

**Kindergarten Priority Standards****Counting and Cardinality**

	KCC.2	Count forward beginning from a given number within the known sequence within 100 (instead of having to begin at 1)
	KCC.3	Represent numbers. a. Write numbers from 0 to 20. b. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects)
	KCC.6	Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group.

**Operations and Algebraic Thinking**

	KOA.5	Fluently add and subtract within 5.
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**Numbers and Operations in Base Ten**

	KNBT.1	Compose and decompose numbers from 11 to 19 using quantities (numbers with units) of ten ones and some further ones. Understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.
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**Geometry**

	KG.3	Identify shapes as two-dimensional or three-dimensional.
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**Measurement and Data**

	KMD.4	Recognize and identify coins by name (penny, nickel, dime, quarter).
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## 1st Grade Priority Standards

### Measurement and Data

KY.1.MD.2	Express the length of an object as a whole number of same-size length units, by laying multiple copies of a shorter object (the length unit) end to end with no gaps or overlaps
KY.1.MD.3	Assign values to time and money. a. Tell and write time in hours and half-hours using analog and digital clocks. b. Identify the coins by values (penny, nickel, dime, quarter).

### Number and Operations in Base Ten

KY.1.NBT.1	Count and represent numbers. a. Count forward to and backward from 120, starting at any number less than 120. b. In this range, read and write numerals and represent a number of objects with a written numeral.
KY.1.NBT.2	Understand the two-digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones — called a “ten.” b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight or nine tens (and 0 ones)

### Operations and Algebraic Thinking

KY.1.OA.1	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions, or equations.
KY.1.OA.3	Decompose numbers less than or equal to 10. a. Decompose numbers into two groups in more than one way by using objects or drawings and record each decomposition by a drawing or equation. b. Use objects or drawings to demonstrate equality as the balancing of quantities
KY.1.OA.6	Add and subtract within 20. a. Fluently add and subtract within 10. b. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making 10; decomposing a number leading to a 10; using the relationship between addition and subtraction; creating equivalent but easier or known sums.
KY.1.OA.7	Understand the meaning of the equal sign and determine if equations involving addition and subtraction are true or false.
KY.1.OA.8	Determine the unknown whole number in an addition or subtraction equation relating three whole numbers.

## 2nd Grade Priority Standards

### Operations and Algebraic Thinking

	2OA1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions, by using drawings and equations with a symbol for the unknown number to represent the problem
	2OA2	Fluently add and subtract within 20 using mental strategies
	2OA4	Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends

### Numbers and Operation in Base Ten

	2NBT1	Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones.  Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens — called a “hundred.” b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
	2NBT5	Fluently add and subtract within 100 using strategies based on place value, properties of operations and/or the relationship between addition and subtraction
	2NBT7	Add and subtract within 1000. a. Represent and solve addition and subtraction problems using... <ul style="list-style-type: none"><li>• concrete models or drawings;</li><li>• strategies based on place value;</li><li>• properties of operations;</li><li>• the relationship between addition and subtraction and;</li><li>• relate drawings and strategies to expressions or equations.</li></ul> b. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

### Measurement and Data

	1MD7	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks and measuring tapes
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### Geometry

	2G2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
	2G3	Partition circles and rectangles into two, three, or four equal shares; describe the shares using the words halves, thirds, half of, a third of, etc.; and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape

### 3rd Grade Priority Standards

#### Operations and Algebraic Thinking

	3OA3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays and measurement quantities, by using drawings and equations with a symbol for the unknown number to represent the problem.
	3OA5	Apply properties of operations as strategies to multiply and divide.
	3OA7	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations
	3OA8	Use various strategies to solve two-step word problems using the four operations (involving only whole numbers with whole number answers). Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding

#### Numbers and Operations in Base Ten

	3NBT2	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations and/or the relationship between addition and subtraction.
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#### Numbers and Operations- Fractions

	3NF1	Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by $a$ parts of size $\frac{1}{b}$
	3NF3	Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or same point on a number line. b. Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent through writing or drawing. c. Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$ , $=$ , or $<$ , and justify the conclusions

#### Measurement and Data

	3MD1	Tell and write time to the nearest minute and measure elapsed time intervals in minutes. Solve word problems involving addition and subtraction of time intervals within and across the hour in minutes.
	3MD7	Relate area to the operations of multiplication and addition. a. Find the area of a rectangle with whole-number side lengths by tiling it and show the area is the same as would be found by multiplying the side lengths. b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems and represent whole-number products as rectangular areas in mathematical reasoning. c. Use tiling to show in a concrete case the area of a rectangle with whole-number side lengths $a$ and $b + c$ is the sum of $a \times b$ and $a \times c$ . Use area models to represent the distributive property in mathematical reasoning. d. Recognize area as additive. Find areas of figures that can be decomposed into non-overlapping rectangles by adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

