

GRADE 6 MATHEMATICS

Performance Criteria

OVERVIEW

In 6th Grade, students focus on connecting their understanding of multiplication and division to ratios and rates, developing an understanding of rational numbers and the relationships between independent and dependent variables, and writing and solving equations with letters that stand for numbers (variables).

RATIOS & UNITS RATES:

Understanding Ratios

Understand ratio as a comparison of (exactly) two numbers or quantities.

Writing Ratios

Write and describe a relationship as a ratio.

Understanding Unit Rates

Understand the concept of unit rates: or representing a measurement as a ratio of x to a single unit, or 1.

Solving Unit Rate & Rate Problems

Use tables, diagrams, and/or equations to solve unit rate and rate problems

FRACTIONS:

Dividing by Fractions

Use fraction bars, diagrams, drawings, and/or modeling with materials to understand division of fractions by fractions.

Solving Word Problems

Solve word problems involving division of fractions by fractions.

NEGATIVE NUMBERS:

Recognizing Negative Numbers

Recognize a minus (-) directly in front of a number as indicating the number is a negative number (a number less than zero). Understand that on a number line, positive and negative numbers are on opposite sides of 0 (zero).

Real-World Examples

Find real-world examples of negative numbers, including temperature above and below zero, elevation above and below sea level, or credits and debits in a checking account

Four-Quadrant Graph

Use understanding of negative numbers to plot points in all four quadrants of a four-quadrant graph.

INDEPENDENT & DEPENDENT VARIABLES:

Algebraic Expressions

Write, read and understand algebraic expressions (mathematical statements) in which letters stand for numbers. Understand that solving an equation such as $2 + x = 12$ means “2 plus what number equals 12”?

Equations vs. Expressions

Understand the difference between a mathematical equation (like a complete sentence) and a mathematical expression (like a phrase in a sentence).

Writing Expressions

Identify and write equivalent (equal) mathematical expressions in more than one way – for example, $2(3 + x)$ is the same as $6 + 2x$.

Whole Number Exponents

Write and determine the value of expressions with whole number exponents. For example: $13 + 4^2 = 13 + 16 = 29$.

GEOMETRY:

Area, Surface Area, & Volume

Solve real-world and mathematical problems involving area, surface area, and volume of non-circular figures, including cubes, rectangles and rectangular prisms (three-dimensional objects with 6 rectangular faces; see example below).

Graphing Polygons

Graph polygons (figures with three or more sides); find side lengths by subtracting coordinates.

STATISTICS & PROBABILITY:

Mean, Median, & Range

Understand the meaning of mean and median as different measures of center and range. Learn how to find mean, median, and range:

- mean– the average: add data values together; divide by number of values or sample size
- median– the middle value (half the values are less than the median, and half the values are more than the median): rank data in order from lowest to highest; find the number in the middle
- range– difference between the largest and smallest values: subtract the lowest value from the highest value. To find mid-range, add the lowest and highest values together, and divide by 2