Colorado Extended Evidence Outcomes: Mathematics

Grade 6

Ratios & Proportional Relationships: Understand ratio concepts and use ratio reasoning to solve problems. 6.RP.A

1 **Apply the concept of a ratio and use ratio language or actions to describe a ratio relationship between two quantities up to at least 5 each.** 6.RP.A.1

- a For example, count out two shoes for each one person, or indicate there are four wheels for each car in the parking lot. 6.RP.A.1.A

2 **Apply the concept of a unit rate and use rate language and/or written representations in the context of a ratio relationship.** 6.RP.A.2

- a For example, student uses 'per' and 'for each' language, such as "There are 24 hours for each day" or "There are two gloves per student." (Expectations for unit rates in this grade are limited to non-complex fractions) 6.RP.A.2.A

3 **Use ratio and rate reasoning to solve real-world problems, e.g., by reasoning about tables of equivalent rations.** 6.RP.A.3

- a Equivalent ratios should be simple, like 1:2 is equivalent to 2:4, or 2:3 is equivalent to 4:6. 6.RP.A.3.A
- b For example, students should be able to make a table relating the two socks they wear each day and use that to find the number of socks they need for a 3-day trip. 6.RP.A.3.B

The Number System: Apply and extend previous understandings of multiplication and division to divide fractions by fractions. 6.NS.A

1 **Illustrate quotients of fractions, and solve word problems involving division of a larger benchmark fraction by a smaller benchmark fraction resulting in whole-number quotients, e.g., by using visual fraction models to represent division in problems like 3 divided by 1 .** 6.NS.A.1

The Number System: Compute fluently with multi-digit numbers and find common factors and multiples. 6.NS.B

2 **Divide multi-digit numbers using illustrations or demonstrations of fair share and equal share strategies.** 6.NS.B.2

- a For example, students can divide 36 cookies into 12 boxes by counting out one cookie per box until there are 3 in each box. 6.NS.B.2.A

3 **Add, subtract, multiply, and divide numbers less than ten with one or two decimal places using appropriate strategies for each operation and/or a calculator.** 6.NS.B.3

- a For example, do simple calculations with amounts of money. 6.NS.B.3.A

4 **Find common factors of two whole numbers less than or equal to 20 and common multiples of two whole numbers less than or equal to 10.** 6.NS.B.4

- a For example, if there are 8 hot dogs in a package and 6 buns in a package, how many packages of each do you buy to not have hot dogs or buns left over? 6.NS.B.4.A

The Number System: Apply and extend previous understandings of numbers to the system of rational numbers. 6.NS.C

5 **Identify positive and negative numbers that 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).** 6.NS.C.5

6 **Identify integers on a number line.** 6.NS.C.6

- a Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative integer coordinates. 6.NS.C.6.A
- b Use opposite signs of numbers indicating locations on opposite sides of 0 on the number line. 6.NS.C.6.B
- c Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane. 6.NS.C.6.C
- d Find and position integers on a horizontal or vertical number line diagram. 6.NS.C.6.D
- e Find and position pairs of integers on a coordinate plane. 6.NS.C.6.E

7 **Order and find absolute value of integers between -10 and 10.** 6.NS.C.7

- a Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. 6.NS.C.7.A
- b For example, identify that -2 is greater than -5 because -2 is located to the right of -5 on a number line. 6.NS.C.7.B
- c Relate negative values to a real-world situation, such as -2 could represent owing someone two dollars. 6.NS.C.7.C

8 **Solve real-world and mathematical problems represented by graphed integer-coordinate points in all four quadrants of the coordinate plane.** 6.NS.C.8

- a Find distances between points with the same first coordinate or the same second coordinate. 6.NS.C.8.A
- b For example, if Shelby lives at 1st St. and 6th Ave., and Lisa les at 4th St. and 6th Ave., how many blocks away from each other do they live? 6.NS.C.8.B

Expressions & Equations: Apply and extend previous understandings of arithmetic to algebraic expressions. 6.EE.A

