Indiana Mathematics

Grade 6

Adopted 2023

Mathematics Process Standards

1. **Make sense of problems and persevere in solving them.** 6.PS.1
2. **Reason abstractly and quantitatively.** 6.PS.2
3. **Construct viable arguments and critique the reasoning of others.** 6.PS.3
4. **Model with mathematics.** 6.PS.4
5. **Use appropriate tools strategically.** 6.PS.5
6. **Attend to precision.** 6.PS.6
7. **Look for and make use of structure.** 6.PS.7
8. **Look for and express regularity in repeated reasoning.** 6.PS.8

Number Sense

NS. Students begin to apply negative integers within real-world contexts and use number lines to model opposite signed numbers as located on opposite sides of zero. 6.NS

1. Use positive and negative numbers to represent and compare quantities in real-world contexts, explaining the meaning of 0 in each situation. 6.NS.1
2. Explain how opposite signs of numbers indicate locations on opposite sides of 0 on the number line; identify the opposite of the opposite of a number. 6.NS.2
3. Compare and order rational numbers and plot them on a number line. Write, interpret, and explain statements of order for rational numbers in real-world contexts. 6.NS.3
4. Solve real-world problems with positive fractions and decimals by using one or two operations. 6.NS.4
5. Apply the order of operations and properties of operations (i.e., identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with nonnegative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. 6.NS.5

Skip to main content

6. 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 from 1 to 100, with a common factor as a multiple of a sum of two whole numbers with no common factor. 6.NS.6
7. Apply the properties of operations (i.e., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions and to justify whether two linear expressions are equivalent when the two expressions name the same number regardless of which value is substituted into them. 6.NS.7
8. Evaluate positive rational numbers with whole number exponents. 6.NS.8

Ratios and Proportional Reasoning

RP. Students use ratios and reasoning to compare two quantities and understand unit rate. Students use ratios and unit rates to model and solve real-world problems. 6.RP

1. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator. 6.RP.1
2. Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship. 6.RP.2
3. 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. 6.RP.3
4. Solve real-world and other mathematical problems involving rates and ratios using models and strategies such as reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. 6.RP.4
5. Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. 6.RP.5

Algebra and Functions

AF. Students evaluate algebraic expressions, write algebraic expressions to represent quantities in context, and create equivalent algebraic expressions. 6.AF

1. Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values. 6.AF.1
2. Demonstrate 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.AF.2
3. Solve equations of the form x + p = q, x - p = q, px = q , and x/p = q fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real-world problems using equations of these forms and solve such problems. 6.AF.3

Skip to main content

4. Write an inequality of the form x > c, x ≥ c, x < c, or x ≤ c , where c is a rational number, to represent a constraint or condition in a real-world or other mathematical problem. Explain that inequalities have infinitely many solutions and how to represent solutions on a number line diagram. 6.AF.4
5. Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. 6.AF.5

Geometry and Measurement

GM. Students find areas of complex shapes and find volumes of rectangular prisms. 6.GM

1. Convert between measurement systems (Customary to metric and metric to Customary) given the conversion factors, and use these conversions in solving real-world problems. 6.GM.1
2. Apply the sums of interior angles of triangles and quadrilaterals to solve real-world and mathematical problems. 6.GM.2
3. Find the area of complex shapes composed of polygons by composing or decomposing into simple shapes; apply this technique to solve real-world and other mathematical problems. 6.GM.3
4. Find the volume of a right rectangular prism with fractional edge lengths using unit cubes of the appropriate unit fraction edge lengths (e.g., using technology or concrete materials) and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = lwh and V = Bh to find volumes of right rectangular prisms with fractional edge lengths to solve real-world and other mathematical problems. 6.GM.4

Data Analysis and Statistics

DS. Students represent data using line plots, histograms, and box plots. 6.DS

1. Select, create, and interpret graphical representations of numerical data, including line plots, histograms, and box plots. 6.DS.1
2. Formulate statistical questions; collect and organize the data (e.g., using technology), and display and interpret the data with graphical representations (e.g., using technology). 6.DS.2

Skip to main content

3. Summarize numerical data sets in relation to their context in multiple ways, such as: 6.DS.3
    a. Report the number of observations; 6.DS.3.A
    b. Describe the nature of the attribute under investigation, including how it was measured and its units of measurement; 6.DS.3.B
    c. Determine quantitative measures of center (mean and/or median) and spread (range and interquartile range); 6.DS.3.C
    d. Describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and 6.DS.3.D
    e. Relate the choice of measures of center and spread to the shape of the data distribution and the context in which the data were gathered. 6.DS.3.E