## 4th Grade Priority Standards

### Numbers and Operations in Base Ten

	4NBT2	<p>Represent and compare multi-digit whole numbers.</p> <p>a. Read and write multi-digit whole numbers using base-ten numerals, number names and expanded form.</p> <p>b. Compare two multi-digit numbers based on meanings of the digit in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</p>
	4NBT4	Fluently add and subtract multi-digit whole numbers using an algorithm
	4NBT5	<p>Multiply whole numbers</p> <ul style="list-style-type: none"> <li>• Up to four digit number by a one-digit number</li> <li>• Two-digit number by two-digit number</li> </ul> <p>Multiply using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays and/or area models</p>
	4NBT6	<p>Divide up to four-digit dividends by one-digit divisors. Find whole-number quotients and remainders using</p> <ul style="list-style-type: none"> <li>• strategies based on place value</li> <li>• the properties of operations</li> <li>• the relationship between multiplication and division</li> </ul> <p>Illustrate and explain the calculation by using equations, rectangular arrays and/or area models</p>

### Numbers and Operations- Fractions

	4NF3	<p>Understand a fraction <math>\frac{a}{b}</math></p> <p>with <math>a &gt; 1</math> as a sum of fractions <math>\frac{1}{b}</math></p> <p>a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</p> <p>b. Decomposing a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions.</p> <p>c. Add and subtract mixed numbers with like denominators.</p> <p>d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.</p>
	4NF6	Use decimal notation for fractions with denominators 10 or 100.

### Geometry

	4G1	Draw points, lines, line segments, rays, angles (right, acute, obtuse) and perpendicular and parallel lines. Identify these in two-dimensional figures.
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5th Grade Priority Standards		
Number and Operations in Base Ten		
	5NBT2	Multiply and divide by powers of 10. <ul style="list-style-type: none"> <li>● Explain patterns in the number of zeros of the product when multiplying a number by powers of 10.</li> <li>● Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.</li> <li>● Use whole-number exponents to denote powers of 10.</li> </ul>
	5NBT3	Read, write and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names and expanded form. b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.
	5NBT4	Use place value understanding to round decimals to any place.
	5NBT7	Operations with decimals to hundredths. a. Add, subtract, multiply and divide decimals to hundredths using... <ul style="list-style-type: none"> <li>● concrete models or drawings</li> <li>● strategies based on place value</li> <li>● properties of operations</li> <li>● the relationship between addition and subtraction</li> </ul> b. Relate the strategy to a written method and explain the reasoning used.
Operations and Algebraic Thinking		
	5OA1	Use parentheses, brackets or braces in numerical expressions and evaluate expressions that include symbols.
Number and Operations- Fractions		
	5NF1	Efficiently add and subtract fractions with unlike denominators (including mixed numbers) by... <ul style="list-style-type: none"> <li>● using reasoning strategies, such as counting up on a number line or creating visual fraction models</li> <li>● finding common denominators</li> </ul>
	5NF4	Apply and extend previous understanding of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product ( $\frac{a}{b}$ ) $\times$ $q$ as a parts of a partition of $q$ into $b$ equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$ . b. Find the area of a rectangle with fractional side lengths by tiling it with squares of the appropriate unit fraction side lengths and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.
Geometry		
	5G2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.
Measurement and Data		
	5MD2	Identify and gather data for statistical questions focused on both categorical and numerical data. Select an appropriate data display (bar graph, pictograph, dot plot). Make observations from the graph about the questions posed.
	5MD5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes. b. Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

**6th Grade Priority Standards****Ratios and Proportional Relationships**

6RP3

Use ratio and rate reasoning to solve real-world and mathematical problems.

a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

b. Solve rate problems including those involving unit pricing and constant speed.

c. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities

**The Number System**

6NS1

Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions.

6NS3

Fluently add, subtract, multiply and divide multi-digit decimals using an algorithm for each operation.

6NS5

Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6NS7

Understand ordering and absolute value of rational numbers.

a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.

b. Write, interpret and explain statements of order for rational numbers in real-world contexts.

c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

d. Distinguish comparisons of absolute value from statements about order.

6NS8

Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

**Geometry**

6G3

Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

**Expressions and Equations**

6EE2

Write, read and evaluate expressions in which letters stand for numbers.

a. Write expressions that record operations with numbers and with letters standing for numbers.

b. Identify parts of an expression using mathematical terms (sums, term, product, factor, quotient, coefficient); view one or more parts of an expression in a single entity.

c. Evaluate expressions for specific values of their variables, including values that are non-negative rational numbers. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

6EE3

Apply the properties of operations to generate equivalent expressions.