1 **Write and evaluate numerical expressions involving single-digit integer factors, like -4 x 3 can mean 3 groups of -4, which totals -12.** 6.EE.A.1

2 **Read and evaluate expressions in which letters stand for numbers.** 6.EE.A.2

- a Identify parts of an expression that indicate operations (add, subtract, multiply, divide). 6.EE.A.2.A
- b Evaluate expressions at specific values of their variables. 6.EE.A.2.B
- c Perform arithmetic operations in the conventional order. 6.EE.A.2.C
- d For example, if x = 4, x + 1 should be interpreted as 4 + 1, which has a value of 5. 6.EE.A.2.D

3 **Apply the properties of operations to identify given equivalent expressions using single-digit integers.** 6.EE.A.3

- a For example, apply the distributive property to the expression 3(2 + 4) to identify the equivalent expression 6 + 12. 6.EE.A.3.A

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).** 6.EE.A.4

- a 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.A.4.A

Expressions & Equations: Reason about and solve one-variable equations and inequalities. 6.EE.B

5 **Answer the question: Which values from a specified set make the equation true?** 6.EE.B.5

- a Use substitution to determine whether a given number in a specified set makes an equation true. 6.EE.B.5.A
- b For example, for the equation 5x = 1-, does x = 1 make the equation true? Does x = 2? x = 3? x = 4? 6.EE.B.5.B

6 **Identify or match an expression using variables to a real-world problem.** 6.EE.B.6

- a For example, a number of apples plus a number of bananas could match the expression a + b. 6.EE.B.6.A

7 **Solve real-world and mathematical problems by solving equations of the form x ± p = q and px = q for cases in which p, q and x are all whole numbers.** 6.EE.B.7

8 **Evaluate an inequality of the form x > c or x < c that represents a real-world or mathematical problem.** 6.EE.B.8

- a For example, if you have more than 8 dollars, the inequality x > 8 would be true for any amount of money (x) greater than 8 dollars. 6.EE.B.8.A

Expressions & Equations: Represent and analyze quantitative relationships between dependent and independent variables. 6.EE.C

9 **Use variables to represent two quantities in a real-world problem that change in relationship to one another.** 6.EE.C.9

- a Analyze the relationship between variables using a table, such as a 2- column table with on column labeled with each variable. 6.EE.C.9.A
- b For example, a table of people and shoes in the classroom might have a column p, for people, and a column s, for shoes, and although the number of people and shoes can vary, there is always twice as many people as shoes. 6.EE.C.9.B

Statistics & Probability: Develop understanding of statistical variability. 6.SP.A

1 **Match statistical questions to appropriate sources of data. For example, match the question, "How tall are 6th graders?" to a sample of 6th grade students.** 6.SP.A.1

2 **Match statistical questions to a distribution of data that can be described by its center, spread, and overall shape.** 6.SP.A.2

3 **Match given measures of center (mean or median) and variation (range) to a display of a data distribution.** 6.SP.A.3

Statistics & Probability: Summarize and describe distributions. 6.SP.B

4 **Display data in plots on a number line, including dot plots and histograms.** 6.SP.B.4

5 **Summarize numerical data sets by counting the number of observations, identifying the largest and smallest observations, and informally identifying observations near the center.** 6.SP.B.5

- a Interpret these values in a real-world context. 6.SP.B.5.A

Geometry: Solve real-world and mathematical problems involving area, surface area, and volume. 6.G.A

1 **Find the area of right triangles, other triangles, parallelograms, and trapezoids by composing into rectangles or decomposing into triangles and other shapes.** 6.G.A.1

- a Apply these techniques in the context of solving real-world and mathematical problems. 6.G.A.1.A

2 **Find the volume of a right rectangular prism with whole number edge lengths by packing it with unit cubes and show that the volume is the same as would be found by multiplying the edge lengths of the prism.** 6.G.A.2

3 **Create polygons in the coordinate plane given coordinates for the vertices.** 6.G.A.3

4 **Represent three-dimensional figures using nets made up of rectangles, and use the nets to find the surface area of these figures.** 6.G.A.4