Idaho Content Standards with Limits
10th Grade- Math

Standard 1: Number and Operation

Apply properties of rational numbers.
Content Limit: Properties include: addition and multiplication (inverse, commutative, associative, identity, distributive, and transitive) and the zero property of multiplication. Items will assess understanding of the properties and not the vocabulary. Items may be set in either real-world or mathematical contexts.

Use positive and negative numbers, absolute value, fractions, decimals, percentages, and scientific notation, including application in real-world situations.
Content Limit: Items involving exponents and roots limited to squares, cubes, and square roots. This limit does not apply to numbers written in scientific notation.

Apply properties of exponents.
Content Limit: Logarithms will not be assessed. Exponents should be integers, both positive and negative. Properties include: power of a power, multiplication of powers with the same base, dividing powers with the same base, and a number to the zero power.

Identify exact and approximate roots without simplification.
Content Limit: Perfect and non-perfect square roots limited to those whose exact or approximate root can be found through the use of perfect squares through 15^2. Perfect and non-perfect cube roots limited to those whose exact or approximate root can be found through the use of perfect cubes through $5^{3.}$

Solve problems using number theory concepts (factors, multiples, primes).
Content Limit: Identify prime numbers less than 100. Identify GCF and LCM. With the exception of numbers less than 100 that have no prime factors other than 2, 3, or 5, prime factorization of numbers factored in exponential form must be used when identifying GCF and LCM. Items may be set in either real-world or mathematical contexts.

Use the order of operations and perform operations with rational numbers.
Content Limit: Fraction denominators limited to 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 16, 18, 20, 24, 25, 36, 50, and 100. No more than four fractions. Decimals to thousandths place (division to hundredths place), percents greater than 0, integers to thousands place, powers as squares through 15^2 or cubes through 5^3, square roots of perfect squares through 225, and scientific notation. Working with integers, fractions, decimals, square roots, and exponents may be required within the same item.

Standard 2: Concepts and Principles of Measurement

Given the formulas, find the circumference, perimeter, or area of triangles, circles, and quadrilaterals, the volume of spheres, non-oblique prisms, cylinders, and cones, and the surface area of spheres, non-oblique prisms, cylinders, and right square-based pyramids.
Content Limit: Items may be set in either real-world or mathematical contexts. Graphics should be used in most of these items. Graphics should be drawn to scale. Give all measurements needed in the problem/diagram (e.g., a student should not have to use the Pythagorean theorem to find a missing side and then use that answer to find the perimeter or area). Give exact or rounded answers for figures requiring pi (π).

Use rates, ratios, proportions, map scales, and scale factors (one- and two-dimensional) in problem-solving situations.
Content Limit: Formulas and conversion facts may be given in an item (e.g., 1 mile = 5,280 feet). Items may include converting between square units. Conversions must be within one system. Items may include similar figures and scale drawings. Items may be set in either real-world or mathematical contexts. Graphics should be used in some of these items, as appropriate.

Construct equivalent units, comparable units, and conversions.
Content Limit: Items will not require students to convert from U.S. to metric or metric to U.S. All items should be set in a real-world context.

Use customary and metric units and their relationship to one another and to real world applications involving length, area, capacity, weight, time, and temperature.

Content Limit: Terms that may be used: area, Celsius, centimeter, cubic unit, degree, Fahrenheit, foot/feet, gallon, gram, inch, kilogram, kiloliter, kilometer, liter, meter, mile, milligram, milliliter, ounce, pint, pound, precision, quart, rate, slope, square unit, surface area, volume, and yard. Items will not require students to convert from U.S. to metric or metric to U.S. All items should be set in a real-world context.

Determine and use appropriate units.
Content Limit: Items may ask students to use rates to determine a measured outcome (e.g., rate × time = distance or miles/hour × hours = miles).

Standard 3: Concepts and Language of Algebra and Functions

Represent mathematical relationships using variables, expressions, linear equations and inequalities.
Content Limit: Given a description in words, students represents relationship using mathematical symbols that may involve rational numbers, whole number powers (square whole numbers less than or equal to 15^2 or cubes less than or equal to 5^3), and square and cube roots. Terms that may be used: algebra, algebraic, cube, cube root, equation, expression, function, inequality, interval, power, relationship, square, square root, unknown, and variable.

Use appropriate procedures for manipulating and simplifying algebraic expressions involving variables, integers, and rational numbers**.**
Content Limit: Items may include application of order of operations with up to three grouping symbols. Terms that may be used: expression, formula, function, relationship, solve, unknown, value, and variable. Evaluating an expression or a formula may involve squares or cubes and/or applying the distributive property. Terms that may not be used: quadratic, setup.

Use appropriate procedures to solve multi-step, first-degree equations and inequalities; such as $3(2x – 5) = 5x + 7$ or $3(2x – 5) > 5x + 7$.
Content Limit: Items may include ≥ and ≤, but not ≠. Solving an inequality should not involve multiplying or dividing by a negative number.

Use appropriate procedures to solve linear systems of equations involving two variables; such as $x + y = 7$ and $2x + 3y = 21$.
Content Limit: Systems must have only one solution, that solution being an integer solution.

