use of functions and focus on linear, quadratic, absolute value and exponential functions. They explore parametric changes on graphs of functions. They use rules and properties to simplify algebraic expressions. They combine simple rational expressions and simple polynomial expressions. They factor polynomial expressions and quadratics of the form 1x2+bx+c.

Academic Expectations
2.7 Students understand number concepts and use numbers appropriately and accurately.
2.8 Students understand various mathematical procedures and use them appropriately and accurately.
2.11 Students understand mathematical change concepts and use them appropriately and accurately.
2.12 Students understand mathematical structure concepts including the properties and logic of various mathematical systems.

Program of Studies: Understandings			
MA-HS-AT-U-1 Students will understand that patterns, relations and functions are tools that help explain or predict real-world phenomena.	1.2, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6	2.1, 7.4	4.1, 4.2, 4.3, 4.4, 4.5, 11.1, 11.2, 11.3, 11.4, 11.5
MA-HS-AT-U-2 Students will understand that there are relationships between and among patterns and functions, their representations and their properties.	1.2, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6	7.3, 7.4	1.2, 1.3, 1.4, 1.5, 11.1, 11.2, 11.3, 11.4, 11.5
MA-HS-AT-U-3 Students will understand that algebra represents mathematical situations and structures for analysis and problem solving.	Used throughout the textbook.		
MA-HS-AT-U-4 Students will understand that real-world situations can be represented using mathematical models to analyze quantitative relationships.	Used throughout the textbook.		

MA-HS-AT-U-5 Students will understand that functions are used to analyze change in various contexts and model real-world phenomena.	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6		Used throughout the textbook.
MA-HS-AT-U-6 Students will understand that functions can be written in words, in a symbolic sentence or in a table or graph.	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6		Used throughout the textbook.
Program of Studies: Skills and Concepts			
MA-HS-AT-S-PRF1 Students will use explicitly-defined or recursively defined functions to generalize patterns.	1.2	2.1	11.1, 11.2, 11.3, 11.4, 11.5
MA-HS-AT-S-PRF2 Students will understand relations and functions and use various representations for them.	5.1, 5.2, 5.3, 5.4, 5.5, 5.6		4.1, 4.2, 4.3, 4.4, 4.5
MA-HS-AT-S-PRF3 Students will analyze functions by investigating rates of change, intercepts, zeros, asymptotes and local and global behavior.	4.5, 5.1, 5.2, 5.3, 5.4, 5.5	7.3, 7.4	4.1, 4.2, 4.3, 4.4, 4.5, 6.1, Chapter 9 Math Lab 3, 10.1, 13.1
MA-HS-AT-S-PRF4 Students will transform functions (e.g., arithmetically combining, composing and inverting commonly used functions), using technology on more complicated symbolic expressions.	4.6, 4.7, 5.1, 5.2, 5.4, 5.5		4.1, 4.2, 4.3, 4.4, 4.5

MA-HS-AT-S-PRF5 Students will understand and compare the properties of classes of functions (e.g., absolute value, step, exponential, polynomial, rational, logarithmic, periodic).	5.4		4.4, 6.1, 8.1, 8.2, 9.1, 10.1, 13.1
MA-HS-AT-S-PRF6 Students will interpret representations of functions of two variables.	4.5, 5.3, 5.4, 5.5		4.1, 4.3, 4.4, 6.1, 8.1, 8.2, 9.1, 10.1, 13.1
MA-HS-AT-S-PRF7 Students will use a variety of symbolic representations, including recursive and parametric equations, for functions and relations.	4.5, 5.3, 5.4, 5.5		4.1, 4.3, 4.4, 6.1, 8.1, 8.2, 9.1, 10.1, 13.1
MA-HS-AT-S-PRF8 Students will identify essential quantitative relationships in a situation and determine the class or classes of functions that might model the relationship.	4.5, 5.3, 5.4, 5.5		4.1, 4.3, 4.4, 6.1, 8.1, 8.2, 9.1, 10.1, 13.1
MA-HS-AT-S-PRF9 Students will determine whether a relationship given in symbolic or graphical form is a function.	5.1		4.1
MA-HS-AT-S-PRF10 Students will determine the domain of a function represented in either symbolic or graphical form.	5.1, 5.2, 5.3, 5.4, 5.5		4.1, 4.2, 4.3, 4.4, 4.5

