



Essential Standards Extended Guide

Grade 6 Mathematics

GUIDING INFORMATION

In response to requests from schools and districts for guidance on essential standards, committees of educators from around Idaho collaborated in the summer of 2024 to categorize mathematics standards into four groups:

- **Essential standards** are explicitly taught, assessed multiple times, and receive targeted interventions for students who have not yet reached proficiency.
- **Supporting standards** are taught to reinforce essential standards and may or may not be formally assessed.
- **Additional standards** extend learning and are incorporated as time allows within course units, with assessment being optional.
- **Mathematical Big Ideas** are overarching mathematical concepts that are central to the learning of mathematics and link numerous mathematical understandings into a coherent whole. They are difficult to assess.

This guidance helps LEAs prioritize the most critical standards, recognizing that not all standards are of equal importance. This document serves as a resource—not a mandate—to assist local efforts. Importantly, this work did not remove or revise any of the adopted Idaho Content Standards and is intended to refocus time and effort.

The *2022 Idaho Content Standards for Mathematics* list the standards for each grade level by domain and provide clarification statements and examples of individual standards. This *Essential Standards Extended Guide* provides examples of how teachers can group standards for mathematics instruction. Appendix A provides planning templates for using these instructional groupings to plan instructional calendars and units.

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Instructional Grouping 1: Ratios and Proportions

Mathematical Big Ideas:

- ☐ 6.RP.A. Understand ratio and rate concepts and use ratio and rate reasoning to solve problems.

Essential Standards
Standards to be explicitly taught, assessed more than once, and intervened upon.
6.RP.A.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

Supporting Standards
Standards that support the learning of essential standards and may or may not be formally assessed.
<i>Teacher Note: 6.RP.A.1 and 6.RP.A.2 are critical to support the understanding of the essential standard in this instructional grouping.</i>
6.RP.A.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
6.RP.A.2. Understand the concept of a unit rate $\frac{a}{b}$ associated with a ratio a:b with $b \neq 0$, and use rate language in the context of a ratio relationship.
6.RP.A.3a. 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. Use tables to compare ratios.
6.RP.A.3b. Solve unit-rate problems, including those involving unit pricing and constant speed
6.RP.A.3c. Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, given a part and the percent.
6.RP.A.3d. Use ratio reasoning to convert measurement units within and between measurement systems; manipulate and transform units appropriately when multiplying or dividing quantities.

Instructional Grouping 2: Operations with Rational Numbers

Mathematical Big Ideas:

- ☐ 6.NS.A. Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- ☐ 6.NS.B. Compute fluently with multi-digit numbers and find common factors and multiples.
- ☐ 6.NS.C. Apply and extend previous understandings of numbers to the system of rational numbers.

Integrate:

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

Essential Standards
Standards to be explicitly taught, assessed more than once, and intervened upon.
6.NS.A.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.
6.NS.B.3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
6.G.A.1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

Supporting Standards
Standards that support the learning of essential standards and may or may not be formally assessed.
6.NS.B.2. Fluently divide multi-digit numbers using the standard algorithm.
6.NS.B.4. 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 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
6.G.A.2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths 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 in the context of solving real-world and mathematical problems.

Additional Standards
Standards that deepen learning and may be included as time allows throughout course units of study and may or may not be assessed.
6.G.A.4. Represent three-dimensional figures using nets made up of rectangles and triangles and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Instructional Grouping 3: Number Magnitude

Mathematical Big Ideas:

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

Essential Standards Standards to be explicitly taught, assessed more than once, and intervened upon.
6.NS.C.5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. Use positive and negative numbers (including fractions and decimals) to represent quantities in real-world contexts, explaining the meaning of zero in each situation.
6.NS.C.6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

Supporting Standards Standards that support the learning of essential standards and may or may not be formally assessed.
6.NS.C.6a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
6.NS.C.6b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; 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.NS.C.6c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
6.NS.7. Understand ordering and absolute value of rational numbers.
6.NS.C.7a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
6.NS.C.7b. Write, interpret, and explain statements of order for rational numbers in real-world contexts.
6.NS.C.7c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
6.NS.C.8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

Additional Standards
Standards that deepen learning and may be included as time allows throughout course units of study and may or may not be assessed.
6.G.A.3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side and area by joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
6.NS.C.7d. Distinguish comparisons of absolute value from statements about order.

