Essential Standards Extended Guide

Grade 7 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: Proportional Relationships

Mathematical Big Ideas:

- ☐ **7.RP.A. Analyze proportional relationships and use them to solve real-world and mathematical problems.**

Essential Standards
Standards to be explicitly taught, assessed more than once, and intervened upon.
7.RP.A.2. Recognize and represent proportional relationships between quantities.
7.RP.A.2a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
7.RP.A.2b. Identify the constant of proportionality in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. Recognize the constant of proportionality as both the unit rate and as the multiplicative comparison between two quantities.

Supporting Standards
Standards that support the learning of essential standards and may or may not be formally assessed.
7.RP.A.1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
7.RP.A.2c. Represent proportional relationships by equations.
7.RP.A.2d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.
7.RP.A.3. Use proportional relationships to solve multi-step ratio, rate, and percent problems.

Instructional Grouping 2: Operations with Fractions and Integers

Mathematical Big Ideas:

- ☐ **7.NS.A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.**

Essential Standards Standards to be explicitly taught, assessed more than once, and intervened upon.
7.NS.A.1b. Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite are additive inverses because they have a sum of 0 (e.g., 12.5 + (−12.5) = 0). Interpret sums of rational numbers by describing real-world contexts.
7.NS.A.1c. Understand subtraction of rational numbers as adding the additive inverse, $p − q = p + (−q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
7.NS.A.2a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (− 1/2) (−1) = 1/2 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
7.NS.A.2b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non zero divisor) is a rational number. If p and q are integers, then $− (p/q) = −(p)/q = p/−(q)$. Interpret quotients of rational numbers by describing real- world contexts. Interpret quotients of rational numbers by describing real-world contexts

Supporting Standards Standards that support the learning of essential standards and may or may not be formally assessed.
7.NS.A.1. Apply and extend previous understandings of addition and subtraction to add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
7.NS.A.1a. Describe situations in which opposite quantities combine to make zero.
7.NS.A.1d. Apply properties of operations as strategies to add and subtract rational numbers.
7.NS.A.2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide integers and other rational numbers.
7.NS.A.2c. Apply properties of operations as strategies to multiply and divide rational numbers.
7.NS.A.3. Solve real-world and mathematical problems involving the four operations with integers and other rational numbers.

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.
7.NS.A.2d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates or eventually repeats.

Instructional Grouping 3: Expressions and Equations

Mathematical Big Ideas:

- ☐ **7.EE.A. Use properties of operations to generate equivalent expressions.**
- ☐ **7.EE.B. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**

Essential Standards Standards to be explicitly taught, assessed more than once, and intervened upon.
7.EE.B.4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Supporting Standards Standards that support the learning of essential standards and may or may not be formally assessed.
7.EE.A.1. Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients.
7.EE.A.2. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.
7.EE.B.3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (integers, fractions, and decimals). Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
7.EE.B.4a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.
7.EE.B.4b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.

Instructional Grouping 4: Geometry

Mathematical Big Ideas:

- ○ **7.G.B.   Draw, construct, and describe geometrical figures and describe the relationships between them.**
- ○ **7.G.B.   Solve real-life and mathematical problems involving angle measure, area, surface area, and volume**

Teacher Note: In addition to the Big Ideas listed, the standards for Geometry can effectively be integrated into and enhanced by connecting explicitly to the Big Ideas listed in Instructional Grouping 1, 2, and 3. For example, 7.G.A.1 connects directly to 7.RP.A and 7.G.B.5 connects to 7.EE.B.

Essential Standards Standards to be explicitly taught, assessed more than once, and intervened upon.
7.G.A.1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

Supporting Standards Standards that support the learning of essential standards and may or may not be formally assessed.
7.G.B.4. Understand the attributes and measurements of circles.
7.G.B.4b. Develop an understanding of circle attributes including radius, diameter, circumference, and area and investigate the relationships between each.
7.G.B.4c. Informally derive and know the formulas for the area and circumference of a circle and use them to solve problems.
7.G.B.5. Use facts about supplementary, complementary, vertical, and adjacent angles to write equations and use them to solve for an unknown angle in a figure.
7.G.B.6. Generalize strategies for finding area, volume, and surface areas of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. Solve real-world and mathematical problems in each of these areas.

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.
7.G.A.2. Draw (freehand, with ruler and protractor, and with technology) two-dimensional geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine unique triangles, more than one triangle, or no triangle.

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.
7.G.A.3. Describe the shape of the two-dimensional face of the figure that results from slicing three dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.
7.G.B.4. Understand the attributes and measurements of circles
7.G.B.4a. Know that a circle is a two-dimensional shape created by connecting all of the points equidistant from a fixed point called the center of the circle

Instructional Grouping 5: Statistics and Probability

Mathematical Big Ideas:

- △ **7.SP.A. Use random sampling to draw inferences about a population**
- ○ **7.SP.B. Draw informal comparative inferences about two populations.**
- △ **7.SP.C. Investigate chance processes and develop, use, and evaluate probability models.**

Teacher Note: In addition to the Big Ideas listed, the standards for Statistics and Probability can effectively be integrated and enhanced by connecting explicitly to the Big Ideas listed in Instructional Grouping 1, 2, and 3. For example, 7.SP.C connects to proportional reasoning in 7.RP.A.

Essential Standards
Standards to be explicitly taught, assessed more than once, and intervened upon.
7.SP.A.2. Use data from a random sample about an unknown characteristic of a population. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions, i.e., generate a sampling distribution.

Supporting Standards
Standards that support the learning of essential standards and may or may not be formally assessed.
7.SP.A.1. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
7.SP.C.6. Approximate the (theoretical) probability of a chance event by collecting data and observing its long-run relative frequency (experimental probability). Predict the approximate relative frequency given the (theoretical) probability.
7.SP.C.8b. Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.

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.
7.SP.B.3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

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.
7.SP.B.4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.
7.SP.C.5. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
7.SP.C.7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
7.SP.C.7a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.
7.SP.C.7b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process
7.SP.C.8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
7.SP.C.8a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
7.SP.C.8c. Design and use a simulation to generate frequencies for compound events.

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