

## Idaho Content Standards with Limits Math – 7<sup>th</sup> Grade

### **Standard 1: Number and Operation**

Compare magnitudes and relative magnitudes of rational numbers, including integers, fractions, and decimals.

Content Limit: Fraction denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 25, and 100. Integers only as negative rational numbers. Decimals must be terminating. Numbers may be ordered least to greatest or greatest to least.

Solve problems requiring the conversion between simple decimals, fractions, ratios, and percents.

Content Limit: Fraction denominators limited to 2, 3, 4, 5, 8, 10, 20, 25, and 100.

Locate the position of rational numbers on a number line.

Content Limit: Fraction denominators limited to 2, 3, 4, 5, 6, 8, and 10. Decimals to thousandths place.

Rewrite multiple factors using exponents.

Content Limit: Factors must be whole numbers greater than 1.

Apply the number theory concepts of primes, composites, and prime factorization and find the Least Common Multiple (LCM) and the Greatest Common Factor (GCF).

Content Limit: Items involve no more than two numbers less than 100. Numbers are not relatively prime.

Recognize pertinent information for problem solving.

Content Limit: Items include more information than required to solve. Information may be given in text or table form. Data provided consistent with context of the item (e.g., a table listing start/stop times for movies).

Add, subtract, multiply, and divide whole numbers, fractions and decimals; and add, multiply, and divide integers.

Content Limit: Fraction denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 25, and 100. Negative rational numbers are limited to integers. Up to three numbers and two operations. No grouping symbols. Expression must be clearly stated.

Evaluate whole numbers in exponential form.

Content Limit: Exponents are limited to whole numbers 2 through 6 inclusive. Results must be less than 100.

Evaluate numerical expressions using the order of operations with whole numbers and decimals.

Content Limit: Operations may include addition, subtraction, multiplication, and division. Grouping symbols may be used and nested two levels at most. Decimals are limited to thousandths place.

Use a variety of strategies including common mathematical formulas to compute problems drawn from real-life situations.

Content Limit: Formulas will be given in item and limited to area of a parallelogram, triangle, or circle, circumference of a circle, distance formula, simple interest formula, and volume of a rectangular prism.

Identify whether a given estimate is an overestimate or underestimate.

Content Limit: Estimates will involve multiplication only.

### **Standard 2: Concepts and Principles of Measurement**

Select and use appropriate units and tools to make formal measurements in both systems.

Content Limit: Select appropriate units and tools only. Units for length are inches, feet, yards, miles, millimeters, centimeters, and meters. Units for time are seconds, minutes, hours, days, and years. Units for weight are ounces, pounds, tons, grams, and kilograms. Units for volume (capacity) are cups, quarts, gallons, milliliters, and liters.

Given the formulas, find the perimeter, circumference, or area of triangles, circles, and quadrilaterals.

Content Limit: Quadrilaterals may include parallelograms and trapezoids. Diameter or radius may be given in circle problems. Radii may not be 2. A reference sheet will be available with formulas that include: perimeter and area of a rectangle; area of a triangle, trapezoid, and parallelogram; and circumference and area of a circle.

Convert units of measurement within each system.

Content Limit: All conversions must be within the same system of measurement: inches and feet, inches and yards, feet and yards, ounces and pounds, pounds and tons, fluid ounces and cups, cups and pints, pints and quarts, quarts and gallons, milli- and unit, centi- and unit, and kilo- and unit. Time units may include years, months, weeks, days, hours, minutes, and seconds.

Solve problems involving perimeter and area of rectangles and triangles.

Content Limit: Items may include shapes that are formed by a combination of two shapes.

Reduce rates to unit rates.

Content Limit: Situations must be real-world applications such as gas mileage, speed, growth, etc. Rates given should be equivalent unit rates equal to a whole number or terminating decimal.

Identify properly constructed dimensional analysis conversions

Content Limit: Customary units may include inches, feet, yards, miles, ounces, pounds, cups, pints, quarts, and gallons. Metric units may include millimeters, centimeters, meters, grams, kilograms, milliliters, and liters. Time units may include years, months, weeks, days, hours, minutes, and seconds. No more than one conversion ratio and one multiplier should be used for any item

(e.g., 2 hours to minutes is acceptable:  $2 \times \frac{60}{1}$ ).

### **Standard 3: Concepts and Language of Algebra and Functions**

Use variables in simple expressions and equations.

Content Limit: Evaluate an expression by substituting a number for every variable in the expression. Items are limited to at most two variables at a time. Items may also check solutions to equations by substituting values for the variable(s) in an equation.

Translate simple word statements into algebraic expressions and equations.

Content Limit: Expressions and equations may contain at most two operations and may require at most one grouping symbol. May contain one or two variables.

