6th Grade

The nine standards listed below are the key content competencies students will be expected to master in sixth grade. Additional clarity and details are provided through the classroom-level learning objectives and evidence of student learning details for each grade-level standard found on subsequent pages of this document. As teachers are planning instruction and assessing mastery of the content at the grade level, the focus should remain on the key competencies listed in the table below.

SIXTH GRADE STANDARDS
6.MP: **Display perseverance and patience in problem-solving. Demonstrate skills and strategies needed to succeed in mathematics, including critical thinking, reasoning, and effective collaboration and expression. Seek help and apply feedback. Set and monitor goals.**
6.NR.1: **Solve relevant, mathematical problems involving operations with whole numbers, fractions, and decimal numbers.**
6.NR.2: **Apply operations with whole numbers, fractions and decimals within relevant applications.**
6.NR.3: **Solve a variety of problems involving whole numbers and their opposites; model rational numbers on a number line to describe problems presented in relevant, mathematical situations.**
6.NR.4: **Solve a variety of contextual problems involving ratios, unit rates, equivalent ratios, percentages, and conversions within measurement systems using proportional reasoning.**
6.GSR.5: **Solve relevant problems involving area, surface area, and volume.**
6.PAR.6: **Identify, write, evaluate, and interpret numerical and algebraic expressions as mathematical models to explain relevant situations.**
6.PAR.7: **Write and solve one-step equations and inequalities as mathematical models to explain authentic, realistic situations.**
6.PAR.8: **Graph rational numbers as points on the coordinate plane to represent and solve contextual, mathematical problems; draw polygons using the coordinates for their vertices and find the length of a side of a polygon.**

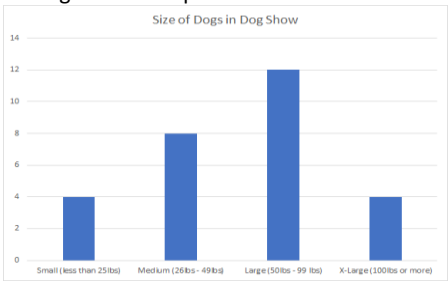
Georgia's K-12 Mathematics Standards – 2021

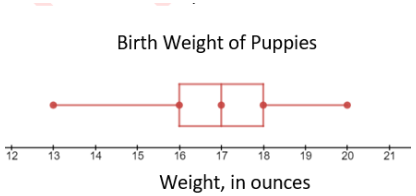
6TH GRADE

NUMERICAL REASONING *– multiplication and division of whole numbers and fractions, and all four operations with decimal numbers*					
6.NR.1: Solve relevant, mathematical problems involving operations with whole numbers, fractions, and decimal numbers.					
Expectations		**Evidence of Student Learning** **(not all inclusive; see Grade Level Overview for more details)**			
6.NR.1.1	Fluently add and subtract any combination of fractions to solve problems.	***Terminology*** ● Fluently/Fluency – Students choose flexibly among methods and strategies to solve mathematical problems accurately and efficiently.	***Strategies and Methods*** ● Students should be able to use numerical reasoning to interpret applicable, mathematical situations involving fractions. ● Students should be given the opportunity to apply reasoning strategies while solving problems. ● Students may solve problems in different ways and have the flexibility to choose a mathematical strategy that allows them to make sense of and strategically solve problems using efficient methods that are most comfortable for and makes sense to them.	***Age/Developmentally Appropriate*** ● Students should be allowed to choose an appropriate strategy to demonstrate fluency.	
6.NR.1.2	Multiply and divide any combination of whole numbers, fractions, and mixed numbers using a student-selected strategy. Interpret products and quotients of fractions and solve word problems.	***Strategies and Methods*** ● Students should be able to utilize fractions with denominators including 2, 3, 4, 5, 6, 8, 10, and 12. ● Students should be able to use numerical reasoning to interpret applicable, mathematical situations involving fractions. ● Students can use a variety of strategies, including but not limited to concrete models, visual fraction models, student-generated strategies, a standard algorithm, or other strategies based on numerical reasoning to represent and solve problems. ● Students should be given the opportunity to apply reasoning strategies and use written methods that make sense to them. ● Students should use flexible, accurate, and efficient written methods to express computational thinking based on numerical reasoning and sense-making developed from learning experiences that focus on the numbers as quantities. ● Students may solve problems in different ways and have the flexibility to choose a mathematical strategy that allows them to make sense of and strategically solve problems using efficient methods that are most comfortable for and makes sense to them.	***Fundamentals*** ● Students should use their understanding of equivalency to flexibly reason with equivalent fractions based on the context of the problem. Simplifying fractions is not an expectation of this grade level. ● Students should be able to use the meanings of fractions, multiplication, division and the inverse relationship between multiplication and division to make sense of multiplying and dividing fractions.	***Example*** ● How many $\frac{3}{4}$-cup servings are in $\frac{2}{3}$ of a cup of yogurt?

