Essential Standards Extended Guide
Grade 5 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: Place Value Patterns and Operations

Mathematical Big Ideas:
- ○ **5.OA.A. Write and interpret numerical expressions.**
- □ **5.NBT.A. Understand the place value system.**
- □ **5.NBT.B. Perform operations with multi-digit whole numbers and with decimals to hundredths.**

Essential Standards Standards to be explicitly taught, assessed more than once, and intervened upon.
5.NBT.A.2. Explain patterns in the number of zeros of the product when multiplying a number by powers of ten, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of ten. Use whole-number exponents to denote powers of ten.
5.NBT.B.5. Demonstrate fluency for multiplication of multi-digit whole numbers using the standard algorithm. Include two-digit × four-digit numbers and three-digit × three-digit numbers.

Supporting Standards Standards that support the learning of essential standards and may or may not be formally assessed.
5.OA.A.1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
5.OA.A.2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.
5.NBT.A.1. Recognize that in a multi-digit number, including decimals, a digit in any place represents ten times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.

5.NBT.B.6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.
    a. Use strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.
    b. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

5.MD.B.2a. Interpret numerical data, with whole-number values, represented with tables or line plots.

Instructional Grouping 2: Decimals

Mathematical Big Ideas:
- ☐ **5.NBT.A. Understand the place value system.**
- ☐ **5.NBT.B. Perform operations with multi-digit whole numbers and with decimals to hundredths.**
- △ **5.MD.A. Convert like measurement units within a given measurement system.**

Essential Standards
Standards to be explicitly taught, assessed more than once, and intervened upon.
5.NBT.B.7. Add, subtract, multiply, and divide decimals to hundredths.

Supporting Standards
Standards that support the learning of essential standards and may or may not be formally assessed.
5.NBT.A.1. Recognize that in a multi-digit number, including decimals, a digit in any place represents ten times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.

5.NBT.B.3. Read, write, and compare decimals to thousandths.
    a. Read and write decimals to thousandths using standard form, expanded form, and word from.
    b. Compare two decimals to thousandths based on meanings of the digits in each place, and record the results of the comparisons using $>$, $=$, and $<$.

5NBT.A.4. Use place value understanding to round decimals to any place.
5.NBT.B.7a. Use concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction and between multiplication and division.
5.NBT.B.7b. Relate the strategy to a written method and explain the reasoning used.
5.MD.A.1. Convert among different-sized standard measurement units within a given measurement system. Use conversions in solving multi-step, real-world problems.
5.MD.B.2a. Interpret numerical data, with whole-number values, represented with tables or line plots.

Instructional Grouping 3: Addition and Subtraction with Fractions

Mathematical Big Ideas:

- ☐ **5.NF.A. Use equivalent fractions as a strategy to add and subtract fractions.**

Essential Standards
Standards to be explicitly taught, assessed more than once, and intervened upon.
Teacher Note: Students use a progression of physical, visual, and symbolic representations to explain their reasoning strategies. Relate students' physical and visual representations to verbalized and written equations. 5.NF.A.2. Solve word problems involving addition and subtraction of fractions referring to the same whole (the whole can be a set of objects), including cases of unlike denominators.

Supporting Standards
Standards that support the learning of essential standards and may or may not be formally assessed.
5.NF.A.1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions to produce an equivalent sum or difference of fractions with like denominators.
5.NF.A.2a. Justify the conclusions by using visual fraction models and/or equations to represent the problem.
5.NF.A.2b. Use benchmark fractions and number sense of fraction to estimate mentally and assess the reasonableness of answers.
5.MD.B.2b. Use graphic displays of data (line plots (dot plots), tables, etc.) to solve real-world problems using fractional data.

Instructional Grouping 4: Multiplication with Fractions

Mathematical Big Ideas:

- ☐ **5.NF.B. Apply and extend previous understandings of multiplication and division to multiply and divide fractions.**

Essential Standards
Standards to be explicitly taught, assessed more than once, and intervened upon.
Teacher Note: Students use a progression of physical, visual, and symbolic representations to explain their reasoning strategies. Relate students' physical and visual representations to verbalized and written equations. 5.NF.B.6. Solve real-world problems involving multiplication of fractions and mixed numbers by using visual fraction models and/or equations to represent the problem.

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

5.NF.B.4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
    a.   Interpret the product $\left(\frac{a}{b}\right) \times q$ as a parts of a partitions of q into b equal parts, and equivalently, as the result of the sequence of operations $a \times q \div b$.
    b.   Find the area of a rectangle with fractional side lengths.
        i. Tile it with unit squares of the appropriate unit fraction side lengths.
        ii. Show that the area is the same by tiling as would be found by multiplying the side lengths.
        iii. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5.NF.B.5. Interpret multiplication as scaling (resizing), by:
    a.   Comparing the size of a fractional product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
    b.   Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number, explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number, and relating the principle of fraction equivalence $\frac{a}{b} = \frac{n \times a}{n \times b}$ to the effect of multiplying $\frac{a}{b}$ by 1.