Use symbols “<,” “>,” “=,” “≠,” “≤,” and “≥” to express relationships.

Content Limit: Item may include integers between –50 and 50, up to two operations, at most one grouping symbol, and exponents limited to 2 and 3. May include one variable.

Evaluate simple numeric and algebraic expressions using commutative, associative, identity, zero, inverse, distributive, and substitution properties.

Content Limit: Expressions may include integers between –50 and 50, up to two operations, at most one grouping symbol, and exponents limited to 2 and 3. May include one variable.

Use the order of operations in evaluating simple algebraic expressions.

Content Limit: Expressions may include integers between –50 and 50, up to four operations, at most two grouping symbols, and exponents limited to 2 and 3. The fraction bar may be used as a grouping symbol. May include one or two variables.

Solve one-step equations.

Content Limit: Equations may include integers between –50 and 50. Variable may appear on left or right side of equal sign.

Extend patterns involving rational numbers and describe the rule that generates the pattern.

Content Limit: Patterns involve adding or subtracting whole numbers, decimals, or fractions. Fraction denominators limited to 2, 3, 4, 5, 6, 8, and 10. Decimals to thousandths place. Items may ask the student to extend the pattern, state the rule for the pattern, or both.

Represent a simple set of data in a table, as a graph, and as a mathematical relationship.

Content Limit: Relationship must be linear. Relationship is presented as a table, graph, or equation. Equation describing relationship must include one operation. The answer options will include a table, a graph, or an equation.

Use patterns and linear functions to represent and solve simple problems.

Content Limit: Patterns may include rational numbers. Linear functions are limited to whole number variable values.

## **Standard 4: Concepts and Principles of Geometry**

Classify relationships among types of one- and two-, dimensional geometric figures, using their defining properties.  
Content Limit: Figures may include triangles and quadrilaterals. Triangles may be classified by angles (acute, equiangular, obtuse, or right) or by sides (equilateral, isosceles, or scalene) or both (e.g., an obtuse isosceles triangle). Quadrilaterals may be classified according to number and position of parallel sides as well as angle measure (square, trapezoid, parallelogram, rectangle, or rhombus)

Apply fundamental concepts, properties, and relationships among points, lines, rays, planes, and angles.  
Content Limit: Items may include parallel, intersecting, and perpendicular lines. Angles may include acute, right, obtuse, straight, and congruent. Symbols may include: capital letter for points, two-headed arrow above two capital letters for lines, line segment above two capital letters for line segments, one-headed arrow above two capital letters for rays, angle symbol with one capital letter or angle symbol with three capital letters for angles, and symbols for parallel, perpendicular, and right angle.

Explain and model the effects of reflections, translations, and rotations on various shapes.  
Content Limit: Items are limited to identifying the effects of a single transformation. Rotations are in increments of  $45^\circ$ . Rotations indicate clockwise or counterclockwise.

Identify congruence, similarities, and line symmetry of shapes.  
Content Limit: Shapes limited to two-dimensional figures.

Identify and plot points on a coordinate plane.  
Content Limit: Points may be in any of four quadrants or on an axis. Use integer coordinates.

## **Standard 5: Data Analysis, Probability, and Statistics**

Read and interpret tables, charts, and graphs, including frequency tables, scatter plots, broken line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots.  
Content Limit: For scatter plots and line graphs, scales are in increments of 1, 2, 5, and 10 and are consistent on  $x$ - and  $y$ -axis. No more than one table, chart, or graph per item.

Collect, organize, and display data with appropriate notation in tables, charts and graphs, including scatter plots, broken line graphs, line plots, bar graphs, and stem-and-leaf plots.  
Content Limit: Given data, choose a display. Displays limited to scatter plots, broken line graphs, line plots, bar graphs, and stem-and-leaf plots.

Determine the measures of central tendency – mean, median and mode – with sets of data.  
Content Limit: At most ten numbers in data set. Numbers are less than 300. Data set must contain at most a single mode. Data set may have an even number of data points, but should be in numeric order.

Predict, perform, and record results of simple probability experiments.  
Content Limit: Items using multiple trials must be done with replacement. Items may ask for the probability of a combination of outcomes (e.g., the probability of drawing a red marble or a green marble). Items may require the representation of all possible outcomes.

Recognize equally likely outcomes.  
Content Limit: Item describes a familiar situation such as spinning a spinner, rolling one or two dice (does not include sum of two dice), or drawing multi-color objects from a container. Equally likely outcomes must pertain to the same event.

Make predictions based on simple theoretical probabilities.  
Content Limit: Item describes a familiar situation such as spinning a spinner, rolling one or two dice (does not include sum of two dice), or drawing different colored objects from a container.