6EE7

Solve real-world and mathematical problems by writing and solving equations of the form  $x + p = q$  and  $px = q$  for cases in which  $p$ ,  $q$  and  $x$  are all nonnegative rational numbers.

## 7th Grade Priority Standards

### Ratios and Proportional Relationships

	7RP2	Recognize and represent proportional relationships between quantities. a. Decide whether two quantities represent a proportional relationship. 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. 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.
	7RP3	Use percents to solve mathematical and real-world problems. a. Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, a part and a percent, given two of these. b. Use proportional relationships to solve multistep ratio and percent problems.

### The Number System

	7NS3	Solve real-world and mathematical problems involving the four operations with rational numbers.
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### Expressions and Equations

	7EE4	Use variables to represent quantities in a real-world or mathematical problem and construct equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $pppp + qq = rr$ and $pp(xx + qq) = rr$ , where p, q and r are specific rational numbers. Solve equations of these forms. Graph the solution set of the equality and interpret it in context of the problem. b. Solve word problems leading to inequalities of the form $pppp + qq > rr$ , $pppp + qq < rr$ , $pppp + qq \geq rr$ , $pppp + qq \leq rr$ ; where p, q and r are specific rational numbers. Graph the solution set of the inequality and interpret it in context of the problem.
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### Geometry

	7G4	Use formulas for area and circumference of circles and their relationships. a. Apply the formulas for the area and circumference of a circle to solve real-world and mathematical problems. b. Explore and understand the relationship between the radius, diameter, circumference and area of a circle.
	7G6	Solve problems involving area of two-dimensional objects and surface area and volume of three-dimensional objects. a. Solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles, quadrilaterals and other polygons b. Solve real-world and mathematical problems involving volume and surface area, using nets as needed, of three-dimensional objects including cubes, pyramids and right prisms

### Statistics and Probability

	7SP4	Calculate and use measures of center (mean and median) and measures of variability (interquartile range when comparing medians and mean absolute deviation when comparing means) for numerical data from random samples to draw informal comparative inferences about two populations.
	7SP6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency and predict the approximate relative frequency given the probability



## 8th Grade Priority Standards

### Expressions and Equations

8EE1	Know and apply the properties of integer exponents to generate equivalent numerical expressions
8EE7	<p>Solve linear equations in one variable.</p> <p>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 <math>xx = aa</math>, <math>aa = aa</math>, or <math>aa = b</math> results (where <math>a</math> and <math>b</math> are different numbers).</p> <p>b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms</p>
8EE8	<p>Analyze and solve a system of two linear equations.</p> <p>a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously; understand that a system of two linear equations may have one solution, no solution, or infinitely many solutions.</p> <p>b. Solve systems of two linear equations in two variables algebraically by using substitution where at least one equation contains at least one variable whose coefficient is 1 and by inspection for simple cases</p> <p>c. Solve real-world and mathematical problems leading to two linear equations in two variables</p>
8F2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
8F4	<p>Construct a function to model a linear relationship between two quantities.</p> <p>a. Determine the rate of change and initial value of the function from a description of a relationship or from two <math>(x, y)</math> values, including reading these from a table or from a graph.</p> <p>b. Interpret the rate of change and initial value of a linear function in terms of the situation it models and in terms of its graph or a table of values.</p>
8G4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations and dilations. Given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them
8G8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
8G9	Apply the formulas for the volumes and surface areas of cones, cylinders and spheres and use them to solve real-world and mathematical problems.

## Algebra 1 Priority Standards

KY.HS.F.3	Understand average rate of change of a function over an interval. a. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. b. Estimate the rate of change from a graph
KY.HS.F.4	Graph functions expressed symbolically and show key features of the graph, with and without using technology (computer, graphing calculator). a.) Graph linear and quadratic functions and show intercepts, maxima and minima.
KY.HS.F.5	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. a. Identify zeros, extreme values and symmetry of the graph within the context of a quadratic function. b. Use the properties of exponents to interpret expressions for exponential functions and classify the exponential function as representing growth or decay.
KY.HS.F.12	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)
KY.HS.A.12	Create equations and inequalities in one variable and use them to solve problems.
KY.HS.A.13	Create equations and inequalities in one variable and use them to solve problems.
KY.HS.A.14	Create a system of equations or inequalities to represent constraints within a modeling context. Interpret the solution(s) to the corresponding system as viable or nonviable options within the context.
KY.HS.A.19	Solve quadratic equations in one variable. a. Solve quadratic equations by taking square roots, 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 $b$
KY.HS.A.20	Solve systems of linear equations in two variables. a. Understand a system of two equations in two variables has the same solution as a new system formed by replacing one of the original equations with an equivalent equation. b. Solve systems of linear equations with graphs, substitution and elimination
KY.HS.A.25	Graph linear inequalities in two variables. a. Graph the solutions to a linear inequality as a half-plane (excluding the boundary in the case of a strict inequality). b. Graph the solution set to a system of linear inequalities as the intersection of the corresponding half-planes.