6.NR.1.3	Perform operations with multi-digit decimal numbers fluently using models and student-selected strategies.	***Fundamentals*** ● Fluently/Fluency – Students choose flexibly among methods and strategies to solve mathematical problems accurately and efficiently.	***Strategies and Methods*** ● Students should be able to use a variety of part-whole strategies to compute efficiently (area model, partial product, partial quotient). ● The part-whole strategies used should be flexible and extend from previous computation strategies and future work with computation. ● Students should use models and student-selected strategies as an efficient written method of demonstrating place value understanding for each operation (addition, subtraction, multiplication, and division). ● Students may solve problems in different ways and have the flexibility to choose a mathematical strategy that allows them to make sense of and strategically solve problems using efficient methods that are most comfortable for and makes sense to them.	***Terminology*** ● Decimal number – a number whose whole number part and fractional part are separated by a decimal point.

6.NR.2: Apply operations with whole numbers, fractions and decimals within relevant applications.

Expectations		**Evidence of Student Learning** **(not all inclusive; see Grade Level Overview for more details)**			
6.NR.2.1	Describe and interpret the center of the distribution by the equal share value (mean).	***Age/Developmentally Appropriate*** ● The concept of mean should be explored visually and conceptually before introducing the formula. ● This is the beginning of the progression of the concept of measures of center and will continue to be developed in 6th grade.		***Strategies and Methods*** ● Students should be given the opportunity to use manipulatives such as: snap cubes, tiles, etc...to model equal share value.	***Example*** ● "If we combined all of the 5th grade students' candies and shared them equally with each student so everyone has the same number of candies." (This is the mean or equal share value.)
6.NR.2.2	Summarize categorical and quantitative (numerical) data sets in relation to the context: display the distributions of quantitative (numerical) data in plots on a number line, including dot plots, histograms, and box plots and display the distribution of categorical data using bar graphs.	***Fundamentals*** ● Students have experience with displaying categorical data using bar graphs from elementary grades. In sixth grade, students are extending their understanding of analyzing categorical data	***Strategies and Methods*** ● As a result of an investigation, students should summarize categorical and quantitative (numerical) data sets in relation to the context. ● Students should be able to describe the	***Age/Developmentally Appropriate*** ● Sixth grade students should be able to create dot plots and box plots to analyze the results of an investigation. ● Sixth grade students should focus on describing and interpreting data displayed. ● Students should be able to identify that each quartile presented in a box plot	***Examples*** ● Categorical Example: 

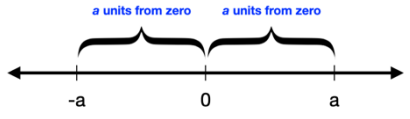
		displayed on histograms.	nature of the attribute under investigation, including how it was measured and its units of measurement.	represents 25% of the data set.	What could be the weight of the smallest dog? The largest? ● Quantitative (Numerical) Example: Here are the birth weights, in ounces, of all the puppies born at a kennel in the past month.  What do you notice and wonder about the distribution of the puppy weights?

