

Knowre's Alignment to CCSS Mathematics Standards

Correlation Guide – High School Mathematics



Mathematics Standards for High School

NUMBER AND QUANTITY

The Real Number System (N.RN)

Extend the properties of exponents to rational exponents.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
N. RN. 1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	Lesson 6-5		Lessons 5-7, 5-8, 5-9, 8-5, 11-4
N. RN. 2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Lessons 6-5, 6-8, 11-2, 11-3, 11-4		Lessons 5-3, 5-4, 5-5, 5-6, 5-7, 5-8, 5-9, 8-5, 10-2, 11-2

Use properties of rational and irrational numbers.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
N. RN. 3	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.			Lessons 5-4, 5-5

Mathematics Standards for High School

NUMBER AND QUANTITY

Quantities (N.Q)

Reason quantitatively and use units to solve problems.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
N. Q. 1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Lesson 2-6		Lessons 1-3, 1-7, 2-3, 3-1, 3-2, 3-3, 3-4, 4-1, 4-2, 8-1, 8-2, 8-3, 8-5, 8-6, 10-2, 10-5, 11-1, 11-2, 11-3, 11-6, 12-6
N. Q. 2	Define appropriate quantities for the purpose of descriptive modeling.	Lessons 2-1, 2-3, 2-5, 2-6, 3-2, 3-3, 3-4, 4-4, 4-5, 5-2, 5-3		Lessons 1-7, 2-2
N. Q. 3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.			Lessons 1-7, 8-5, 11-6

Mathematics Standards for High School

NUMBER AND QUANTITY

The Complex Number System (N.CN)

Perform arithmetic operations with complex numbers.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
N. CN. 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.			Lessons 7-5, 7-6, 8-4
N. CN. 2	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.			Lessons 7-5, 7-6, 8-4
N. CN. 3 (+)	Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.			Lessons 7-6, 9-3

Use complex numbers in polynomial identities and equations.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
N. CN. 7	Solve quadratic equations with real coefficients that have complex solutions.			Lessons 8-5, 8-6
N. CN. 8 (+)	Extend polynomial identities to the complex numbers.			Lesson 7-6
N. CN. 9 (+)	Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.			Lessons 9-3, 9-4

Mathematics Standards for High School

ALGEBRA

Seeing Structure in Expressions (A.SSE)

Interpret the structure of expressions.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
A. SSE. 1	Interpret expressions that represent a quantity in terms of its context.			
a.	Interpret parts of an expression, such as terms, factors, and coefficients.	Lessons 1-1, 1-2, 7-1, 9-2, 9-3, 12-1		Lessons 1-2, 3-4, 5-4, 6-2, 6-3, 6-4, 6-5, 6-6, 7-1, 7-2, 7-3, 7-6, 8-2, 8-5, 9-1, 9-2, 9-4, 11-3, 11-5, 11-6, 12-1, 12-2, 12-3, 12-5, 12-6, 13-3, 13-7
b.	Interpret complicated expressions by viewing one or more of their parts as a single entity.	Lessons 1-2, 1-3, 7-4, 12-3		Lessons 7-6, 11-2, 11-3, 11-4, 11-6, 12-3, 13-7
A. SSE. 2	Use the structure of an expression to identify ways to rewrite it.	Lessons 1-1, 1-2, 1-3, 2-4, 6-1, 6-2, 6-3, 6-4, 6-7, 7-2, 7-3, 7-4, 8-1, 8-2, 8-3, 8-4, 8-5, 9-3, 9-4, 9-6, 11-2, 11-3, 11-4, 12-1, 12-3, 12-4		Lessons 1-1, 1-7, 4-5, 4-6, 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7, 5-8, 5-9, 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, 8-2, 8-3, 8-4, 8-5, 9-1, 9-2, 9-3, 11-2, 11-3, 11-4, 11-5, 12-4, 12-5, 12-6, 13-1, 13-2, 13-3, 13-5

