

# IDAHO CONTENT STANDARDS GRADE 6 MATHEMATICS

Cognitive level codes:

- B: Memorize
- C: Perform procedures
- D: Demonstrate understanding
- E: Conjecture, generalize, prove
- F: Solve non-routine problems, make connections

Calculator codes:

- CN: “calculator neutral.” Having or not having a calculator on this item will not affect students’ ability to demonstrate proficiency on this objective.
- YES: calculator MUST be available in order for the student to demonstrate proficiency on this objective.
- NO: student MUST NOT have a calculator while completing this item in order to assess this objective.
- CR: “calculator recommended.” For all items not assessing computation or estimation, calculator availability is recommended.

Shaded objectives should be assessed in the classroom, but not included on the ISAT assessment.

## Standard 1: Number and Operation

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6	Objective 7	Objective 8
<b>Goal 1.1: Understand and use numbers.</b>	6.M.1.1.1 Compare magnitudes and relative magnitudes of positive rational numbers, including whole numbers through billions, fractions, and decimals. (317.01.a, 317.01.d)  CL: B, C Calc: CN Content Limit: Fraction denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 25. Can use mixed numbers. Decimals limited to tenths, hundredths, and thousandths. Numbers may be ordered least to greatest or greatest to least.	6.M.1.1.2 Explain the interrelationship of fractions, decimals, and percents. (317.01.b)  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.	6.M.1.1.3 Locate the position of integers on a number line.  CL: B Calc: CN Content Limit: Limit numbers between -50 and 50.	6.M.1.1.4 Convert between decimals and fractions. (317.01.b)  CL: B, C Calc: NO Content Limit: Fraction denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, 20, and 25. Can use mixed numbers. Decimals to thousandths place.	6.M.1.1.5 Apply number theory concepts (prime, composite, prime factorization) and identify common factors and common multiples. (317.01.e)  CL: B, C Calc: CR Content Limit: Whole numbers less than or equal to 300. Prime factors less than 13. Answer options may be written using exponents.	6.M.1.1.6 Solve problems using the 4-step process of problem solving (explore, plan, solve, and examine). (318.01.b)  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.	6.M.1.1.7 Describe the use of integers in real-world situations. (317.01.f)  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.	6.M.1.1.8 Use appropriate vocabulary.  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.

<p><b>Goal 1.2: Perform computations accurately.</b></p>	<p>6.M.1.2.1 Recall basic multiplication and division facts from 12 x 12 Times Table. (317.02.d)</p> <p>CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.</p>	<p>6.M.1.2.2 Add, subtract, multiply, and divide whole numbers, decimals, and simple fractions (including unlike denominators). (317.02.a, 317.02.b, 317.02.c, 317.02.g)</p> <p>CL: B, C Calc: NO Content Limit: Multiplication items have at most a three-digit number multiplied by a two-digit number. May include multiplication of fractions or fraction and whole number. Division items have at most a three-digit number divided by a two-digit whole number. Items do not include negative numbers. Fraction denominators limited to 2, 3, 4, 5, 6, 8, 10, and 12. Subtraction cannot be a mixed number minus a mixed number requiring regrouping. Fraction division must have a whole number divisor. Expression must be clearly stated.</p>	<p>6.M.1.2.3 Evaluate numerical expressions with whole numbers using the order of operations (excluding exponents). (317.02.e)</p> <p>CL: B Calc: NO Content Limit: Operations may include addition, subtraction, multiplication, and division. Grouping symbols may be used and nested two levels at most. Multiplication items may include at most two-digit factors.</p>	<p>6.M.1.2.4 Select and use an appropriate method of computation from mental math, paper and pencil, calculator or a combination of the three. (317.02.h)</p> <p>CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.</p>	<p>6.M.1.2.5 Use a variety of strategies to solve real-life problems. (318.01.a)</p> <p>CL: C, D Calc: YES Content Limit: Multiplication items may include two-digit factors. Division items may involve a one-digit divisor and a three-digit dividend. Fraction denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 25. Decimals limited to thousandths place. Expression should not be stated. The problems could be such that a variety of strategies could be used, but ability to ‘Use a variety of strategies’ to be assessed in the classroom, not on the ISAT.</p>	<p>6.M.1.2.6 Use appropriate vocabulary and notations. (317.02.i)</p> <p>CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.</p>		
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<b>Goal 1.3: Estimate and judge reasonableness of results.</b>	6.M.1.3.1 Estimate to predict computation results. (317.03.a)  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.	6.M.1.3.2 Explain when estimation is appropriate. (317.03.b)  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.	6.M.1.3.3 Identify whether a given estimate is an overestimate or underestimate. (317.03.c)  CL: E Calc: NO Content Limit: Estimates will involve addition or subtraction only.	6.M.1.3.4 Use a four-function calculator to solve complex grade-level problems.  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.	6.M.1.3.5 Formulate conjectures and discuss why they must be or seem to be true. (318.02.c)  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.	6.M.1.3.6 Use appropriate vocabulary. (317.03.d)  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.		
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## Standard 2: Concepts and Principles of Measurement