6.NR.2.3	Interpret numerical data to answer a statistical investigative question created. Describe the distribution of a quantitative (numerical) variable collected, including its center, variability, and overall shape.	***Fundamentals*** ● In sixth grade, students should explore the conceptual idea of MAD – not the formula. ● Students should be able to determine the number of observations from a context or diagram. ● Students should be able to describe the distribution of a quantitative (numerical) variable collected, including its center (median, mean), variability (interquartile range (IQR), mean absolute deviation (MAD), and range), and overall shape	***Terminology*** ● Students should be able to apply their understanding of absolute value (rather than use operations on negative integers) in the context of MAD.	***Strategies and Methods*** ● Students should explore conceptually the measures of center (mean, median) and variability (interquartile range and range) for a set of numerical data gathered from relevant, mathematical situations and use these measures to describe the shape of the data presented in various forms.	***Example*** ● Arthur and Aaron are on the same 6th grade basketball team. Both players have scored an average of ten points over the past ten games. Here are the students' number of points scored during each of the last ten games. Arthur: 9, 10, 10, 11, 11, 9, 10, 10, 10, 10 Aaron: 16, 18, 4, 3, 5, 13, 18, 3, 13, 7 Which student is more consistent? Possible Student Response/Solution: Arthur is more consistent because his MAD is smaller than Aaron's

		(symmetrical vs non-symmetrical). ● Data sets can be limited to no more than 10 data points when exploring the mean absolute deviation. ● Students should be able to describe the nature of the attribute under investigation, including how it was measured and its units of measurement.			MAD; Arthur has less variability than Aaron.
6.NR.2.4	Design simple experiments and collect data. Use data gathered from realistic scenarios and simulations to determine quantitative measures of center (median and/or mean) and variability (interquartile range and range). Use these quantities to draw conclusions about the data, compare different numerical data sets, and make predictions.	***Fundamentals*** ● Students should be able to use quantitative measures of center and variability to draw conclusions about data sets and make predictions based on comparisons. ● Students should be able to identify that each quartile represents 25% of the data set.		***Strategies and Methods*** ● Students should apply understanding of the measures of center (mean, median) and variability (interquartile range and range) to determine quantitative measures of center and variability, draw conclusions about the data, compare different-numerical data sets and make predictions using data gathered from realistic scenarios and simulations.	
6.NR.2.5	Relate the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	***Fundamentals*** ● Students should understand the concept of outliers.		***Strategies and Methods*** ● Students should be able to analyze the shape of a data distribution and determine which measure of center and variability best describes the data based on the shape of the data and the context in which the data was gathered.	
6.NR.2.6	Describe the impact that inserting or deleting a data point has on the mean and the median of a data set. Create data displays using a	***Strategies and Methods*** ● Students should be able to analyze the shape of a data distribution and determine the impact single data points have on the data set represented visually.			

	dot plot or box plot to examine this impact.	

6.NR.3: Solve a variety of problems involving whole numbers and their opposites; model rational numbers on a number line to describe problems presented in relevant, mathematical situations.

Expectations		Evidence of Student Learning (not all inclusive; see Grade Level Overview for more details)		
6.NR.3.1	Identify and compare integers and explain the meaning of zero based on multiple authentic situations.	***Relevance and Application*** ● Students should be able to use numerical reasoning to explain 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, debits/credits, positive/negative electric charge). ● Students should be able to use positive and negative numbers to represent quantities in authentic situations and explain the meaning of zero based on each situation. ● Students should be able to interpret relevant, mathematical problems related to positive and negative numbers.	***Example*** ● Write –5°C > –9°C to express the fact that –5°C is warmer than –9°C.	
6.NR.3.2	Order and plot integers on a number line and use distance from zero to discover the connection between integers and their opposites.	***Strategies and Methods*** ● Students should have opportunities to explore this concept using visual models to develop a deeper understanding. ● Number lines should be indicated both vertically and horizontally.	***Example*** ● Students should be able to recognize that -a is the same distance from zero as a, and therefore, are opposites of each other. 	
6.NR.3.3	Recognize and explain that opposite signs of integers indicate locations on opposite sides of zero on the number line; recognize and explain that the opposite of the opposite of a number is the number itself.	***Fundamentals*** ● Students should be able to explain that zero is its own opposite. ● Students should be able to explain that the sign of an integer represents its position relative to zero on a number line. ● Students should be able to show and explain why – (–a) = a. Which is read as, "The opposite of the opposite of a is the same as a."		
6.NR.3.4	Write, interpret, and explain statements of order for rational numbers in authentic,	***Strategies and Methods*** ● Students should be able to use numerical reasoning to interpret and explain the	***Terminology*** ● Rational numbers are numbers that can be written as a fraction where the	***Examples*** ● Write –3 degrees Celsius > –7 degrees Celsius to express the fact that –3 degree Celsius is warmer than –7 degrees Celsius.

