

Standard 1: Algebraic Reasoning: Patterns and Relationships

5 th Grade	6 th Grade	7 th Grade	8 th Grade
<p>The student will use algebraic methods to describe patterns and solve problems in a variety of contexts.</p>	<p>The student will use algebraic methods to describe patterns, simplify and write algebraic expressions and equations, and solve simple equations in a variety of contexts.</p>	<p>The student will use number properties and algebraic reasoning to identify, simplify, and solve simple linear equations and inequalities.</p>	<p>The student will graph and solve linear equations and inequalities in problem solving situations.</p>
<p>1. Describe rules that produce patterns found in tables, graphs, and models, and use variables (e.g., boxes, letters, pawns, number cubes, or other symbols) to solve problems or to describe general rules in algebraic expression or equation form.</p>	<p>1. Generalize and extend patterns and functions using tables, graphs, and number properties (e.g., number sequences, prime and composite numbers, recursive patterns like the Fibonacci numbers).</p> <p>2. Write algebraic expressions and simple equations that correspond to a given situation.</p>	<p>1. Identify, describe, and analyze functional relationships (linear and nonlinear) between two variables (e.g., as the value of x increases on a table, do the values of y increase or decrease, identify a positive rate of change on a graph and compare it to a negative rate of change).</p>	
<p>2. Use algebraic problem-solving techniques (e.g., use a balance to model an equation and show how subtracting a number from one side requires subtracting the same amount from the other side) to solve problems.</p>			
<p>3. Recognize and apply the commutative, associative, and distributive properties to solve problems (e.g., $3 \times (2 + 4) = (3 \times 2) + (3 \times 4)$).</p>	<p>3. Use substitution to simplify and evaluate algebraic expressions (e.g., if $x = 5$ evaluate $3 - 5x$).</p>		
	<p>4. Write and solve one-step equations with one variable using number sense, the properties of operations, and the properties of equality (e.g., $1/3x = 9$).</p>	<p>2. Write and solve two-step equations with one variable using number sense, the properties of operations, and the properties of equality (e.g., $-2x + 4 = -2$).</p>	<p>1. Equations</p> <p>a. Model, write, and solve multi-step linear equations with one variable using a variety of methods to solve application problems.</p>
			<p>b. Graph and interpret the solution to one- and two-step linear equations on a number line with one variable and on a coordinate plane with two variables.</p>

			c. Predict the effect on the graph of a linear equation when the slope or y-intercept changes (e.g., make predictions from graphs, identify the slope or y-intercept in the equation $y = mx + b$ and relate to a graph).
			d. Apply appropriate formulas to solve problems (e.g., $d=rt$, $I=prt$).
		3. Inequalities: Model, write, solve, and graph one-step linear inequalities with one variable.	2. Inequalities: Model, write, solve, and graph one-step linear inequalities with one variable.

Standard 2: Number Sense and Operation

5 th Grade	6 th Grade	7 th Grade	8 th Grade
<p>The student will use numbers and number relationships to acquire basic facts. The student will estimate and compute with whole numbers, fractions, and decimals.</p>	<p>The student will use numbers and number relationships to solve a variety of problems. The student will estimate and compute with integers, fractions, and decimals.</p>	<p>The student will use numbers and number relationships to solve a variety of problems.</p>	<p>The student will use numbers and number relationships to solve a variety of problems.</p>
<p>1. Number Sense</p> <p>a. Apply the concept of place value of whole numbers through hundred millions (9 digits) and model, read, and write decimal numbers through the thousandths.</p>			
<p>b. Represent with models the connection between fractions and decimals, compare and order fractions and decimals, and be able to convert from one representation to the other to solve problems (e.g., use 10×10 grids, base 10 blocks).</p>	<p>1. Number Sense: Convert compare, and order decimals, fractions, and percents using a variety of methods.</p>	<p>1. Number Sense</p> <p>a. Compare and order positive and negative rational numbers.</p>	<p>1. Number Sense</p> <p>a. Represent and interpret large numbers and numbers less than one in exponential and scientific notation.</p>
<p>c. Identify and compare integers using real world situations. (e.g., owing money, temperature, or measuring elevations above and below sea level).</p>			
<p>d. *Identify and apply factors, multiples, prime, and composite numbers in a variety of problem-solving situations (e.g., build rectangular arrays for numbers 1–100 and classify as prime or composite, use common factors to add fractions).</p>		<p>b. Build and recognize models of perfect squares to find their square roots and estimate the square root of other numbers (e.g., the square root of 12 is between 3 and 4).</p>	
		<p>c. Demonstrate the concept of ratio and proportion with models (e.g., similar geometric shapes, scale models).</p>	

