Missouri Mathematics

Grade 6

Adopted 2016

Ratios and Proportional Relationships

A. Understand and use ratios to solve problems. 6.RP.A

1. Understand a ratio as a comparison of two quantities and represent these comparisons. 6.RP.A.1
2. Understand the concept of a unit rate associated with a ratio, and describe the meaning of unit rate. 6.RP.A.2
3. Solve problems involving ratios and rates. 6.RP.A.3
   a. Create tables of equivalent ratios, find missing values in the tables and plot the pairs of values on the Cartesian coordinate plane. 6.RP.A.3.A
   b. Solve unit rate problems. 6.RP.A.3.B
   c. Solve percent problems. 6.RP.A.3.C
   d. Convert measurement units within and between two systems of measurement. 6.RP.A.3.D

Number Sense and Operations

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

1. Compute and interpret quotients of positive fractions. 6.NS.A.1
   a. Solve problems involving division of fractions by fractions. 6.NS.A.1.A

B. Compute with non-negative multi-digit numbers, and find common factors and multiples. 6.NS.B

2. Demonstrate fluency with division of multi-digit whole numbers. 6.NS.B.2
3. Demonstrate fluency with addition, subtraction, multiplication and division of decimals. 6.NS.B.3
4. Find common factors and multiples. 6.NS.B.4
   a. Find the greatest common factor (GCF) and the least common multiple (LCM). 6.NS.B.4.A
   b. 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. 6.NS.B.4.B

C. Apply and extend previous understandings of numbers to the system of rational numbers. 6.NS.C

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5. Use positive and negative numbers to represent quantities. 6.NS.C.5

6. Locate a rational number as a point on the number line. 6.NS.C.6
   a. Locate rational numbers on a horizontal or vertical number line. 6.NS.C.6.A
   b. Write, interpret and explain problems of ordering of rational numbers. 6.NS.C.6.B
   c. Understand that a number and its opposite (additive inverse) are located on opposite sides of zero on the number line. 6.NS.C.6.C
7. Understand that the absolute value of a rational number is its distance from 0 on the number line. 6.NS.C.7
8. Extend prior knowledge to generate equivalent representations of rational numbers between fractions, decimals and percentages (limited to terminating decimals and/or benchmark fractions of 1/3 and 2/3). 6.NS.C.8

Expressions, Equations and Inequalities

A. Apply and extend previous understandings of arithmetic to algebraic expressions. 6.EEI.A

1. Describe the difference between an expression and an equation. 6.EEI.A.1
2. Create and evaluate expressions involving variables and whole number exponents. 6.EEI.A.2
   a. Identify parts of an expression using mathematical terminology. 6.EEI.A.2.A
   b. Evaluate expressions at specific values of the variables. 6.EEI.A.2.B
   c. Evaluate non-negative rational number expressions. 6.EEI.A.2.C
   d. Write and evaluate algebraic expressions. 6.EEI.A.2.D
   e. Understand the meaning of the variable in the context of the situation. 6.EEI.A.2.E
3. Identify and generate equivalent algebraic expressions using mathematical properties. 6.EEI.A.3

B. Reason about and solve one-variable equations and inequalities. 6.EEI.B

4. Use substitution to determine whether a given number in a specified set makes a one-variable equation or inequality true. 6.EEI.B.4
5. Understand that if any solutions exist, the solution set for an equation or inequality consists of values that make the equation or inequality true. 6.EEI.B.5
6. Write and solve equations using variables to represent quantities, and understand the meaning of the variable in the context of the situation. 6.EEI.B.6
7. Solve one-step linear equations in one variable involving nonnegative rational numbers. 6.EEI.B.7
8. Recognize that inequalities may have infinitely many solutions. 6.EEI.B.8
   a. Write an inequality of the form $x > c$, $x \geq c$, or $x \leq c$ to represent a constraint or condition. 6.EEI.B.8.A
   b. Graph the solution set of an inequality. 6.EEI.B.8.B

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C. **Represent and analyze quantitative relationships between dependent and independent variables.** 6.EEI.C

9. Identify and describe relationships between two variables that change in relationship to one another. 6.EEI.C.9

   a. Write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. 6.EEI.C.9.A

   b. Analyze the relationship between the dependent and independent variables using graphs, tables and equations and relate these representations to each other. 6.EEI.C.9.B

Geometry and Measurement

A. **Solve problems involving area, surface area and volume.** 6.GM.A

1. Find the area of polygons by composing or decomposing the shapes into rectangles or triangles. 6.GM.A.1
2. Find the volume of right rectangular prisms. 6.GM.A.2

   a. Understand that the volume of a right rectangular prism can be found by filling the prism with multiple layers of the base. 6.GM.A.2.A

   b. Apply V = l * w * h and V = Bh to find the volume of right rectangular prisms. 6.GM.A.2.B
3. Solve problems by graphing points in all four quadrants of the Cartesian coordinate plane. 6.GM.A.3

   a. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the Cartesian coordinate plane. 6.GM.A.3.A

   b. Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. 6.GM.A.3.B

   c. Find distances between points with the same first coordinate or the same second coordinate. 6.GM.A.3.C

   d. Construct polygons in the Cartesian coordinate plane. 6.GM.A.3.D
4. Solve problems using nets. 6.GM.A.4

   a. Represent three-dimensional figures using nets made up of rectangles and triangles. 6.GM.A.4.A

   b. Use nets to find the surface area of three-dimensional figures whose sides are made up of rectangles and triangles. 6.GM.A.4.B

Data Analysis, Statistics and Probability

A. **Develop understanding of statistical variability.** 6.DSP.A

1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. 6.DSP.A.1
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.DSP.A.2

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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 from a single number. 6.DSP.A.3

B. Summarize and describe distributions. 6.DSP.B

4. Display and interpret data. 6.DSP.B.4
   a. Use dot plots, histograms and box plots to display and interpret numerical data. 6.DSP.B.4.A
   b. Create and interpret circle graphs. 6.DSP.B.4.B
5. Summarize numerical data sets in relation to the context. 6.DSP.B.5
   a. Report the number of observations. 6.DSP.B.5.A
   b. Describe the nature of the attribute under investigation, including how it was measured and its units of measurement. 6.DSP.B.5.B
   c. Give 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 of the data. 6.DSP.B.5.C
   d. Analyze the choice of measures of center and variability based on the shape of the data distribution and/or the context of the data. 6.DSP.B.5.D