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6	Objective 7
<b>Goal 2.1: Understand and use U.S. customary and metric measurements.</b>	6.M.2.1.1 Select and use appropriate units and tools to make formal measurements in both systems. (319.01.a)  CL: B, C Calc: CN 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. 'Use ... tools to make formal measurements' to be assessed in the classroom, not on the ISAT.	6.M.2.1.2 Apply estimation of measurement to real-world and content problems using standard measuring devices. (319.01.b)  CL: B, C Calc: CN Content Limit: Assessed in the classroom, not on the ISAT.	6.M.2.1.3 Apply understanding of relationships to solve real-world problems related to elapsed time. (319.01.f)  CL: F Calc: CN Content Limit: Time is limited to $\frac{1}{4}$ , $\frac{1}{2}$ , and $\frac{3}{4}$ hours and listed in fraction form.	6.M.2.1.4 Given the formulas, find the perimeter or circumference and area of triangles, circles and parallelograms (all kinds). (319.01.c, 321.01.e)  CL: B, C Calc: YES Content Limit: Items may involve measurement, using a grid, or using a formula. Formulas are given within the item. When using a grid, lengths of sides of a figure are limited to whole numbers. The pi symbol ( $\pi$ ) will be used. Answer choices will be numerical only (e.g., answer 43.96, not $14\pi$ ). Items will not provide area or circumference and then require determining radius or diameter.	6.M.2.1.5 Convert units of measurement within each system in one-step problems (e.g., quarts to gallons and gallons to quarts). (319.01.e)  CL: B, C Calc: CN Content Limit: Conversion <i>within</i> systems only (not between). Customary length units are inches, feet, and yards; weight units are ounces and pounds; and capacity units are cups, pints, quarts, and gallons. Customary conversions must be given within item. Time units are seconds, minutes, hours, days, and weeks. Metric prefixes include milli-, centi-, and kilo- using base units of meter, gram and liter. Items should be set in real-world context.	6.M.2.1.6 Solve problems involving perimeter and area of rectangles. (321.01.d)  CL: B, C Calc: YES Content Limit: Formulas are not provided.	6.M.2.1.7 Use appropriate vocabulary and notations. (319.01.g)  CL: B, D Calc: CN Content Limit: Assessed in the classroom, not on the ISAT.

<b>Goal 2.2: Apply the concepts of rates, ratios, and proportions.</b>	6.M.2.2.1 Identify and write ratios and scales (on a map). (319.03.a)  CL: B, C, Calc: YES Content Limit: ‘On a map’ does not limit this to a map only. Use real-world situations. Scales in increments of 1, 2, 5, or 10, or consistent with real-world applications such as inches to feet as in a room (1 inch represents 5 feet), centimeters to meters as for a house (1 centimeter represents 2 meters) or inches to miles on earth (1 inch represents 60 miles).						
<b>Goal 2.3: Apply dimensional analysis.</b>	No objectives at this grade level.						

