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Ratios and Proportional Relationships 6.RP	**Ratios and Proportional Relationships 6.RP**
Understand ratio concepts and use ratio reasoning to solve problems.	**Understand ratio concepts and use ratio reasoning to solve problems.**
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 1 beak." "For every vote candidate A received, candidate C received nearly three votes."* **(6.RP.1.)**	I can use ratios to compare data.
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."[1] (6.RP.2.)	I can identify unit rate.
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.	I can create a table of equivalent ratios, find missing values, and then plot on a coordinate plane.
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?*	I can solve unit rate problems.
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.	I can understand percent as a rate per 100 and solve problems involving finding the whole, given a part and the percent.(eg. 3 carrots is 10% of what a rabbit eats in a day. How many carrots would the rabbit eat each day?)
d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. **(6.RP.3.)**	I can use ratio to convert measurement units and change to an appropriate unit as needed.
The Number System 6.NS	**The Number System 6.NS**
Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	**Apply and extend previous understandings of multiplication and division to divide fractions by fractions.**

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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?* **(6.NS.1.)**	I can compute and solve word problems involving division of fractions.
Compute fluently with multi-digit numbers and find common factors and multiples.	**Compute fluently with multi-digit numbers and find common factors and multiples.**
2. Fluently divide multi-digit numbers using the standard algorithm. **(6.NS.2.)**	I can fluently divide multi-digit number using a standard algorithm.
3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. **(6.NS.3.)**	a. I can fluently add and subtract multi-digit decimals using a standard algorithm. b. I can multiply multi-digit decimals using a standard algorithm. c. I can division multi-digit decimals using a standard algorithm.
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).* **(6.NS.4.)**	a. I can find the greatest common factor for numbers less than or equal to 100. b. I can find the least common multiple of two whole numbers less than or equal to 12. c. I can use the distributive property to factor out the greatest common factor from an addition expression with two whole numbers.

Apply and extend previous understandings of numbers to the system of rational numbers.	**Apply and extend previous understandings of numbers to the system of rational numbers.**
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. **(6.NS.5.)**	I can understand and use positive and negative numbers to represent quantities in real-world situations.

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6. 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.	I can name the opposites of numbers.
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.	I can understand and plot pairs of positive and negative numbers on a coordinate plane, including reflections of those points.
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. **(6.NS.6.)**	
7. 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.*	I can write an inequality using intergers in real-world situations (using a number line model).
b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3 ^{o}C > –7 ^{o}C to express the fact that –3 ^{o}C is warmer than –7 ^{o}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.*	I understand absolute value as a distance from zero in real-world situations.
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.* **(6.NS.7.)**	I can compare absolute values or positives and negatives to determine which number is bigger or smaller.
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. **(6.NS.8.)**	I can solve real-world and mathematical problems by graphing coordinate pairs on a on a 4 quadrant coordinate plane and find the distance between two points on the same X or Y axis.
Expressions and Equations 6.EE	**Expressions and Equations 6.EE**
Apply and extend previous understandings of arithmetic to algebraic expressions.	**Apply and extend previous understandings of arithmetic to algebraic expressions.**

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1. Write and evaluate numerical expressions involving whole-number exponents. **(6.EE.1.)**	I can write and evaluate expressions involving exponents.
2. 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.*	I can write an expression with variables.
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.*	I can identify the parts of an expression and explain that a quantity (parenthesis) is both a number by itself or two numbers with an operation.
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.* **(6.EE.2.)**	I can evaluate an expression/equation using order of operations when given the value of the variable.
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.* **(6.EE.3.)**	I can apply the properties of operations, including the Distributive property, to an expression or factor an expression to create an equivalent expression.
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.* **(6.EE.4.)**	I can determine if two expressions are equivalent using the Distributive property and expanding or substitution.
Reason about and solve one-variable equations and inequalities.	**Reason about and solve one-variable equations and inequalities.**
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. **(6.EE.5.)**	I can explain if a value from a set makes an inequality or equation true/false.
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. **(6.EE.6.)**	I can write an expression or equation using a variable that helps me solve a real-world problem.

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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. **(6.EE.7.)**	I solve real-world and mathematical problems by evaluating an expression or equation when the variable is a positive rational number.
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. **(6.EE.8.)**	I can write an inequality about a real-world situation and recognize that it has infinite solutions. I can graph that inequality on a number line.
Represent and analyze quantitative relationships between dependent and independent variables.	**Represent and analyze quantitative relationships between dependent and independent variables.**
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.* **(6.EE.9.)**	I can write an equation involving dependent and independent variables and evaluate that equation.
Geometry 6.G	**Geometry 6.G**
Solve real-world and mathematical problems involving area, surface area, and volume.	**Solve real-world and mathematical problems involving area, surface area, and volume.**
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. **(6.G.1.)**	I can find the area of triangles, quadrilaterals, and polygons by decomposing shapes to help me find the area in a real-world problem.
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 $V = l$ w h and $V = b\,h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. **(6.G.2.)**	I can find the volume of right rectangular prisms expressed as a proper or improper fraction in various real-world and mathematical situations.
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. **(6.G.3.)**	I can draw polygons on a coordinate plane and use the coordinates to find the lengths of the side(s) to help me solve real-world problems.

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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. **(6.G.4.)**	I can represent 3D shapes using nets and use the net to help find the surface area of the figure.
Statistics and Probability 6.SP	**Statistics and Probability 6.SP**
Develop understanding of statistical variability.	**Develop understanding of statistical variability.**
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.* **(6.SP.1.)**	I can write a statistical question that has more than one right answer.
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. **(6.SP.2.)**	I can describe a set of data using it's median or mean and range and describe it's shape.
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. **(6.SP.3.)**	I can describe a measure of center and a measure of variation for a data set.
Summarize and describe distributions.	**Summarize and describe distributions.**
4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots. **(6.SP.4.)**	I can display data on a number line, dot plot (line plot), histogram, and box and whisker plot.
5. Summarize numerical data sets in relation to their context, such as by:	
a. Reporting the number of observations.	I can tell how many items are in a data set.
b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.	I can describe how data was collected and in what unit of measure.
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.	I can find the median, mean, interquartile range, mean absolute deviation (distance from the mean), and outliers in a set of data.
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. **(6.SP.5.)**	I can choose the measure of center that best describes the data based on the context in which it was gathered.
[1] Expectations for unit rates in this grade are limited to non-complex fractions.	

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