Mathematics Standards for High School

ALGEBRA

Write expressions in equivalent forms to solve problems.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
A. SSE. 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.	Lesson 9-4		Lessons 8-4, 11-2
b.	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.			Lesson 8-5
c.	Use the properties of exponents to transform expressions for exponential functions.	Lesson 6-7		Lessons 5-1, 5-2, 9-4, 11-4, 12-2
A. SSE. 4	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.			Lessons 12-5, 12-6

Arithmetic with Polynomials and Rational Expressions (A.APR)

Perform arithmetic operations on polynomials.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
A. APR. 1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Lessons 7-2, 7-3, 7-4		Lessons 7-1, 7-2

Mathematics Standards for High School

ALGEBRA

Understand the relationship between zeros and factors of polynomials.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
A. APR. 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 $p(x)$.			Lesson 9-3
A. APR. 3	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.			Lessons 9-3, 9-4

Use polynomial identities to solve problems.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
A. APR. 4	Prove polynomial identities and use them to describe numerical relationships.			Lessons 7-1, 7-2, 7-4, 8-5

Rewrite rational expressions.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
A. APR. 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, for the more complicated examples, a computer algebra system.			Lessons 9-1, 9-2, 9-3, 13-1, 13-4
A. APR. 7 (+)	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.			Lessons 13-1, 13-2, 13-3

Mathematics Standards for High School

ALGEBRA

Creating Equations (A.CED)

Create equations that describe numbers or relationships.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
A. CED. 1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	Lessons 2-4, 3-2, 3-3, 3-4, 6-7, 6-8, 9-4, 9-5, 9-6		Lessons 1-3, 1-4, 1-5, 1-6, 2-3, 3-2, 8-1, 8-4, 8-6, 9-4, 10-3, 11-2, 11-3, 11-4, 11-6, 12-3, 12-4, 12-5, 12-6, 13-5, 13-6
A. CED. 2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Lessons 4-1, 4-4, 4-5, 4-6, 12-1		Lessons 3-1, 3-3, 3-4, 3-5, 4-1, 4-2, 4-3, 4-5, 4-6, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 8-3, 8-4, 8-5, 9-3, 9-4, 11-1, 11-5, 11-6, 12-3, 13-4, 13-5, 13-7
A. CED. 3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.	Lessons 3-1, 3-2, 3-3, 3-4, 3-6, 5-1, 5-2, 5-3, 5-4		Lessons 1-4, 1-5, 1-6, 2-3, 3-6, 4-4, 4-5, 8-1, 8-3, 9-3, 10-1, 10-2, 11-5
A. CED. 4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	Lesson 4-5		Lessons 1-3, 3-1, 3-3, 3-4, 9-2, 10-2, 11-5, 13-1

Mathematics Standards for High School

ALGEBRA

Reasoning with Equations and Inequalities (A.REI)

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

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
A. REI. 1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Lessons 2-1, 2-2, 2-3, 2-4, 2-7, 9-3		Lessons 1-3, 3-1, 4-1, 8-4, 8-5, 11-2, 11-3, 11-4, 12-4
A. REI. 2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.			Lessons 10-2, 11-2, 11-3, 12-4, 13-6, 13-7

Solve equations and inequalities in one variable.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
A. REI. 3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Lessons 2-1, 2-2, 2-3, 2-4, 2-5, 2-6, 2-7, 3-1, 3-2, 3-3, 3-4, 3-5, 3-6		Lessons 1-3, 1-4, 1-5, 1-6, 2-2, 3-2, 3-5, 12-2
A. REI. 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.	Lesson 9-5		Lessons 8-5, 8-6
	b. Solve quadratic equations by inspection, 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 .	Lessons 9-3, 9-4, 9-5, 9-6		Lessons 8-4, 8-5, 8-6, 10-2, 12-6