	mathematical situations. Compare rational numbers, including integers, using equality and inequality symbols.	meaning of numerical statements of inequality as the relative position of two integers positioned on a number line. ● Students are introduced to rational numbers. Students should connect their understanding of fractions and integers to comprehend rational numbers as numbers that can be written as a fraction where the numerator and denominator are integers.	numerator and denominator are integers.	● Interpret –8.3 > –12.3 as a statement that –8.3 is located to the right of –12.3 on a number line oriented from left to right.
6.NR.3.5	Explain the absolute value of a rational number as its distance from zero on the number line; interpret absolute value as distance for a positive or negative quantity in a relevant situation.	***Terminology*** ● Absolute value is a number's distance from zero (0) on a number line.	***Fundamentals*** ● Students should be introduced to the absolute value symbol with this learning objective, i.e., $\left\|-\frac{3}{4}\right\|$. ● Students should conclude through exploration that absolute value and distance are always expressed as a positive value.	***Example*** ● For an account balance of –51.25 dollars, write |–51.25| = 51.25 to describe the size of the debt in dollars.
6.NR.3.6	Distinguish comparisons of absolute value from statements about order.	***Example*** ● Recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.		

6.NR.4: Solve a variety of contextual problems involving ratios, unit rates, equivalent ratios, percentages, and conversions within measurement systems using proportional reasoning.					
Expectations		**Evidence of Student Learning** **(not all inclusive; see Grade Level Overview for more details)**			
6.NR.4.1	Explain the concept of a ratio, represent ratios, and use ratio language to describe a relationship between two quantities.	***Strategies and Methods*** ● Students should be able to solve problems involving ratios found in everyday situations. ● Students should be given the opportunity to represent and explain the concept of a ratio and the relationship between two quantities using concrete materials, drawings, tape diagrams (bar models), double number line diagrams, equations, and standard fractional notation.	***Fundamentals*** ● Students should be able to explain the concept of a ratio, such as using part-to-part or part-to-whole. ● Students should be able to fluently use ratio language to describe a ratio relationship between two quantities. ● Students should be able to identify standard fractional notation to compare.	***Example*** ● The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak. ● For every vote candidate A received, candidate C received nearly three votes.	
6.NR.4.2	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.	***Strategies and Methods*** ● Students should be able to solve problems involving ratios found in realistic situations.			
6.NR.4.3	Solve problems involving proportions using a variety of student-selected strategies.	***Strategies and Methods*** ● Students should be given opportunities to utilize student-selected strategies to solve applicable, mathematical problems involving proportions. ● Students should be given the opportunity to use concrete materials, drawings, tables of equivalent ratios, tape diagrams (bar models), double number line diagrams, and equations when solving problems. ● Students can choose a strategy from a variety of strategies developed to solve a specific problem depending on the situation presented in the problem.			
6.NR.4.4	Describe the concept of rates and unit rate in the context of a ratio relationship.	***Strategies and Methods*** ● Students should create a table of values displaying the ratio relationships to graph ordered pairs of distances and times. ● Students should write equations to represent	***Fundamentals*** ● When asked practical, mathematical questions, students should demonstrate an understanding of	***Terminology*** ● Students should understand a unit rate as a relationship of a:b where b = 1 ($\frac{a}{b}$ associated	***Examples*** ● We paid $75 for 15 hamburgers, which is a rate of $5 per one hamburger? ● In a problem involving motion at a constant speed, list and graph