## Geometry Priority Standards

KY.HS.G.4	<p>Understand the effects of transformations of geometric figures.</p> <p>a. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure.</p> <p>b. Specify a sequence of transformations that will carry a given figure onto another.</p> <p>c. 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.</p>
KY.HS.G.5	<p>Know and apply the concepts of triangle congruence: a. 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. b. Explain how the criteria for triangle congruence (ASA, SAS and SSS) follow from the definition of congruence in terms of rigid motions.</p>
KY.HS.G.7	<p>Prove theorems about geometric figures. a. Construct formal proofs to justify theorems for lines, angles and triangles</p>
KY.HS.G.8	<p>Create and apply geometric constructions. a. Make formal geometric constructions with a variety of tools and methods. b. Apply basic construction procedures to construct more complex figures.</p>
KY.HS.G.9	<p>Understand properties of dilations. a. Verify the properties that result from that dilations given by a center and a scale factor. b. Verify that a dilation produces an image that is similar to the pre-image.</p>
KY.HS.G.11	<p>Understand theorems about triangles. a. Apply theorems about triangles. c. Use similarity criteria for triangles to solve problems and to prove relationships in geometric figures.</p>
KY.HS.G.12	<p>Understand properties of right triangles. a. 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 (sine, cosine and tangent). b. Explain and use the relationship between the sine and cosine of complementary angles. c. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems</p>
KY.HS.G.16	<p>Identify and describe relationships among angles and segments within the context of circles involving: a. Recognize differences between and properties of inscribed, central and circumscribed angles. b. Understand relationships between inscribed angles and the diameter of a circle. c. Understand the relationship between the radius of a circle and the line drawn through the point of tangency on that radius</p>
KY.HS.G.23	<p>Find measurements among points within the coordinate plane. a. Use points from the coordinate plane to find the coordinates of a midpoint of a line segment and the distance between the endpoints of a line segment. b. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.</p>
KY.HS.G.27	<p>Use volume formulas to solve problems for cylinders, pyramids, cones, spheres, prisms</p>

## Algebra 2 Priority Standards

	KY.HS.SP.14	Describe events as subsets of a sample space. Use characteristics (or categories) of the outcomes, such as, <ul style="list-style-type: none"> <li>• as unions, “A or B,” that are mutually exclusive events and</li> <li>• as unions, “A or B,” that are non-mutually exclusive events and</li> <li>• as intersections, “A and B,” and</li> <li>• as complements of other events, “not A.” to calculate basic probabilities.</li> </ul>
	KY.HS.A.3	Choose and produce an equivalent form of an expression to reveal and explain the properties of the quantity represented by the expression. <p>a. Write the standard form of a given polynomial and identify the terms, coefficients, degree, leading coefficient and constant term. b. Factor a quadratic expression to reveal the zeros of the function it defines. c. Use the properties of exponents to rewrite exponential expressions.</p>
	KY.HS.A.7	Identify roots of polynomials when suitable factorizations are available. Know these roots become the zeros (x-intercepts) for the corresponding polynomial function
	KY.HS.A.17	Solve and justify equations in one variable. Justify the solutions and give examples showing how extraneous solutions may arise. a. Solve rational equations written as proportions in one variable. b. Solve radical equations in one variable.
	KY.HS.A.19	Solve quadratic equations in one variable. <p>a. Solve quadratic equations by taking square roots, 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 <math>a \pm bi</math> for real numbers a and b.</p>
	KY.HS.A.24	Justify that the solutions of the equations $f(x)=g(x)$ are the coordinates of the points where the graphs of $y=f(x)$ and $y=g(x)$ intersect. Find the approximate solutions graphically, using technology or tables.
	KY.HS.F.4	Graph functions expressed symbolically and show key features of the graph, with and without using technology (computer, graphing calculator). ★ b. Graph square root, cube root and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available and showing end behavior. d. Graph exponential and logarithmic functions, showing intercepts and end behavior
	KY.HS.F.8:	Understand the effects of transformations on the graph of a function. a. 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. b. Experiment with cases and illustrate an explanation of the effects on the graph using technology.