

6th Grade Mathematics

Goal	ISAT%	Objective Description (with content limits)	New Vocabulary Words
Standard 1: Number & Operation			
1.1: Understand and use numbers	27-31%	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.	billion budget computer consecutive integer magnitude negative number numeral order of operations percent positive number prime factorization rational number remainder set sixteenth square square unit squared tax Venn diagram
1.1: Understand and use numbers		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.	
1.1: Understand and use numbers		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.	
1.1: Understand and use numbers		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.	
1.2: Perform computations accurately		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) 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.	

6th Grade Mathematics

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1.2: Perform computations accurately		<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>	
1.2: Perform computations accurately		<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>	
1.3: Estimate and judge reasonableness of results		<p>6.M.1.3.3 Identify whether a given estimate is an overestimate or underestimate. (317.03.c)</p> <p>CL: E Calc: NO Content Limit: Estimates will involve addition or subtraction only.</p>	
Standard 2: Measurement			
2.1: Understand and use customary and metric measurements		<p>6.M.2.1.1 Select and use appropriate units and tools to make formal measurements in both systems. (319.01.a)</p> <p>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.</p>	circle circumference compass (circle) diameter formula height parallelogram pi (π) protractor radius ratio (map) rectangle scale (map) square triangle
2.1: Understand and use customary and metric measurements	13-18%	<p>6.M.2.1.3 Apply understanding of relationships to solve real-world problems related to elapsed time. (319.01.f)</p> <p>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.</p>	

6th Grade Mathematics

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2.1: Understand and use customary and metric measurements		<p>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)</p> <p>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 (π) will be used. Answer choices will be numerical only (e.g., answer 43.96, not 14π). Items will not provide area or circumference and then require determining radius or diameter.</p>	
2.1: Understand and use customary and metric measurements		<p>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)</p> <p>CL: B, C Calc: CN Content Limit: Conversion within 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.</p>	
2.1: Understand and use customary and metric measurements		<p>6.M.2.1.6 Solve problems involving perimeter and area of rectangles. (321.01.d)</p> <p>CL: B, C Calc: YES Content Limit: Formulas are not provided.</p>	
2.2: Apply the concepts of rates, ratios, and proportions		<p>6.M.2.2.1 Identify and write ratios and scales (on a map). (319.03.a)</p> <p>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).</p>	
Standard 3: Algebra & Functions			
3.1 Use algebraic symbolism as a tool to represent mathematical relationships		<p>6.M.3.1.2 Translate simple word statements into algebraic equations. (320.01.b)</p> <p>CL: C Calc: CN Content Limit: Whole numbers less than 50. Equations include one operation. May include one or two variables.</p>	algebraic equation change

6th Grade Mathematics

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3.1 Use algebraic symbolism as a tool to represent mathematical relationships	20-24%	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.	expression input inverse property manipulative mathematical model pictorial representation sequence simplify solution solve substitution term value variable
3.2: Evaluate algebraic expressions		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.	
3.2: Evaluate algebraic expressions		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.	
3.3: Solve algebraic equations and inequalities		6.M.3.3.1 Solve one-step equations with whole numbers. (320.03.a) CL: C Calc: YES Content Limit: Limit to whole number solutions less than 100. Addition, subtraction, multiplication, and division are allowed.	
3.4: Understand the concept of functions		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) 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.	
3.4: Understand the concept of functions		6.M.3.4.2 Describe and extend patterns by using manipulatives and pictorial representations. (323.01.b) CL: D Calc: CN Content Limit: Pictorial only. Patterns must be growth patterns not repeating patterns. Shapes used may include squares and/or triangles.	

6th Grade Mathematics

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3.4: Understand the concept of functions		6.M.3.4.3 Use mathematical models to show change in a real-world context. (323.01.c) 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.	
3.6: Use patterns to represent problems		6.M.3.6.1 Use patterns to represent and solve simple problems. 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.	
Standard 4: Geometry			
4.1: Apply concepts of size, shape, and spatial relationships		6.M.4.1.3 Apply fundamental concepts, properties, and relationships among points, lines, rays, and angles. (321.01.c) 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.	coordinate plane coordinate points coordinates equilateral triangle figure hexagon line symmetry octagon parallelogram pentagon plane figure reflection rhombus right triangle rotation spatial relationship translation trapezoid vertex
4.1: Apply concepts of size, shape, and spatial relationships	16-20%	6.M.4.1.4 Describe reflections, translations, and rotations on various shapes. (321.01.g) 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.	
4.1: Apply concepts of size, shape, and spatial relationships		6.M.4.1.5 Identify congruence, similarities, and line symmetry of shapes. (321.01.d) CL: D Calc: CN Content Limit: Shapes limited to two-dimensional figures.	

6th Grade Mathematics

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4.3: Apply graphing in two dimensions		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.	
Standard 5: Data Analysis, Probability, & Stats			
5.1: Understand data analysis	13-16%	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.	average broken line graph circle graph frequency frequency table line plot mean pie graph
5.2: Collect, organize, and display data		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.	
5.3: Apply simple statistical measurements		6.M.5.3.1 Find measures of central tendency – mean, median, and mode – with simple sets of data. (322.03.a) 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.	
5.3: Apply simple statistical measurements		6.M.5.3.2 Calculate the range of a set of data. (322.03.b) CL: C Calc: CR Content Limit: Data set contains no more than 10 numbers. Data set may include decimals to tenths.	

6th Grade Mathematics

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5.4: Understand basic concepts of probability		6.M.5.4.1 Predict, perform, and record results of simple probability experiments. (322.04.a) 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.	
5.5: Make predictions or decisions based on data		6.M.5.5.1 Make predictions based on data. (318.01.c) CL: E Calc: YES Content Limit: Data given in bar graph, circle graph, or table.	

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