Instructional Grouping 5: Division with Fractions

Mathematical Big Ideas:

- ☐ **5.NF.B. Apply and extend previous understandings of multiplication and division to multiply and divide fractions.**

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

Teacher Note: Students use a progression of physical, visual, and symbolic representations to explain their reasoning strategies. Relate students' physical and visual representations to verbalized and written equations.
5.NF.B.7c. Solve real-world problems involving division of unit fractions by nonzero whole numbers and division of whole numbers by unit fractions by using visual fraction models and/or equations to represent the problem.

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

5.NF.B.3. Interpret a fraction as division of the numerator by the denominator $\left(\frac{a}{b} = a \div b\right)$. Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers by using visual fraction models and/or equations to represent the problem.

5.NF.B.7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
    a. Represent division of a unit fraction by a nonzero whole number and compute such quotients using a visual fraction model. Use the relationship between multiplication and division to explain that $\frac{1}{b} \div c = \frac{1}{bc}$ because $\frac{1}{bc} \times c = \frac{1}{b}$.
    b. Represent division of a whole number by a unit fraction, and compute such quotients using a visual fraction model. Use the relationship between multiplication and division to explain that $a \div \frac{1}{b} = ab$ because $ab \times \frac{1}{b} = a$.

Instructional Grouping 6: Representing Data

Teacher Note: This group of standards can be integrated into other instructional groupings and into other content areas to help students see and represent their world in mathematical ways.

Mathematical Big Ideas:

- △ **5.MD.B. Represent and interpret data.**

Essential Standards Standards to be explicitly taught, assessed more than once, and intervened upon.
5.MD.B.2. Collect, represent, and interpret numerical data, including whole numbers, and fractional and decimal values.

Supporting Standards Standards that support the learning of essential standards and may or may not be formally assessed.
5.MD.B.2a. Interpret numerical data, with whole-number values, represented with tables or line plots.
5.MD.B.2b. Use graphic displays of data (line plots (dot plots), tables, etc.) to solve real-world problems using fractional data.

Instructional Grouping 7: Geometric Measurement

Mathematical Big Ideas:
- ☐ **5.MD.C. Geometric measurement: Understand concepts of volume and relate volume to multiplication and to addition.**
- ○ **5.G.B. Classify two-dimensional figures into categories based on their properties.**

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

Teacher Note: Measurement tasks can provide context and visual models for problem solving using the arithmetic operations with whole numbers, fractions and decimals.
5.MD.C.4. Use concrete and/or visual models to measure the volume of rectangular prisms in cubic units by counting cubic cm, cubic in, cubic ft, and nonstandard units.

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

5.MD.C.3. Recognize volume as an attribute of solid figures and understand volume measurement in terms of cubic units.
a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.   b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
5.MD.C.5. Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume.

a. Find the volume of a right rectangular prism with whole-number edge lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base.
     b. Apply the formulas $V = l \times w \times h$ and $V = B \times h$ (where B stands for the area of the base) for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths, and in the context of solving real-world and mathematical problems.
     c. Recognize volume as additive.
         i. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts.
         ii. Apply this technique to solve real-world problems.

5.G.B.3. Understand that attributes belonging to a category of two-dimensional figures also belong to all of the subcategories of that category.
5.G.B.4. Classify two-dimensional figures in a hierarchy based on properties.

Instructional Grouping 8: The Coordinate Plane

Mathematical Big Ideas:
- ● ○ **5.G.A. Graph points on the coordinate plane to solve real-world and mathematical problems.**
- ● ○ **5.OA.B. Analyze patterns and relationships.**

Essential Standards
Standards to be explicitly taught, assessed more than once, and intervened upon.
Teacher Note: This essential standard lays critical foundational understanding for Algebra in future grades. 5.G.A.2. Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane (x and y both have positive values), and interpret coordinate values of points in the context of the situation.

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

5.OA.B.3. Generate two numerical patterns using two given rules.
    a.   Identify apparent relationships between corresponding terms.
    b.   Form ordered pairs consisting of corresponding terms from the two patterns.
    c.   Graph the ordered pairs on a coordinate plane.

5.NBT.A.1. Recognize that in a multi-digit number, including decimals, a digit in any place represents ten times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.

5.G.A.1. Describe and understand the key attributes of the coordinate plane.
    a.   Use a pair of perpendicular number lines (axes) with the intersection of the lines (the origin (0,0)) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates.
    b.   Understand that the x-coordinate, the first number in an ordered pair, indicates movement parallel to the x-axis starting at the origin; and the y-coordinate, the second number, indicates movement parallel to the y-axis starting at the origin.

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?