6th Grade – Mathematics Kentucky

Academic Standards with Targets

Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.** ***For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was one beak." "For every vote candidate A received, candidate C received nearly three votes."***
Domain:	**Ratio and Proportional Relationships**
Cluster:	**Understand ratio concepts and use ratio reasoning to solve problems.**
Type: _____Knowledge ___X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Write ratio notation- __:__, __ to __, __/__ Know order matters when writing a ratio Know ratios can be simplified Know ratios compare two quantities; the quantities do not have to be the same unit of measure Recognize that ratios appear in a variety of different contexts; part-to-whole, part-to-part, and rates	Generalize that all ratios relate two quantities or measures within a given situation in a multiplicative relationship. Analyze your context to determine which kind of ratio is represented		

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.RP.2 Understand the concept of a unit rate *a/b* associated with a ratio *a*:*b* with *b* ≠ 0, and use rate language in the context of a ratio relationship.** ***For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."***
Domain:	**Ratio and Proportional Relationships**
Cluster:	**Understand ratio concepts and use ratio reasoning to solve problems.**
Type: ___ __Knowledge ___X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Identify and calculate a unit rate. Use appropriate math terminology as related to rate.	Analyze the relationship between a ratio a:b and a unit rate a/b where $b \neq 0$.		

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course: 6th Grade	
Standard:	**6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.** **a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.** **b. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*** **c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.** **d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.**
Domain:	**Ratios and Proportional Relationships**
Cluster:	**Understand ratio concepts and use ratio reasoning to solve problems.**
Type: _____Knowledge __X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Make a table of equivalent ratios using whole numbers. Find the missing values in a table of equivalent ratios. Plot pairs of values that represent equivalent ratios on the coordinate plane. Know that a percent is a ratio of a number to 100. Find a % of a number as a rate per 100.	Use tables to compare proportional quantities. Solve real-world and mathematical problems involving ratio and rate, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. Apply the concept of unit rate to solve real-world problems involving unit pricing. Apply the concept of unit rate to solve real-world problems involving constant speed. Solve real-world problems involving finding the whole, given a part and a percent. Apply ratio reasoning to convert measurement units in real-world and mathematical problems. Apply ratio reasoning to convert measurement units by multiplying or dividing in real-world and mathematical problems.		

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Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th grade	
Standard with code:	**6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.** ***For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?***
Domain:	**Number System**
Cluster:	**Apply and extend previous understanding of multiplication and division to divide fractions by fractions.**
Type: _____Knowledge ___X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Compute quotients of fractions divided by fractions (including mixed numbers).	Interpret quotients of fractions Solving word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.		

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.NS.2 Fluently divide multi-digit numbers using the standard algorithm.**
Domain:	**The Number System**
Cluster:	**Compute fluently with multi-digit numbers and find common factors and multiples.**

Type: __X____Knowledge _____Reasoning _____Performance Skill _____Product

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Fluently divide multi-digit numbers using the standard algorithm with speed and accuracy.			

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.**
Domain:	**The Number System**
Cluster:	**Compute fluently with multi-digit numbers and find common factors and multiples.**
Type: __X____Knowledge _____Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation with speed and accuracy.			

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).***
Domain:	**Number Systems**
Cluster:	**Compute fluently with multi-digit numbers and find common factors and multiples.**
Type: ____ Knowledge __X____ Reasoning _____ Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Identify the factors of two whole numbers less than or equal to 100 and determine the Greatest Common Factor. Identify the multiples of two whole numbers less than or equal to 12 and determine the Least Common Multiple.	Apply the Distributive Property to rewrite addition problems by factoring out the Greatest Common Factor.		

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Grade Level/ Course: 6th Grade	
Standard with code:	**6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above /below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.**
Domain:	**Number Sense**
Cluster:	**Apply and extend previous understandings of numbers to the system of rational numbers.**
Type: _____Knowledge ___X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Identify an integer and its opposite	Use integers to represent quantities in real world situations (above/below sea level, etc) Explain where zero fits into a situation represented by integers		

