

6th Grade

Numbers Concepts and Computations NC

Rational Numbers

- 1 Understand a ratio as a comparison of two quantities. 6.NC.1
- 2 Classify numbers (integers, fractions, decimals) as rational numbers. 6.NC.2
- 3 Explain positive and negative integers as being opposite (inverse) values or directions from zero. Also, explain zero as its own opposite. 6.NC.3
- 4 Understand the meaning of zero in a real-world context. 6.NC.4
- 5 Understand the absolute value of rational numbers to be its distance from zero on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. 6.NC.5
- 6 Determine the absolute value of a rational number by finding its distance from zero on a number line in real-world situations; recognize that the opposite of the opposite of a number is the number itself. 6.NC.6
- 7 Write, interpret, and explain statements of order for rational numbers in real-world contexts. 6.NC.7

Rational Number Operations

- 8 Use visual models (e.g., area models, number lines) to explore and explain why dividing by a fraction is equivalent to multiplying by its reciprocal. 6.NC.8
- 9 Use visual models (e.g., area models, number lines) to explain, justify, and apply the process of dividing fractions by fractions in real-world contexts. 6.NC.9
- 10 Solve word problems involving division of fractions by fractions. 6.NC.10
- 11 Compare rational numbers, using inequalities ($<$, $>$, $\leq$, $\geq$, $\neq$) and order on a number line. 6.NC.11

Common Factors and Multiples

- 12 Find the greatest common factor of two whole numbers less than or equal to 100. 6.NC.12
- 13 Find the least common multiple of two whole numbers less than or equal to 12. 6.NC.13
- 14 Use the distributive property to rewrite the sum of two whole numbers 1-100 using its greatest common factor. 6.NC.14

Mathematical Fluency

- 15 Fluently divide multi-digit numbers using various strategies, including but not limited to the standard algorithm. 6.NC.15

- 16 Fluently add, subtract, multiply, and divide multi-digit decimals and fractions using various strategies, including but not limited to the standard algorithm. 6.NC.16
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Proportional Relationships PR

Ratio and Rates

- 1 Write ratios, rates, and unit rates. Determine the units of a unit rate. 6.PR.1
 - 2 Use ratio and rate reasoning to solve real-world and mathematical problems including making ratio tables, solving unit rate problems, and using percentages. 6.PR.2
 - 3 Solve unit rate problems including those involving unit pricing and constant speed. 6.PR.3
 - 4 Find a percent of a quantity as a rate per 100. 6.PR.4
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Algebra A

Expressions

- 1 Write and evaluate numerical expressions involving whole-number exponents, including those with parentheses. 6.A.1
 - 2 Translate verbal descriptions into algebraic expressions and evaluate them for given values. 6.A.2
 - 3 Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient, variable, constant) and view one or more parts of an expression as a single entity. 6.A.3
 - 4 Evaluate expressions at specific values of their variables, including expressions with whole number exponents and those from formulas in real-world problems. Explain how the structure of an expression affects its value by justifying each step using the order of operations and properties of operations. 6.A.4
 - 5 Apply properties of operations (distributive, commutative, associative) to generate equivalent expressions. 6.A.5
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Equations and Inequalities

- 6 Use substitution to determine if a given value in a specified set makes an equation or inequality true. Include the following inequality symbols: $<$, $>$, $\leq$, $\geq$, $\neq$. 6.A.6
 - 7 Write and solve one-step equations in real-world and mathematical problems, involving positive rational numbers and zero. 6.A.7
 - 8 Write, solve, and graph one-step inequalities in real-world and mathematical problems, involving positive rational numbers and zero. 6.A.8
 - 9 Understand an equation with two variables as a statement expressing a relationship between two quantities, and recognize that this relationship can often be represented as a function, where one variable depends on the other. 6.A.9
 - 10 Analyze the relationship between the dependent and independent variables in an equation using tables and graphs, relating these to the equation. 6.A.10
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Geometry G

Area, Volume, and Surface Area

- 1 Find the area of triangles, special quadrilaterals, and polygons by composing or decomposing to solve real-world problems. 6.G.1
- 2 Find the volume of right rectangular prisms with fractional edge lengths by packing and relate it to multiplication. 6.G.2
- 3 Draw polygons in the coordinate plane when given coordinates for the vertices. 6.G.3
- 4 Use coordinates to calculate vertical and horizontal distances between points with the same xx -coordinate or the same yy -coordinate to solve real-world and mathematical problems. 6.G.4
- 5 Construct nets of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid, using the nets to find the surface area of these prisms and pyramids. 6.G.5

Coordinate Plane System

- 6 Find and graph pairs of rational numbers in all four quadrants of the coordinate plane in realworld and mathematical problems. 6.G.6
- 7 Understand that signs of a coordinate pair indicate locations in a quadrant of the coordinate plane, opposite signs indicate reflections across one or both axes. 6.G.7

Measurement M

Conversions

- 1 Use ratio reasoning to convert measurement units within the U.S. Customary and metric measuring systems. 6.M.1

Statistics and Probability SP

Statistical and Nonstatistical

- 1 Understand the four components of the statistical process (question formulation, data collection, data analysis, interpretation). 6.SP.1
- 2 Recognize that data sets collected to answer a statistical question can be analyzed by their distributions. 6.SP.2

Numerical Data

- 3 Represent numerical data on a number line, histogram, and box plot. 6.SP.3
- 4 Interpret a box plot to answer statistical questions about a data set. 6.SP.4

Measures of Center

- 5 Distinguish between a measure of center (mean, medium, and mode) and measure of variation (range and/or mean absolute deviation). 6.SP.5
- 6 Calculate and interpret any measure of center (mean, median, and mode) of a numerical data set. 6.SP.6
- 7 Determine which measure of center (mean or median) is more appropriate to describe the center of data; justify the choice. 6.SP.7

Measures of Variation

- 8 Compare and interpret range and interquartile range (IQR) to describe how data varies in a distribution. 6.SP.8
- 9 Calculate and interpret the measure of variation (range, interquartile range (IQR), and/or mean absolute deviation) of a numerical data set. 6.SP.9