		the relationship between distance and time where the unit rate is the simple multiplicative relationship. ● Students should be able to determine the independent and dependent relationship of rate relationships within authentic, mathematical situations.	simple multiplicative relationships involving unit rates.	with a ratio a: b with b ≠ 0 (b not equal to zero), and use rate language).	ordered pairs of distances and times, and write an equation such as d = 65t to represent the relationship between distance and time. In this example, 65 is the unit rate or simple multiplicative relationship.
6.NR.4.5	Solve unit rate problems including those involving unit pricing and constant speed.	***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?			
6.NR.4.6	Calculate a percent of a quantity as a rate per 100 and solve everyday problems given a percent.	***Strategies and Methods*** ● Students should be able to calculate the percentage of a number using proportional reasoning developed through working with ratios and rates. ● Students should be able to solve contextual problems involving finding the whole given a part and the part given the whole. ● Students should determine what percent one number is of another number to solve authentic, mathematical problems.		***Fundamentals*** ● Students should have opportunities to explore the concept of percentage and recognize the connection between fractions, decimal numbers, and percentages, such as, 25% of a quantity means $\frac{25}{100}$ or .25 times the quantity. ● Students should be able to convert fractions with denominators of 2, 4, 5 and 10 to the decimal notation.	
6.NR.4.7	Use ratios to convert within measurement systems (customary and metric) to solve authentic problems that exist in everyday life.	***Strategies and Methods*** ● Students should be able to use flexible, strategic thinking to manipulate and transform units appropriately when multiplying or dividing quantities to solve practical, mathematical problems. ● Students should be able to convert measurement units when given a conversion factor within one system of measurement and between two systems of measurement (customary and metric) using proportional reasoning developed through working with ratios and rates.		***Example*** ● Given 1 in. = 2.54 cm, how many centimeters are in 6 inches?	

GEOMETRIC & SPATIAL REASONING *– area of polygons, volume of right rectangular prisms, surface area of 3-D figures*				
6.GSR.5: Solve relevant problems involving area, surface area, and volume.				
Expectations		**Evidence of Student Learning** **(not all inclusive; see Grade Level Overview for more details)**		
6.GSR.5.1	Explore area as a measurable attribute of triangles, quadrilaterals, and other polygons conceptually by composing or decomposing into rectangles, triangles, and other shapes. Find the area of these geometric figures to solve problems.	***Age and Developmentally Appropriate*** ● Students should build on prior knowledge of area to investigate the area of other polygons through geometric and spatial reasoning tasks.	***Strategies and Methods*** ● Students should be able to use knowledge of area of a rectangle to determine the area of a triangle. ● Students should have opportunities to find the area of a triangle by decomposing the rectangle into two triangles. ● Students should conclude the area of the triangle is half the area of the rectangle and the area of the rectangle is twice the area of the triangle. Therefore, the formula for the area of a triangle is $\frac{1}{2}$ x base x height or $\frac{base\ x\ height}{2}$. ● Students should be able to use geometric and spatial reasoning to calculate the area of a triangle, quadrilateral, and regular polygon by composing or decomposing into shapes, such as, but not limited to triangles, rectangles, trapezoids, rhombi, etc. ● Students should be presented with mathematical problems found in the real world. ● Students should be able to decompose regular and irregular polygons into triangles and quadrilaterals in a way that makes sense from their perspective.	***Terminology*** ● A polygon is a closed figure with at least three straight sides and angles; a polygon is regular only when all sides are equal and all angles are equal; and a polygon is irregular when all sides are not equal or all angles are not equal.

6.GSR.5.2	Given the net of three-dimensional figures with rectangular and triangular faces, determine the surface area of these figures.	***Strategies and Methods*** ● Students should use various tools and strategies including a picture or physical model of a net to measure the surface area of three-dimensional figures that are composed of rectangular and triangular faces when solving practical, mathematical problems.	***Age and Developmentally Appropriate*** ● Students should be provided the net of three-dimensional figures to ensure developmental appropriateness.
6.GSR.5.3	Calculate the volume of right rectangular prisms with fractional edge lengths by applying the formula, V = (area of base) x (height).	***Age and Developmentally Appropriate*** ● Fractional edge lengths should be limited to fractions with a denominator of 2, 3, and 5. ● At this grade level, problems should not include volume displacement.	***Fundamentals*** ● Students should make the connection between (length) x (width) and the area of the base to connect this formula to other three-dimensional volume formulas. ***Strategies and Methods*** ● Students should be able to calculate the volume of a right rectangular prism with fractional edge lengths and show that the volume is the same as would be found by multiplying the edge lengths of the prism. ● Students should apply the formula for the volume of a right rectangular prism in the context of solving authentic, mathematical problems to meet this learning objective.