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Grade Level/ Course: 6th Grade	
Standard with code:	**6.NS.6abc Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.** **a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) = 3 and that 0 is its own opposite.** **b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.** **c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.**
Domain:	**Number Sense**
Cluster:	**Apply and extend previous understandings of numbers to the system of rational numbers.**
Type: _____Knowledge ___X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Identify a rational number as a point on the number line. Identify the location of zero on a number line in relation to positive and negative numbers Recognize opposite signs of numbers as locations on opposite sides of 0 on the number line Recognize the signs of both numbers in an ordered pair indicate which quadrant of the coordinate plane the ordered pair will be located Find and position integers and other rational numbers on a horizontal or vertical number line diagram Find and position pairs of integers and other rational numbers on a coordinate plane	Reason that the opposite of the opposite of a number is the number itself. Reason that when only the x value in a set of ordered pairs are opposites, it creates a reflection over the y axis, e.g., (x,y) and (-x,y) Recognize that when only the y value in a set of ordered pairs are opposites, it creates a reflection over the x axis, e.g., (x,y) and (x, -y) Reason that when two ordered pairs differ only by signs, the locations of the points are related by reflections across both axes, e.g., (-x, -y) and (x,y)		

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Grade Level/ Course: 6th Grade	
Standard with code:	**6.NS.7abcd Understand ordering and absolute value of rational numbers.** **a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.** ***For example, interpret -3>-7 as a statement that -3 is located to the right of -7 on a number line oriented from left to right.*** **b. Write, interpret, and explain statements of order for rational numbers in real-world contexts.** ***For example, write -3°C > -7°C to express the fact that -3°C is warmer than -7°C.*** **c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.** ***For example, for an account balance of -30 dollars, write |-30| = 30 to describe the size of the debt in dollars.*** **d. Distinguish comparisons of absolute value from statements about order.** ***For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.***
Domain:	**Number Sense**
Cluster:	**Apply and extend previous understandings of numbers to the system of rational numbers.**

Type: _____Knowledge ___X___Reasoning _____Performance Skill _____Product

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Order rational numbers on a number line Identify absolute value of rational numbers	Interpret statements of inequality as statements about relative position of two numbers on a number line diagram. Write, interpret, and explain statements of order for rational numbers in real-world contexts Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation Distinguish comparisons of absolute value from statements about order and apply to real world contexts		

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Grade Level/ Course: 6th Grade	
Standard with code:	**6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.**
Domain:	**Number Systems**
Cluster:	**Apply and extend previous understandings of numbers to the system of rational numbers.**
Type: _____Knowledge ___X__Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Calculate absolute value. Graph points in all four quadrants of the coordinate plane.	Solve real-world problems by graphing points in all four quadrants of a coordinate plane. Given only coordinates, calculate the distances between two points with the same first coordinate or the same second coordinate using absolute value.		

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Grade Level/ Course: 6th Grade	
Standard with code:	**6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.**
Domain:	**Expressions and Equations**
Cluster:	**Apply and extend previous understandings of arithmetic to algebraic expressions.**
Type: X___Knowledge _____Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Write numerical expressions involving whole number exponents Ex. $3^4 = 3x3x3x3$ Evaluate numerical expressions involving whole number exponents Ex. $3^4 = 3x3x3x3 = 81$ Solve order of operation problems that contain exponents Ex. $3 + 2^2 – (2 + 3) = 2$			

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Grade Level/ Course: 6th Grade	
Standard with code:	**6.EE.2a Write, read and evaluate expressions in which letters stand for numbers.** **a. Write expressions that record operations with numbers and with letters standing for numbers.** ***For example, express the calculation "Subtract y from 5" as 5 – y.***
Domain:	**Expressions and Equations**
Cluster:	**Apply and extend previous understandings of arithmetic to algebraic expressions.**
Type: _____Knowledge ___X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Use numbers and variables to represent desired operations	Translating written phrases into algebraic expressions. Translating algebraic expressions into written phrases.		

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course: 6th Grade	
Standard with code:	**6.EE.2b Write, read and evaluate expressions in which letters stand for numbers.** **b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.** ***For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.***
Domain:	**Expressions and Equations**
Cluster:	**Apply and extend previous understandings of arithmetic to algebraic expressions.**
Type: ___X___Knowledge _____Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient) Identify parts of an expression as a single entity, even if not a monomial.			