Model and solve real-world phenomena using multi-step, first degree, single variable equations and inequalities, linear equations, and two-variable linear systems of equations.
Content Limit: Matrices, sequences, series, and recursive relations will not be assessed. Items should be set in a real-world context. Items should use methods that are graphical and/or algebraic. Graphics should be used in some of these items, as appropriate.

Use graphs and sequences to represent and solve problems.
Content Limit: Items that require the solving of equations and/or inequalities should be linear in nature. Items that do not require solving equations and/or inequalities may be nonlinear, but should include interpreting graphics only. Items involving graphs using discrete data, such as bar graphs or scatter plots, should contain no more than 15 data points. Items should be set in a real-world context. Items should use methods that are graphical and/or algebraic. Graphics should be used in some of these items, as appropriate. Terms that may not be used: algebraic sequence and geometric sequence. Matrices, sequences, series, and recursive relations will not be assessed. Three-dimensional figures in a coordinate system will not be assessed.

Standard 4: Concepts and Principles of Geometry

Recognize and apply congruency and similarity of two-dimensional figures.
Content Limit: Items assessing the concept of similarity and congruency should focus on the conditions that cause figures to be similar or congruent. This includes the concept that angles opposite congruent sides of an isosceles triangle are congruent, but does not include formal proofs for ASA, SS, or SAS.

Recognize and use similarity as it relates to size variations in two- and three- dimensional objects.
Content Limit: Terms that may be used: two-dimensional figure, three-dimensional figure, acute, angle, arc, base, circle, circumference, cone, congruent angles, corresponding angles, cube, cylinder, diagonal, diameter, dimensions, edge, equilateral, face, figure, hexagon, hypotenuse, intersect, isosceles, line, line segment, midpoint, obtuse, octagon, parallel, parallelogram, pentagon, perpendicular, Pythagorean theorem, plane, point, polygon, prism, pyramid,

quadrilateral, radius/radii, rectangle, rhombus, right angle, right triangle, side, square, trapezoid, triangle, figure, and vertex/vertices.

Given the Pythagorean Theorem, calculate missing side lengths of right triangles without simplifying radicals.
Content Limit: Radicals should be simplified where possible. Answers can be left in non-simplified radical format or rounded for items with answers that are not exact. Appropriate approximate language should be used in the item.

Identify attributes of the Cartesian Coordinate System, such as quadrants, origin, and axes.
Content Limit: All four quadrants of the Cartesian plane may be used with the use of Roman numerals to identify the four specific quadrants. Terms that may be used: angle, axis/axes, coordinate, grid, horizontal, intersect, ordered pair, origin, parallel, perpendicular, plot, point, quadrant, vertical, *x*-axis, and *y*-axis.

Graph scatter plots and identify informal trend lines.
Content Limit: Grids will have origin and scales labeled. Graphing scatter plots with ordered pairs may involve rational numbers, but should have no more than 15 data points.

Represent linear relationships using tables, graphs, and mathematical symbols.
Content Limit: Items involving graphs using discrete data, such as bar graphs or scatter plots, should contain no more than 15 data points. Representation using 'mathematical symbols' includes equations.

Interpret attributes of linear relationships such as slope, rate of change, and intercepts.
Content Limit: Items should be set in a real-world context. Relationships to be interpreted may be presented in a linear equation or graphical format. Slopes may be positive or negative.

Use logic to make and evaluate mathematical arguments.
Content Limit: Stimulus may include tables, charts, graphs, text, maps, diagrams, pictorial representations, two- and three- dimensional figures, statistics, data, or other mathematical information.

Standard 5: Data Analysis, Probability, and Statistics

Analyze and interpret tables, charts, and graphs, including scatter plots, multiple broken line graphs, and box-and-whisker plots.
Content Limit: Items should be set in a real-world context. Items should contain no more than 30 organized data points. Displays of data within the stem should be complete and correct.

Collect, organize, and display data in tables, charts, and graphs.
Content Limit: Items should contain no more than 15 unorganized data points.

Interpret and use basic statistical concepts, including mean, median, mode, range, and distribution of data, including outliers.
Content Limit: Items should use the terms mean, median, mode, range, but should not provide or require a definition of the terms. Items should only have one mode. Items may have an even or odd number of data points. Items containing raw, unorganized data points should have a maximum of 30 single-digit data points or a maximum of 15 data points with more than one digit. Measures of standard deviation and variance should not be assessed.

Make predictions and draw conclusions based on statistical measures.
Content Limit: Items may be set in a real-world or mathematics context.

Find probabilities based on dependent, independent, and compound events.
Content Limit: Items should not assess dependent, compound events. Independent compound events should contain no more than two simple events, such as those involving coins, spinners, dice, and cards.

Contrast experimental and theoretical probability.
Content Limit: Answer options will consist of listing both the theoretical and experimental probabilities.

Make predictions based on randomness, chance, equally likely events, and probability.
Content Limit: Predictions should not be based on dependent-compound events. Items may be set in a real-world or mathematics context.