MA-HS-AT-S-PRF11 Students will understand functional notation and evaluate a function at a specified point in its domain.	5.2		4.2
MA-HS-AT-S-PRF12 Students will combine functions by addition, subtraction, multiplication and compositions.			4.2
MA-HS-AT-S-PRF13 Students will graph linear, absolute value, quadratic and exponential functions and identify their key characteristics.	4.3, 4.4, 4.5, 5.4, 5.5, 11.1, 11.2	7.3, 7.4	1.5, 4.4, 6.1, 8.1, 8.2, 9.1, 10.1
MA-HS-AT-S-PRF14 Students will recognize and solve problems that can be modeled using linear, absolute value, quadratic or exponential functions.	4.3, 4.4, 4.5, 5.4, 5.5, 11.1, 11.2		1.5, 4.4, 6.1, 8.1, 8.2, 9.1, 10.1
MA-HS-AT-S-PRF15 Students will extend the ideas of transformations and parametric changes of linear function, such as vertical and horizontal shifts, to transformations of non-linear functions.	4.6		1.5, 4.5, 6.1, 8.1, 8.2, 9.1, 10.1
MA-HS-AT-S-PRF16 Students will see the patterns in arithmetic and geometric sequences using recursion.	1.2	2.1	11.1, 11.2, 11.3, 11.4, 11.5
MA-HS-AT-S-PRF17 Students will see patterns in other sequences (e.g., quadratic, cubic).		2.1	11.4, 11.5

MA-HS-AT-S-PRF18 Students will relate the patterns in arithmetic sequences to linear functions.			11.2, 11.3, 11.4, 11.5
MA-HS-AT-S-PRF19 Students will relate the patterns in geometric sequences to exponential functions.		2.1	11.3, 11.4
MA-HS-AT-S-PRF20 Students will solve problems that have direct or inverse relationships for any variable.	5.3		10.6
MA-HS-AT-S-VEO1 Students will write expressions, equations, inequalities and relations in equivalent forms.	1.8, 3.1, 3.2, 3.3, 3.4, 3.5		1.1, 1.2
MA-HS-AT-S-VEO2 Students will use symbolic algebra to represent and explain mathematical relationships.	1.8		1.1, 1.2
MA-HS-AT-S-VEO3 Students will use symbolic expressions, including iterative and recursive forms, to represent relationships among various contexts.	1.2		11.1, 11.2, 11.3, 11.4, 11.5
MA-HS-AT-S-VEO4 Students will judge the meaning, utility and reasonableness of the results of symbol manipulations, including those carried out using technology.	Used throughout the textbook.		

MA-HS-AT-S-VEO5 Students will understand the properties of integer exponents and roots and apply these properties to simplify algebraic expressions.	10.2, 10.3		5.1, 5.2, 5.3
MA-HS-AT-S-VEO6 Students will add, subtract and multiply polynomials.	10.1		9.1
MA-HS-AT-S-VEO7 Students will divide a polynomial by a first-degree polynomial.			9.3
MA-HS-AT-S-VEO8 Students will factor polynomials by removing the greatest common factor.	10.5		9.2
MA-HS-AT-S-VEO9 Students will factor quadratic polynomials.	10.5, 10.6, 10.7		9.2, 9.3, 9.4
MA-HS-AT-S-VEO10 Students will determine when an expression is undefined.	12.1		10.1
MA-HS-AT-S-VEO11 Students will add, subtract, multiply, divide and simplify rational expressions.	12.2, 12.3, 12.4		10.2, 10.3
MA-HS-AT-S-VEO12 Students will evaluate polynomial and rational expressions and expressions containing radicals and absolute values at specified values of their variables.			9.1, 9.2, 9.3, 9.4, 10.1, 10.2, 10.3

MA-HS-AT-S-EI1 Students will write equivalent forms of equations, inequalities and systems of equations and inequalities and solve them with fluency - mentally or with paper and pencil in simple cases and using technology in all cases.	3.1, 3.2, 3.3, 3.4, 3.5, 8.1, 8.2, 8.3, 8.4, 8.5, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7		1.2, 2.1, 2.2, 2.3, 2.4, 2.5
MA-HS-AT-S-EI2 Students will draw reasonable conclusions about a situation being modeled.	Used throughout the textbook.		
MA-HS-AT-S-EI3 Students will solve one-variable equations and inequalities using manipulatives, symbols, procedures and graphing, including graphing the solution set on a number line.	3.1, 3.2, 3.3, 3.4, 3.5, 9.1, 9.2, 9.3, 9.4	2.6	1.2
MA-HS-AT-S-EI4 Students will solve linear equations and inequalities in one variable including those involving the absolute value of a linear function.	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 9.1, 9.2, 9.3, 9.4, 9.5	2.6	1.2, 1.3
MA-HS-AT-S-EI5 Students will solve an equation involving several variables for one variable in terms of the others.	3.1, 3.2, 3.3, 3.4		
MA-HS-AT-S-EI6 Students will solve systems of two linear equations in two variables.	8.1, 8.2, 8.3, 8.4, 8.5		2.1, 2.2, 2.4
MA-HS-AT-S-EI7 Students will solve systems of three linear equations in three variables.			2.5