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Grade Level/ Course: 6th Grade	
Standard with code:	**6.EE.2c Write, read and evaluate expressions in which letters stand for numbers.** **c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).** ***For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2.***
Domain:	**Expressions and Equations**
Cluster:	**Apply and extend previous understandings of arithmetic to algebraic expressions.**
Type: ___X___Knowledge _____Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Substitute specific values for variables. Evaluate algebraic expressions including those that arise from real-world problems. Apply order of operations when there are no parentheses for expressions that include whole number exponents			

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Grade Level/ Course: 6th Grade	
Standard with code:	**6.EE.3 Apply the properties of operations to generate equivalent expressions.** ***For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.***
Domain:	**Expressions and Equations**
Cluster:	**Apply and extend previous understandings of arithmetic to algebraic expressions.**
Type: ____Knowledge ___X__Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Generate equivalent expressions using the properties of operations. (e.g. distributive property, associative property, adding like terms with the addition property of equality, etc.)	Apply the properties of operations to generate equivalent expressions.		

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Grade Level/ Course: 6th Grade	
Standard with code:	**6.EE.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).** ***For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.***
Domain:	**Expressions and Equations**
Cluster:	**Apply and extend previous understandings of arithmetic to algebraic expressions.**
Type: ____Knowledge ___X__Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Recognize when two expressions are equivalent.	Prove (using various strategies) that two equations are equivalent no matter what number is substituted.		

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.**
Domain:	**Expressions and Equations**
Cluster:	**Reason about and solve one-variable equations and inequalities**
Type: ___X___Knowledge _____Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Recognize solving an equation or inequality as a process of answering "*which values from a specified set, if any, make the equation or inequality true?*" Know that the solutions of an equation or inequality are the values that make the equation or inequality true. Use substitution to determine whether a given number in a specified set makes an equation or inequality true.			

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.**
Domain:	**Expressions and Equations**
Cluster:	**Reason about and solve one-variable equations and inequalities**
Type: _____Knowledge ___X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Recognize that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	Relate variables to a context. Write expressions when solving a real-world or mathematical problem		

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form *x* + *p* = *q* and *px* = *q* for cases in which *p*, *q* and *x* are all nonnegative rational numbers.**
Domain:	**Expressions and Equations**
Cluster:	**Reason about and solve one-variable equations and inequalities**
Type: _____Knowledge ___X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Define inverse operation. Know how inverse operations can be used in solving one-variable equations.	Apply rules of the form $x + p = q$ and $px = q$, for cases in which p, q and x are all nonnegative rational numbers, to solve real world and mathematical problems. (There is only one unknown quantity.) Develop a rule for solving one-step equations using inverse operations with nonnegative rational coefficients. Solve and write equations for real-world mathematical problems containing one unknown.		

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.EE.8 Write an inequality of the form *x* > *c* or *x* < *c* to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form *x* > *c* or *x* < *c* have infinitely many solutions; represent solutions of such inequalities on number line diagrams.**
Domain:	**Expressions and Equations**
Cluster:	**Reason about and solve one-variable equations and inequalities**
Type: _____Knowledge ___X__Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Identify the constraint or condition in a real-world or mathematical problem in order to set up an inequality. Recognize that inequalities of the form *x* > *c* or *x* < *c* have infinitely many solutions.	Write an inequality of the form *x* > *c* or *x* < *c* to represent a constraint or condition in a real-world or mathematical problem. Represent solutions to inequalities or the form *x* > *c* or *x* < *c*, with infinitely many solutions, on number line diagrams.		

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.***
Domain:	**Expressions and Equations**
Cluster:	**Represent and analyze quantitative relationships between dependent and independent variables.**
Type: _____Knowledge ___X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Define independent and dependent variables. Use variables to represent two quantities in a real-world problem that change in relationship to one another.	Write an equation to express one quantity (dependent) in terms of the other quantity (independent). Analyze the relationship between the dependent variable and independent variable using tables and graphs Relate the data in a graph and table to the corresponding equation.		