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2. Number Operations a. Estimate, add, or subtract decimal numbers with same and different place values to solve problems (e.g., $3.72 + 1.4$, $\$4.56 - \2.12).			
b. Estimate, add, or subtract fractions (including mixed numbers) to solve problems using a variety of methods (e.g., use fraction strips, use area models, find a common denominator).	2. Number Operations a. Multiply and divide fractions and mixed numbers to solve problems using a variety of methods.		
c. Estimate and find the quotient (with and without remainders) with two-digit divisors and a two- or three-digit dividend to solve application problems.	b. Multiply and divide decimals with one- or two-digit multipliers or divisors to solve problems.		
		2. Number Operations a. Solve problems using ratios and proportions.	
	b. Estimate and find solutions to single and multi-step problems using whole numbers, decimals, fractions, and percents (e.g., $7/8 + 8/9$ is about 2, $3.9 + 5.3$ is about 9).	b. Solve percent application problems (e.g., discounts, tax, finding the missing value of percent/part/whole).	
	c. Use the basic operations on integers to solve problems.	c. Simplify numerical expressions with integers, exponents, and parentheses using order of operations.	2. Number Operations c. Simplify numerical expressions with rational numbers, exponents, and parentheses using order of operations.
	d. Build and recognize models of multiples to develop the concept of exponents and simplify numerical expressions with exponents and parentheses using order of operations.		a. Use the rules of exponents, including integer exponents, to solve problems (e.g., $7^2 \cdot 7^3 = 7^5$, $3^{-10} \cdot 3^8 = 3^{-2}$). b. Solve problems using scientific notation.

Standard 3: Geometry

5 th Grade	6 th Grade	7 th Grade	8 th Grade
<p>The student will apply geometric properties and relationships.</p>	<p>The student will use geometric properties and relationships to recognize, describe, and analyze shapes and representations in a variety of contexts.</p>	<p>The student will apply the properties and relationships of plane geometry in a variety of contexts.</p>	<p>The student will use geometric properties to solve problems in a variety of contexts.</p>
<p>1. Compare and contrast the basic characteristics of circle and polygons (triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons).</p>	<p>1. Compare and contrast the basic characteristics of three-dimensional figures (pyramids, prisms, cones, and cylinders).</p>	<p>1. Classify regular and irregular geometric figures including triangles and quadrilaterals according to their sides and angles.</p>	<p>1. Construct models, sketch (from different perspectives), and classify solid figures such as rectangular solids, prisms, cones, cylinders, pyramids, and combined forms.</p>
	<p>2. Compare and contrast congruent and similar figures.</p>		
<p>2. Classify angles (e.g., acute, right, obtuse, straight).</p>		<p>2. Identify and analyze the angle relationships formed by parallel lines cut by a transversal (e.g., alternate interior angles, alternate exterior angles, adjacent, and vertical angles).</p>	
	<p>3. Identify the characteristics of the rectangular coordinate system and use them to locate points and describe shapes drawn in all four quadrants.</p>	<p>3. Construct geometric figures and identify geometric transformations on the rectangular coordinate plane (e.g., rotations, translations, reflections, magnifications).</p>	
			<p>2. Develop the Pythagorean Theorem and apply the formula to find the length of line segments, the shortest distance between two points on a graph, and the length of an unknown side of a right triangle.</p>