MA-HS-AT-S-EI8 Students will solve quadratic equations in one variable.	11.3, 11.4, 11.5, 11.6		6.1, 6.2, 6.3, 6.4, 6.5, 6.6
MA-HS-AT-S-EI9 Students will approximate and interpret rates of change from graphical and numerical data.	4.2, 4.3, 4.4, 4.5, 7.3	7.3	1.4, 1.6
MA-HS-AT-S-EI10 Students will graph a linear equation and demonstrate that it has a constant rate of change.	4.2, 4.3, 4.4, 4.5, 7.3	7.3, 7.4	1.4, 1.6
MA-HS-AT-S-EI11 Students will relate the coefficients of a linear equation and the slope and x- and y-intercepts of its graph.	4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 7.3	7.3, 7.4	1.4, 1.6
MA-HS-AT-S-EI12 Students will relate a solution of a system of two linear equations in two variables and the graphs of the corresponding lines.	8.1		2.1
MA-HS-AT-S-EI13 Students will graph the solution set of a linear inequality and identify whether the solution set is an open or closed half-plane.	9.1, 9.2, 9.3, 9.4		1.2
MA-HS-AT-S-EI14 Students will graph the solution set of a system of two or three linear inequalities.	9.7		2.3

MA-HS-AT-S-EI15 Students will read information and draw conclusions from graphs and identify properties of a graph that provide useful information about the original problem.	4.2, 4.3, 4.4, 4.5, 4.6, 4.7, Chapter 4 Math Applications	7.3, 7.4	1.4
MA-HS-AT-S-EI16 Students will graph a quadratic function and understand the relationship between its real zeros and the x-intercepts of the graph.	11.1, 11.2		6.1
MA-HS-AT-S-EI17 Students will write and solve linear sentences, describing real-world situations by using and relating formulas, tables, graphs and equations.	Used throughout the textbook.		
MA-HS-AT-S-EI18 Students will recognize and solve problems that can be modeled using a linear equation in one variable, a quadratic equation or a system of linear equations.	3.1, 3.2, 3.3, 3.4, 3.5, 4.3, 4.4, 4.5, 4.6, 4.7, 8.1, 8.2, 8.3, 8.4, 8.5, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6		1.2, 1.4, 2.1, 2.2, 2.4, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6
MA-HS-AT-S-EI19 Students will use the skills learned to solve linear equations and inequalities to solve numerically, graphically or symbolically non-linear equations (e.g., absolute value, quadratic, exponential equations).	3.1, 3.2, 3.3, 3.4, 3.5, 4.3, 4.4, 4.5, 4.6, 4.7, 5.4, 8.1, 8.2, 8.3, 8.4, 8.5, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6		1.2, 1.3, 2.1, 2.2, 2.4, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6
MA-HS-AT-S-EI20 Students will use graphing technology to explore the meaning of quadratic equations with complex solutions.			6.5, 6.6

Related Core Content for Assessment			
MA-HS-5.1.1 **Students will identify multiple representations (tables, graphs, equations) of functions (linear, quadratic, absolute value, exponential) in real-world or mathematical problems.** **DOK 2**	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.2, 4.3, 4.4, 4.5, 4.6, 5.1, 5.4, 5.6, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6		1.4, 4.4, 5.3, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 8.1, 8.2, 9.1, 9.5, 10.1, 13.1
MA-HS-5.1.2 *Students will identify, relate and apply representations (graphs, equations, tables) of a piecewise function (such as long distance telephone rates) from mathematical or real-world information.*	5.4		4.4
MA-HS-5.1.4 Students will recognize and solve problems that can be modeled using an exponential function, such as compound interest problems.			8.1, 8.5, 8.6
MA-HS-5.1.5 **Students will:** **• determine if a relation is a function;** **• determine the domain and range of a function (linear and quadratic);** **• determine the slope and intercepts of a linear function;** **• determine the maximum, minimum, and intercepts (roots/zeros) of a quadratic function and** **• evaluate a function written in function notation for a specified rational number.** **DOK 2**	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 5.1, 5.2, 5.4, 5.5, 11.1, 11.2		1.4, 4.1, 4.2, 4.3, 4.4, 4.5, 6.1