Mathematics Standards for High School

ALGEBRA

Solve systems of equations.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
A. REI. 5	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Lesson 5-3		Lessons 4-3, 4-5
A. REI. 6	Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables.	Lessons 5-1, 5-2, 5-3		Lessons 4-1, 4-2, 4-3, 4-5, 4-6, 8-6
A. REI. 7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.	Lesson 9-3		Lessons 8-2, 8-4

Represent and solve equations and inequalities graphically.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
A. REI. 10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	Lessons 4-3, 4-4, 4-5, 9-1, 9-2, 9-3, 12-1, 12-2		Lessons 3-1, 3-3, 4-1, 6-1, 6-2, 6-3, 6-4, 6-5, 6-7, 8-1, 8-3, 8-4, 9-4, 10-1, 11-1, 11-5, 13-4, 13-5, 13-7
A. REI. 11	Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	Lessons 5-2, 5-3		Lessons 4-1, 8-6
A. REI. 12	Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Lessons 4-8, 5-4		Lessons 3-6, 4-4, 4-5

Mathematics Standards for High School

FUNCTIONS

Interpreting Functions (F.IF)

Understand the concept of a function and use function notation.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
F. IF. 1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x . The graph of f is the graph of the equation $y = f(x)$.	Lessons 1-5, 6-6, 10-5		Lessons 2-1, 2-2, 2-4, 6-7, 10-3, 10-5
F. IF. 2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Lesson 1-5		Lessons 2-2, 2-4, 3-1, 3-4, 6-6, 8-3, 9-4, 10-1, 10-3, 10-4, 10-5, 11-1, 11-4, 11-5, 11-6, 12-2, 12-3, 13-4, 13-5, 13-6, 13-7
F. IF. 3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	Lessons 10-4, 10-5		Lessons 12-1, 12-2, 12-6

Mathematics Standards for High School

FUNCTIONS

Interpret functions that arise in applications in terms of the context.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
F. IF. 4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.	Lessons 4-1, 4-4, 6-6, 9-1, 9-2, 9-3		Lessons 2-3, 3-1, 3-2, 3-3, 3-4, 3-5, 6-1, 6-2, 8-1, 8-2, 8-3, 8-4, 8-5, 9-3, 9-4, 11-1, 11-5, 11-6, 13-4, 13-5
F. IF. 5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	Lessons 11-1, 12-2, 12-3		Lessons 2-2, 2-3, 3-1, 4-4, 4-5, 6-6, 6-7, 8-3, 8-5, 8-6, 9-4, 10-1, 10-3, 11-1, 11-5, 13-1, 13-4, 13-5, 13-6
F. IF. 6	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	Lessons 4-2, 4-3, 4-4, 4-5		Lessons 3-2, 3-3, 3-4, 3-5, 12-1, 13-7

Mathematics Standards for High School

FUNCTIONS

Analyze functions using different representations.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
F. IF. 7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.			
a.	Graph linear and quadratic functions and show intercepts, maxima, and minima.	Lessons 4-1, 4-3, 4-4, 4-5, 9-1, 9-2, 9-3		Lessons 3-1, 3-2, 3-3, 3-4, 3-5, 4-1, 6-1, 6-2, 6-3, 6-4, 6-5, 6-7, 8-1, 8-2, 8-3, 8-4, 8-5, 9-4
b.	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	Lesson 11-1		Lessons 6-1, 6-2, 6-3, 6-4, 6-5, 6-7, 10-1, 13-5
c.	Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.			Lesson 9-4
d.	Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.			Lessons 13-4, 13-5, 13-7
e.	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	Lesson 6-6		Lessons 11-1, 11-5
F. IF. 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.	Lessons 9-4, 9-5		Lessons 8-4, 8-5
b.	Use the properties of exponents to interpret expressions for exponential functions.	Lessons 6-2, 6-3, 6-7		Lessons 11-1, 11-5
F. IF. 9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).			Lessons 3-2, 3-4, 8-2

Mathematics Standards for High School

FUNCTIONS

Building Functions (F.BF)