Instructional Grouping 4: Expressions and Equations

Mathematical Big Ideas:

- ☐ 6.EE.A. Apply and extend previous understandings of arithmetic to algebraic expressions.
- ☐ 6.EE.B. Reason about and solve one-variable equations and inequalities.
- ☐ 6.EE.C. Represent and analyze quantitative relationships between two variables.

Essential Standards
Standards to be explicitly taught, assessed more than once, and intervened upon.
6.EE.A.2. Write, read, and evaluate expressions in which letters stand for numbers.
6.EE.B.7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q , and x are all nonnegative rational numbers.
6.EE.C.9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write equations to represent the relationship between the two quantities. Analyze the relationship using graphs and tables and relate these to the equations. Include an understanding of independent and dependent variables.

Supporting Standards
Standards that support the learning of essential standards and may or may not be formally assessed.
6.EE.A.1. Write and evaluate numerical expressions involving whole-number exponents.
6.EE.A.2a. Write expressions that record operations with numbers and with letters standing for numbers.
6.EE.A.2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
6.EE.A.3. Apply the properties of operations to generate equivalent expressions.
6.EE.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.B.5. Understand solving an equation or inequality as a process of answering a question: 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.EE.B.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or depending on the purpose at hand, any number in a specified set.

Additional Standards Standards that deepen learning and may be included as time allows throughout course units of study and may or may not be assessed.
6.EE.B.8. Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem.
6.EE.B.8a. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions.
6.EE.B.8b. Represent solutions of such inequalities on number line diagrams.
6.EE.A.2b. Identify parts of an expression using mathematical terms (e.g. sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.

Instructional Grouping 5: Data Distributions

Mathematical Big Ideas:

- ○ 6.SP.A. Develop understanding of statistical variability.
- ○ 6.SP.B. Summarize and describe distributions.

Essential Standards

Standards to be explicitly taught, assessed more than once, and intervened upon.

6.SP.A.2. Understand that a set of data collected to answer a statistical question has a distribution, which can be described by its center (median and/or mean), spread (range, interquartile range, and/or mean absolute deviation), and overall shape. The focus of mean absolute deviation (MAD) is visualizing deviations from the mean as a measure of variability as opposed to a focus on calculating MAD.

Supporting Standards

Standards that support the learning of essential standards and may or may not be formally assessed.

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

6.SP.B.5. Summarize numerical data sets in relation to their context, such as by:
b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.

Additional Standards

Standards that deepen learning and may be included as time allows throughout course units of study and may or may not be assessed.

6.SP.A.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 with a single number.

6.SP.B.5. Summarize numerical data sets in relation to their context, such as by:

- a. Reporting the number of observations.
- c. Giving quantitative measures of center (median, and/or mean) and variability (range, 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 in which the data were gathered.
- d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Appendix A: Planning Templates

Instructional Calendar Template

Use this template to sequence your instructional units onto a Year At-A-Glance calendar. This template can be adapted to show semesters or trimesters.

Month	Instructional Grouping
August	
September	
October	
November	
December	
January	
February	
March	
April	
May	

Unit Planning Template

Use this template to plan and collaborate around an instructional grouping. This template facilitates identifying curricular and assessment resources to teach and assess the content in one instructional grouping.

Instructional Grouping #:	Unit Topic:
Time Allotment: <i>How many instructional days do you plan to spend on this topic?</i>	
Learning Activities: <i>What common lessons will we teach from our curricular resources?</i>	
Common Assessments: <i>What common assessments will we give?</i> <i>Consider IAB and FIAB assessments in the ISAT portal if appropriate and common teacher created assessments.</i>	
Team Collaboration Notes: <i>What did we learn about teaching this topic from analyzing our student work samples?</i> <i>What intervention do we need to do on essential standards? Who is ready for learning additional standards?</i>	