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/Course (high School): 6th Grade	
Standard with Code:	**6.G.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.**
Domain:	**Geometry**
Cluster:	**Solve real world and mathematical problems involving area, surface area, and volume.**
Type: _____Knowledge ___X _Reasoning _____Performance Skill _____Product	

Knowledge Targets	**Reasoning Targets**	**Performance Skill Targets**	**Product Targets**
Recognize and know how to compose and decompose polygons into triangles and rectangles.	Compare the area of a triangle to the area of the composted rectangle. (Decomposition addressed in previous grade.) Apply the techniques of composing and/or decomposing to find the area of triangles, special quadrilaterals and polygons to solve mathematical and real world problems. Discuss, develop and justify formulas for triangles and parallelograms (6th grade introduction)		

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/Course (high School): 6th Grade	
Standard with Code:	**6.G.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas *V=lwh* and *V= Bh* to find the volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.**
Domain:	**Geometry**
Cluster:	**Solve real-world and mathematical problems involving area, surface area, and volume.**
Type: _____Knowledge _____Reasoning __X___Performance Skill _____Product	

Knowledge Targets		Reasoning Targets		Performance Skill Targets		Product Targets	
Know how to calculate the volume of a right rectangular prism.		Apply volume formulas for right rectangular prisms to solve real-world and mathematical problems involving rectangular prisms with fractional edge lengths.		Model the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths.			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.**
Domain:	**Geometry**
Cluster:	**Solve real-world and mathematical problems involving area, surface area, and volume.**
Type: _____Knowledge __X____Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Draw polygons in the coordinate plane. Use coordinates (with the same *x*-coordinate or the same *y*-coordinate) to find the length of a side of a polygon.	Apply the technique of using coordinates to find the length of a side of a polygon drawn in the coordinate plane to solve real-world and mathematical problems.		

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.G.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.**
Domain:	**Geometry**
Cluster:	**Solve real-world and mathematical problems involving area, surface area, and volume.**
Type: _____Knowledge ___X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Know that 3-D figures can be represented by nets.	Represent three-dimensional figures using nets made up of rectangles and triangles. Apply knowledge of calculating the area of rectangles and triangles to a net, and combine the areas for each shape into one answer representing the surface area of a 3-dimensional figure. Solve real-world and mathematical problems involving surface area using nets.		

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.** ***For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.***
Domain:	**Statistics and Probability**
Cluster:	**Develop understanding of statistical variability.**
Type: __X___ Knowledge _____Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Recognize that data can have variability. Recognize a statistical question (examples versus non-examples)			

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.**
Domain:	**Statistics and Probability**
Cluster:	**Develop understanding of statistical variability.**
Type: _X_____Knowledge _____Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Know that a set of data has a distribution. Describe a set of data by its center, e.g., mean and median. Describe a set of data by its spread and overall shape, e.g. by identifying data clusters, peaks, gaps and symmetry			

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.SP.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.**
Domain:	**Statistics and Probability**
Cluster:	**Develop understanding of statistical variability.**
Type: __X___ Knowledge _____Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Recognize there are measures of central tendency for a data set, e.g., mean, median, mode. Recognize there are measures of variances for a data set, e.g., range, interquartile range, mean absolute deviation. Recognize measures of central tendency for a data set summarizes the data with a single number. Recognize measures of variation for a data set describes how its values vary with a single number.			

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots**
Domain:	**Statistics and Probability**
Cluster:	**Summarize and describe distributions**
Type: _____ Knowledge _____Reasoning _____Performance Skill __X___ Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Identify the components of dot plots, histograms, and box plots. Find the median, quartile and interquartile range of a set of data.	Analyze a set of data to determine its variance.		Create a dot plot to display a set of numerical data. Create a histogram to display a set of numerical data. Create a box plot to display a set of numerical data.

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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Grade Level/ Course (HS): 6th Grade	
Standard with code:	**6.SP.5abcd Summarize numerical data sets in relation to their context, such as by:** **a. Reporting the number of observations.** **b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.** **c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and /or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.** **d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.**
Domain:	**Statistics and Probability**
Cluster:	**Summarize and describe distributions**
Type: _____ Knowledge __X___Reasoning _____Performance Skill _____Product	

Knowledge Targets	Reasoning Targets	Performance Skills Targets	Product Targets
Organize and display data in tables and graphs. Report the number of observations in a data set or display. Describe the data being collected, including how it was measured and its units of measurement. Calculate quantitative measures of center, e.g., mean, median, mode. Calculate quantitative measures of variance, e.g., range, interquartile range, mean absolute deviation. Identify outliers	Determine the effect of outliers on quantitative measures of a set of data, e.g., mean, median, mode, range, interquartile range, mean absolute deviation. Choose the appropriate measure of central tendency to represent the data. Analyze the shape of the data distribution and the context in which the data were gathered to choose the appropriate measures of central tendency and variability and justify why this measure is appropriate in terms of the context		

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

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