Build a function that models a relationship between two quantities.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
F. BF. 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.	Lessons 10-2, 10-3, 10-5		Lessons 12-1, 12-2, 12-3, 12-4, 12-5, 12-6
b.	Combine standard function types using arithmetic operations.	Lessons 6-6, 11-1, 12-2		Lessons 10-3, 13-3
c.(+)	Compose functions.			Lesson 10-4
F. BF. 2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	Lessons 6-6, 10-2, 10-3, 10-5		Lessons 12-1, 12-2, 12-3, 12-4, 12-5, 12-6

Build new functions from existing functions.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
F. BF. 3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.			Lessons 6-2, 6-3, 6-4, 6-5, 6-6, 13-4, 13-7
F. BF. 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.	Lesson 4-7		Lessons 10-5, 11-5
b.(+)	Verify by composition that one function is the inverse of another.			Lesson 10-5
c.(+)	Read values of an inverse function from a graph or a table, given that the function has an inverse.			Lesson 10-5
F. BF. 5	Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.			Lessons 11-1, 11-3, 11-4, 11-5

Mathematics Standards for High School

FUNCTIONS

Linear, Quadratic, and Exponential Models (F.LE)

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

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
F. LE. 1	Distinguish between situations that can be modeled with linear functions and with exponential functions.			
a.	Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.	Lessons 4-3, 10-2, 10-3, 10-4		Lessons 11-1, 12-1
b.	Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	Lessons 4-4, 10-2, 10-4, 10-5		Lessons 12-1, 12-2, 12-4, 12-5, 12-6, 13-7
c.	Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	Lessons 6-6, 10-3, 10-4, 10-5		Lessons 11-1, 11-5, 11-6, 12-1, 12-3, 12-5, 12-6, 13-7
F. LE. 2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	Lessons 4-1, 4-4, 4-5, 4-6, 6-6, 6-7, 10-1, 10-2, 10-3, 10-4, 10-5		Lessons 3-3, 3-4, 3-5, 11-1, 11-6, 12-1, 12-3, 12-5, 12-6
F. LE. 3	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.			Lessons 11-1, 12-5
F. LE. 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.			Lesson 11-5

Mathematics Standards for High School

FUNCTIONS

Interpret expressions for functions in terms of the situation they model.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
F. LE. 5	Interpret the parameters in a linear or exponential function in terms of a context.	Lessons 2-2, 4-3, 4-4, 4-5, 6-6, 6-7, 10-2, 10-3, 10-5		Lessons 3-1, 3-2, 3-3, 3-4, 11-1

Mathematics Standards for High School

GEOMETRY

Congruence(G.CO)

Experiment with transformations in the plane.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. CO. 1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.		Lessons 1-1, 1-2, 1-3, 1-4, 3-4, 3-6, 10-1, 10-6	
G. CO. 2	Represent transformations in the plane; 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.		Lessons 7-1, 7-2, 7-3, 7-4, 7-5	
G. CO. 3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.		Lesson 7-3	
G. CO. 4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.		Lessons 7-1, 7-2, 7-3, 7-4, 7-5	
G. CO. 5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure. Specify a sequence of transformations that will carry a given figure onto another.		Lessons 7-1, 7-2, 7-3, 7-4, 7-5	

Understand congruence in terms of rigid motions.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. CO. 6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.		Lessons 4-4, 4-5, 7-1	
G. CO. 7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.		Lessons 4-4, 4-5	
G. CO. 8	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.		Lessons 4-4, 4-6	

Mathematics Standards for High School

GEOMETRY

Prove geometric theorems.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. CO. 9	Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.		Lessons 2-4, 3-1, 3-2, 3-3, 3-4, 5-1	
G. 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.		Lessons 4-1, 4-3, 5-2, 8-4, 8-5, 8-6	
G. CO. 11	Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.		Lessons 6-3, 6-4, 6-5, 6-6	

Make geometric constructions.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. CO. 12	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.		Lessons 1-2, 1-3, 1-4, 3-1, 3-4, 4-2, 5-1	
G. CO. 13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.		Lessons 5-2, 6-1	