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

Goals:	Objective 1	Objective 2	Objective 3	Objective 4
<b>Goal 3.1: Use algebraic symbolism as a tool to represent mathematical relationships.</b>	6.M.3.1.1 Discuss the meaning and use of variables in simple expressions and equations. (320.01.a)  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.	6.M.3.1.2 Translate simple word statements into algebraic equations. (320.01.b)  CL: C Calc: CN Content Limit: Whole numbers less than 50. Equations include one operation. May include one or two variables.	6.M.3.1.3 Read and use symbols of “<,” “>,” and “=” to express relationships. (320.01.c)  CL: C Calc: CN Content Limit: Use whole numbers less than 50 and expressions with no more than one operation on each side of the relation symbol. May include one variable.	
<b>Goal 3.2: Evaluate algebraic expressions.</b>	6.M.3.2.1 Use the following properties in evaluating numerical expressions: commutative, associative, identity, zero, inverse, and distributive. (320.02.a)  CL: B, C Calc: CN Content Limit: Whole numbers less than 100.	6.M.3.2.2 Evaluate simple algebraic expressions using substitution.  CL: C Calc: CN Content Limit: Limit numbers to whole numbers less than 100.		

<p><b>Goal 3.3: Solve algebraic equations and inequalities.</b></p>	<p>6.M.3.3.1 Solve one-step equations with whole numbers. (320.03.a)</p> <p>CL: C Calc: YES Content Limit: Limit to whole number solutions less than 100. Addition, subtraction, multiplication, and division are allowed.</p>			
<p><b>Goal 3.4: Understand the concept of functions.</b></p>	<p>6.M.3.4.1 Extend simple patterns and state a rule (function) that generates the pattern using whole numbers, decimals, and fractions as inputs. (323.01.a)</p> <p>CL: E Calc: YES Content Limit: Patterns involve adding or subtracting whole numbers, decimals, or fractions. Fraction denominators limited to 2, 3, 4, and 5. Decimals to hundredths place. Items may ask the student to extend the pattern, state the rule for the pattern, or both.</p>	<p>6.M.3.4.2 Describe and extend patterns by using manipulatives and pictorial representations. (323.01.b)</p> <p>CL: D Calc: CN Content Limit: Pictorial only. Patterns must be growth patterns not repeating patterns. Shapes used may include squares and/or triangles.</p>	<p>6.M.3.4.3 Use mathematical models to show change in a real-world context. (323.01.c)</p> <p>CL: D Calc: YES Content Limit: Models appropriate for this grade level would include graphing linear relationships in the first quadrant on a coordinate plane.</p>	<p>6.M.3.4.4 Use appropriate vocabulary. (323.01.d)</p> <p>CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.</p>
<p><b>Goal 3.5: Represent equations, inequalities and functions in a variety of formats.</b></p>	<p>No objectives at this grade level.</p>			
<p><b>Goal 3.6: Apply functions to a variety of problems.</b></p>	<p>6.M.3.6.1 Use patterns to represent and solve simple problems.</p> <p>CL: C, D Calc: YES Content Limit: Given an illustration of a pattern or a situation in words that describes a pattern, students extend the pattern to solve a problem. Patterns may involve addition, subtraction, or multiplication and whole numbers less than 100.</p>			