PATTERNING & ALGEBRAIC REASONING *– numerical and algebraic expressions, factors, multiples, algebraic expressions, plotting points in all four quadrants, rational numbers on a number line, polygons in the coordinate plane*

6.PAR.6: Identify, write, evaluate, and interpret numerical and algebraic expressions as mathematical models to explain authentic situations.

Expectations		**Evidence of Student Learning** **(not all inclusive; see Grade Level Overview for more details)**		
6.PAR.6.1	Write and evaluate numerical expressions involving rational bases and whole-number exponents.	***Strategies and Methods*** ● Students should interpret relevant, mathematical situations to write and evaluate numerical expressions.		
6.PAR.6.2	Determine greatest common factors and least common multiples using a variety of strategies to make sense of applicable problems.	***Strategies and Methods*** ● Investigate the distributive property using sums and its use in adding numbers 1-100 with a common factor. ● Students should apply these strategies to solve applicable, mathematical problems.	***Age/Developmentally Appropriate*** ● Students should also be able to apply the least common multiple of two whole numbers less than or equal to 12 to solve applicable, mathematical problems. ● Students should be able to determine the greatest common factor of 2 whole numbers (from	***Example*** ● Hotdogs come in a package of 8 and buns in a package of 12. How many packages of hot dogs and packages of buns would you need to purchase to have an equal number of hot dogs and buns?

			1-100) and use the distributive property to express a sum of two whole numbers with a common factor as a multiple of a sum of two whole numbers with no common factors (GCF).	
6.PAR.6.3	Write and read expressions that represent operations with numbers and variables in realistic situations.	***Strategies and Methods*** ● Students should identify parts of an expression using mathematical terms (sum, difference, term, product, factor, quotient, coefficient, variable, constant); view one or more parts of an expression as a single entity. ● Students should translate from a word form into variable expression. ● Students should understand letters called variables represent unknown numbers and the same rules apply in operations with numbers also apply in operations with variables.	***Examples*** ● Express the calculation "Subtract x from 9" as $9 - x$. ● 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. ● Some of the students at Georgia Middle School like to walk to and from school. They always walk unless it rains. Let d be the distance in miles from a student's home to the school. Write two different expressions that represent how far a student travels by walking in a two-week period if there is one rainy day each week. ● Possible Solution: The distance to school, and therefore home, is d. Thus, the student rides (d + d) miles in one day. Equivalently, she rides (2d) miles in one day. Repeatedly adding the distance traveled in one day for each school day of the week, we find that in one week the student travels (2d + 2d + 2d + 2d + 2d) miles. Equivalently, she travels 5(2d) or (10d) miles in a normal, rain free week.	
6.PAR.6.4	Evaluate expressions when given values for the variables, including expressions that arise in everyday situations.	***Fundamentals*** ● Students should evaluate algebraic expressions for a given value of a variable, using the order of operations. ● Students should 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).		
6.PAR.6.5	Apply the properties of operations to identify and generate equivalent expressions.	***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.	***Age/Developmentally Appropriate*** ● This standard includes distributive property and combining like terms.	

<table>
<tr><th colspan="3">6.PAR.7: Write and solve one-step equations and inequalities as mathematical models to explain authentic, realistic situations.</th></tr>
<tr><th colspan="2">Expectations</th><th>Evidence of Student Learning
(not all inclusive; see Grade Level Overview for more details)</th></tr>
<tr><td>6.PAR.7.1</td><td>Solve one-step equations and inequalities involving variables when values for the variables are given. Determine whether an equation and inequality involving a variable is true or false for a given value of the variable.</td><td>Strategies and Methods
● Students should be able to use algebraic reasoning to solve an equation as a process of answering an authentic question and explain their reasoning.
● When solving an equation or inequality as a process of answering a question, students should be able to explain why specific values from a specified set, if any, make the equation or inequality true.
● Students should use substitution to determine whether a given number in a specified set makes an equation or inequality true.</td></tr>
<tr><td>6.PAR.7.2</td><td>Write one-step equations and inequalities to represent and solve problems; explain that a variable can represent an unknown number or any number in a specified set.</td><td>Age/Developmentally Appropriate
● Students should be able to represent equations involving positive variables and rational numbers.
● Students should have opportunities to solve relevant, mathematical problems.