Mathematics Standards for High School

GEOMETRY

Similarity, Right Triangles, and Trigonometry (G.SRT)

Understand similarity in terms of similarity transformations.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. SRT. 1	Verify experimentally the properties of dilations given by a center and a scale factor.			
a.	A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.		Lesson 7-4	
b.	The dilation of a line segment is longer or shorter in the ratio given by the scale factor.		Lesson 7-4	
G. SRT. 2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.		Lessons 8-3, 8-4	
G. SRT. 3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.		Lesson 8-4	

Prove theorems involving similarity.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. SRT. 4	Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.		Lessons 8-5, 9-1	
G. SRT. 5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.		Lessons 4-4, 4-5, 8-4, 8-5, 8-6, 9-1, 12-7	

Mathematics Standards for High School

GEOMETRY

Define trigonometric ratios and solve problems involving right triangles.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. SRT. 6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.		Lessons 9-3, 9-4, 9-5	
G. SRT. 7	Explain and use the relationship between the sine and cosine of complementary angles.		Lesson 9-5	
G. SRT. 8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.*		Lessons 9-6, 11-4	

Apply trigonometry to general triangles.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. SRT. 9 (+)	Derive the formula $A = \frac{1}{2} ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.		Lesson 9-7	
G. SRT. 10 (+)	Prove the Laws of Sines and Cosines and use them to solve problems.		Lesson 9-7	
G. SRT. 11 (+)	Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles.		Lessons 9-7, 9-8	

Mathematics Standards for High School

GEOMETRY

Circles (G.C)

Understand and apply theorems about circles.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. C. 1	Prove that all circles are similar.		Lesson 10-6	
G. C. 2	Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.		Lessons 10-1, 10-2, 10-3, 10-5	
G. C. 3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.		Lessons 5-2, 10-3	

Find arc lengths and areas of sectors of circles.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. C. 5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.		Lesson 11-5	

Mathematics Standards for High School

GEOMETRY

Expressing Geometric Properties with Equations (G.GPE)

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

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. GPE. 1	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.		Lesson 10-6	
G. GPE. 2	Derive the equation of a parabola given a focus and directrix.			

Use coordinates to prove simple geometric theorems algebraically.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. GPE. 4	Use coordinates to prove simple geometric theorems algebraically.		Lessons 5-2, 5-3, 6-3, 7-2	
G. GPE. 5	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems.		Lessons 3-6, 5-2, 5-3	
G. GPE. 6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.		Lesson 8-2	
G. GPE. 7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles.		Lessons 1-6, 6-3	

Mathematics Standards for High School

GEOMETRY

Geometric Measurement and Dimension (G.GMD)

Explain volume formulas and use them to solve problems.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. GMD. 1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.		Lessons 1-6, 12-4, 12-5	
G. GMD. 2	Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.		Lessons 12-4, 12-5, 12-6	
G. GMD. 3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.		Lessons 12-4, 12-5, 12-6, 12-7	

Visualize relationships between two-dimensional and three-dimensional objects.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. GMD. 4	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.		Lessons 12-1, 12-5	

Mathematics Standards for High School

GEOMETRY

Modeling with Geometry (G.MG)

Apply geometric concepts in modeling situations.

Code	Standards	Algebra 1 Lessons	Geometry Lessons	Algebra 2 Lessons
G. MG. 1	Use geometric shapes, their measures, and their properties to describe objects.		Lessons 11-1, 11-5, 12-2, 12-3, 12-4, 12-5	
G. MG. 1	Apply concepts of density based on area and volume in modeling situations.		Lessons 12-6, 12-7	
G. MG. 1	Apply geometric methods to solve design problems.		Lessons 1-6, 11-1 11-3, 11-4, 11-5, 12-2, 12-3, 12-4, 12-5, 12-6, 12-7	

Need more information? We're happy to help!

Email us at support@knowre.com

or

give us a call at **646-681-8321**