## Standard 4: Concepts and Principles of Geometry

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6	Objective 7
<p><b>Goal 4.1: Apply concepts of size, shape, and spatial relationships.</b></p>	<p>6.M.4.1.1 Describe relationships among types of one- and two-dimensional geometric figures, using their defining properties. (321.01.a)</p> <p>CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.</p>	<p>6.M.4.1.2 Draw and measure various angles and shapes using appropriate tools. (321.01.b)</p> <p>CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.</p>	<p>6.M.4.1.3 Apply fundamental concepts, properties, and relationships among points, lines, rays, and angles. (321.01.c)</p> <p>CL: C Calc: CN Content Limit: Include parallel, intersecting and perpendicular lines. Angles include acute, right, obtuse, and straight. Symbols that may be used 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.</p>	<p>6.M.4.1.4 Describe reflections, translations, and rotations on various shapes. (321.01.g)</p> <p>CL: C Calc: CN Content Limit: 'Describe' allows for selection of description. Rotations may be clockwise or counterclockwise. Rotations are in increments of 90 degrees. Responses will not require naming of x-axis or y-axis. Only one transformation per item is allowed. Items may include a given description and a graphic shown for each answer option.</p>	<p>6.M.4.1.5 Identify congruence, similarities, and line symmetry of shapes. (321.01.d)</p> <p>CL: D Calc: CN Content Limit: Shapes limited to two-dimensional figures.</p>	<p>6.M.4.1.6 Discuss the spatial relationship between two- and three-dimensional objects. (321.01.f)</p> <p>CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.</p>	<p>6.M.4.1.7 Use appropriate vocabulary and symbols. (323.01.h)</p> <p>CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.</p>
<p><b>Goal 4.2: Apply the geometry of right triangles.</b></p>	<p>No objectives at this grade level.</p>						

<b>Goal 4.3: Apply graphing in two dimensions.</b>	6.M.4.3.1 Identify and plot points in the first quadrant on a coordinate plane. (321.02.a)  CL: C Calc: CN Content Limit: Coordinates are whole numbers. Point may be on positive x- or y-axis.						
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**Standard 5: Data Analysis, Probability, and Statistics**

Goals:	Objective 1	Objective 2	Objective 3
<b>Goal 5.1: Understand data analysis.</b>	6.M.5.1.1 Read and interpret tables, charts, and graphs, including broken line graphs, bar graphs, frequency tables, line plots, and circle graphs. (322.01.a)  CL: C, D Calc: YES Content Limit: Graphics may have at most ten data categories. Scales are in increments of 1, 2, 5, or 10, or must be consistent with real-world application. Bar graphs can be horizontal or vertical. Circle graphs may have at most six sectors. Data may be categorical or numerical.	6.M.5.1.2 Explain and justify stated conclusions drawn from tables, charts, and graphs. (322.01.b)  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.	6.M.5.1.3 Use appropriate vocabulary and notations. (322.01.c)  CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.
<b>Goal 5.2: Collect, organize, and display data.</b>	6.M.5.2.1 Collect, organize, and display the data with appropriate notation in tables, charts, and graphs, including broken line graphs, bar graphs, frequency tables and line plots. (322.02.a)  CL: C Calc: CR Content Limit: Given data, choose a display. Displays limited to broken line graph, bar graph, frequency table, and line plots. 'Collect' data should be assessed in the classroom, not on the ISAT.		

<p><b>Goal 5.3: Apply simple statistical measurements.</b></p>	<p>6.M.5.3.1 Find measures of central tendency – mean, median, and mode – with simple sets of data. (322.03.a)</p> <p>CL: C Calc: YES Content Limit: At most five numbers are used to calculate mean. At most nine numbers are used to calculate median (must be an odd number of items in data set given in numeric order). Mode can use up to 10 numbers. When determining the mode, the data set must contain a unique mode. Numbers are less than 300.</p>	<p>6.M.5.3.2 Calculate the range of a set of data. (322.03.b)</p> <p>CL: C Calc: CR Content Limit: Data set contains no more than 10 numbers. Data set may include decimals to tenths.</p>	
<p><b>Goal 5.4: Understand basic concepts of probability.</b></p>	<p>6.M.5.4.1 Predict, perform, and record results of simple probability experiments. (322.04.a)</p> <p>CL: C Calc: YES 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.</p>	<p>6.M.5.4.2 Use the language of probability. (322.04.b)</p> <p>CL: Calc: Content Limit: Assessed in the classroom, not on the ISAT.</p>	
<p><b>Goal 5.5: Make predictions or decisions based on data.</b></p>	<p>6.M.5.5.1 Make predictions based on data. (318.01.c)</p> <p>CL: E Calc: YES Content Limit: Data given in bar graph, circle graph, or table.</p>		