MA-HS-5.1.8 **Students will identify the changes and explain how changes in parameters affect graphs of functions (linear, quadratic, absolute value, exponential) (e.g., compare $y = x^2$, $y = 2x^2$, $y = (x-4)^2$, and $y = x^2+3$).** **DOK 2**	4.5, 5.4, 11.1, 11.2		4.5, 6.1, 8.1, 8.2, 9.1, 10.1
MA-HS-5.2.1 **Students will apply order of operations, real number properties (identity, inverse, commutative, associative, distributive, closure) and rules of exponents (integer) to simplify algebraic expressions.** **DOK 1**	1.1, 1.4, 1.5, 10.2, 10.3	2.6	1.1, 5.1, 5.2
MA-HS-5.2.2 Students will evaluate polynomial and rational expressions and expressions containing radicals and absolute values at specified values of their variables.			9.1, 9.2, 9.3, 9.4, 10.1, 10.2, 10.3
MA-HS-5.2.3 **Students will:** **• add, subtract and multiply polynomial expressions;** **• factor polynomial expressions using the greatest common monomial factor and** **• factor quadratic polynomials of the form $ax^2 + bx + c$, when a = 1 and b and c are integers.** **DOK 2**	10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7		9.1, 9.2, 9.3, 9.4

MA-HS-5.2.4 *Students will factor quadratic polynomials, such as perfect square trinomials and quadratic polynomials of the form $ax^2 + bx + c$ when $a \neq 1$ and b and c are integers.*	10.5, 10.6, 10.7		9.2, 9.3, 9.4
MA-HS-5.2.5 **Students will add, subtract, multiply and divide simple rational expressions with monomial first-degree denominators and integer numerators** $\left(\text{e.g., } \frac{3}{5x}+\frac{4}{3y}; \frac{9}{2a}-\frac{-7}{4b}; \frac{-3}{-5x}\times\frac{-4}{7y}; \frac{5}{2c}\div\frac{9}{-11d}\right)$ **and will express the results in simplified form.** **DOK 1**	12.2, 12.3, 12.4		10.2, 10.3
MA-HS-5.3.1 **Students will model, solve and graph first degree, single variable equations and inequalities, including absolute value, based in real-world and mathematical problems and graph the solutions on a number line.** **DOK 2**	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 9.1, 9.2, 9.3, 9.4, 9.5		1.2, 1.3
MA-HS-5.3.2 *Students will solve for a specified variable in a multivariable equation.*	3.1, 3.2, 3.3, 3.4		
MA-HS-5.1.3 *Students will demonstrate how equations and graphs are models of the relationship between two real-world quantities (e.g., the relationship between degrees Celsius and degrees Fahrenheit).*	4.2, 4.3, 4.4, 4.5, 4.6, 4.7		1.4

MA-HS-5.1.6 *Students will find the domain and range for absolute value functions.*	5.4		1.3
MA-HS-5.1.7 *Students will apply and use direct and inverse variation to solve real-world and mathematical problems.*	5.3		10.6
MA-HS-5.3.3 **Students will model, solve and graph first degree, two-variable equations and inequalities in real-world and mathematical problems.** **DOK 2**	3.1, 3.2, 3.3, 3.4, 3.5, 9.1, 9.2, 9.3, 9.4, 9.6		1.2
MA-HS-5.3.4 **Students will model, solve and graph systems of two linear equations in real-world and mathematical problems.** **DOK 3**	8.1, 8.2, 8.3, 8.4, 8.5		2.1, 2.2, 2.4
MA-HS-5.3.5 *Students will write, graph, and solve systems of two linear inequalities based on real-world or mathematical problems and interpret the solution.*	9.7		2.3
MA-HS-5.3.6 **Students will model, solve and graph quadratic equations in real-world and mathematical problems.** **DOK 2**	11.1, 11.2, 11.3, 11.4, 11.5, 11.6		6.1, 6.2, 6.3, 6.4, 6.5, 6.6