Strategies and Methods
● Students should have an opportunity to solve problem situations with variables in all positions.
● Students should be able to explain that a variable can represent an unknown number, or depending on the purpose at hand, any number in a specified set.</td></tr>
<tr><td>6.PAR.7.3</td><td>Solve problems by writing and solving equations of the form x ± p = q, px = q and $\frac{x}{p}$ = q for cases in which p, q and x are all nonnegative rational numbers.</td><td>Strategies and Methods
● Students should have opportunities to use concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction and multiplication and division when solving one-step equations.
● Students should be able to solve equations presented in applicable, mathematical problems involving positive rational numbers using number sense, properties of arithmetic and the idea of maintaining equality on both sides of the equation.
● Students should be able to interpret a solution in the original context and assess the reasonableness of results.</td></tr>
<tr><td>6.PAR.7.4</td><td>Recognize and generate inequalities of the form x > c, x ≥ c, x < c, or x ≤ c to explain situations that have infinitely many solutions; represent solutions of such inequalities on a number line.</td><td>Strategies and Methods
● Students should represent authentic, mathematical situations using inequalities involving variables.
● Students should be able to create practical, mathematical situations corresponding to specific inequalities.
● This objective includes the use of the symbols: <, >, =, ≤, ≥.</td></tr>
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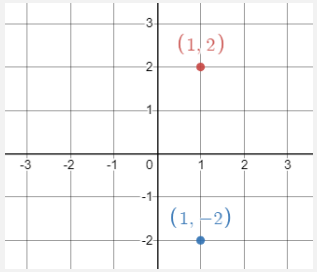
6.PAR.8: Graph rational numbers as points on the coordinate plane to represent and solve contextual, mathematical problems; draw polygons using the coordinates for their vertices and find the length of a side of a polygon.				
Expectations		**Evidence of Student Learning** **(not all inclusive; see Grade Level Overview for more details)**		
6.PAR.8.1	Locate and position rational numbers on a horizontal or vertical number line; find and position pairs of integers and other rational numbers on a coordinate plane.	***Fundamentals*** ● Students should use numerical and graphical reasoning to plot points in all four quadrants on the coordinate plane.	***Strategies and Methods*** ● Students should extend understanding of number lines and coordinate axes from previous grades to represent points on the line and in the plane with negative number coordinates.	
6.PAR.8.2	Show and explain that signs of numbers in ordered pairs indicate locations in quadrants of the coordinate plane and determine how two ordered pairs may differ based only on the signs.	***Fundamentals*** ● Students should use numerical and graphical reasoning to interpret points in all four quadrants on the coordinate plane based on the signs.	***Strategies and Methods*** ● Students should use numerical and graphical reasoning to show and explain the relationship between ordered pairs and location in quadrants of the coordinate plane.	***Example*** ● A student is able to compare and explain that (1, 2) is in the first quadrant whereas (1, -2) is in the fourth quadrant because the y-coordinate is negative and the two points are the same distance from the horizontal axes in different directions. 
6.PAR.8.3	Solve 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 x-coordinate or the same y-coordinate.	***Relevance and Application*** ● Students should be able to solve relevant, mathematical problems when graphing points.	***Strategies and Methods*** ● Students should be expected to solve relevant problems within the context of a graph only.	
6.PAR.8.4	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 x-coordinate or the same y-coordinate.	***Relevance and Application*** ● Students should apply the techniques of graphing in the coordinate plane to solve relevant problems involving the application of algebra through geometry.	***Strategies and Methods*** ● Students should be able to solve problems with polygons when given coordinate pairs with or without a coordinate grid.	