Standard 4: Measurement

5 th Grade	6 th Grade	7 th Grade	8 th Grade
The student use appropriate units of measure to solve problems in a variety of contexts.	The student will use measurements within the metric and customary systems to solve problems in a variety of contexts.	The student will use measurement to solve problems in a variety of contexts.	The student will use measurement to solve problems in a variety of contexts.
1. Measurement a. Compare, estimate, and determine the measurement of angles			
b. Convert basic measurements of volume, mass and distance within the same system for metric and customary units (e.g., inches to feet, hours to minutes, centimeters to meters).	2. Convert, add, or subtract measurements within the same system to solve problems (e.g., 9' 8" + 3' 6; 150 minutes = __ hours and __ minutes; 6 square inches = __ square feet).		
c. Develop and use the formula for perimeter and area of a square and rectangle to solve application problems.	1. Use formulas to find the circumference and area of circles in terms of pi.	1. Develop and apply the formulas for perimeter and area of triangles and quadrilaterals to solve problems. 2. Apply the formula for the circumference and area of a circle to solve problems.	1. Develop and apply formulas to find the surface area and volume of rectangular prisms, triangular prisms, and cylinders (in terms of pi).
			2. Apply knowledge of ratio and proportion to solve relationships between similar geometric figures.
		3. Find the area and perimeter of composite figures to solve application problems.	3. Find the area of a “region of a region” for simple composite figures and the area of cross sections of regular geometric solids (e.g., area of a rectangular picture frame).
2. Money: Solve a variety of problems involving money.			

Standard 5: Data Analysis

5 th Grade	6 th Grade	7 th Grade	8 th Grade
<p>The student will use data analysis, statistics and probability to interpret data in a variety of contexts.</p>	<p>The student will use data analysis, probability, and statistics to interpret data in a variety of contexts.</p>	<p>The student will use data analysis, probability, and statistics to interpret data in a variety of contexts.</p>	<p>The student will use data analysis, probability, and statistics to interpret data in a variety of contexts.</p>
<p>1. Data Analysis</p> <p>a. Compare and translate displays of data and justify the selection of the type of table or graph (e.g., charts, tables, bar graphs, pictographs, line graphs, circle graphs, Venn diagrams).</p>	<p>1. Data Analysis - Organize, construct displays, and interpret data to solve problems (e.g., data from student experiments, tables, diagrams, charts, graphs).</p>	<p>1. Data Analysis - Compare, translate, and interpret between displays of data (e.g., multiple sets of data on the same graph, data from subsets of the same population, combinations of diagrams, tables, charts, and graphs).</p>	<p>1. Data Analysis - Select, analyze and apply data displays in appropriate formats to draw conclusions and solve problems.</p>
<p>b. *Formulate questions, design investigations, consider samples, and collect, organize, and analyze data using observation, measurement, surveys, or experiments (e.g., how far can 5th graders throw a softball based on where it first hits the ground?).</p>			
<p>2. Probability</p> <p>a. Determine the probability of events occurring in familiar contexts or experiments and express probabilities as fractions from zero to one (e.g., find the fractional probability of an event given a biased spinner).</p>			
<p>b. Use the fundamental counting principle on sets with up to four items to determine the number of possible combinations (e.g. create a tree diagrams to see possible combinations).</p>	<p>2. Probability - Use the fundamental counting principle on sets with up to five items to determine the number of possible combinations.</p>	<p>2. Probability - Determine the probability of an event involving “or”, “and”, or “not” (e.g., on a spinner with one blue, two red and two yellow sections, what is the probability of getting a red or a yellow?).</p>	<p>2. *Probability - Determine how samples are chosen (random, limited, biased) to draw and support conclusions about generalizing a sample to a population (e.g., is the average height of a men’s college basketball team a good representative sample for height predictions?).</p>

5th Grade

3. Central Tendency: Determine the range (spread), mode (most often), and median (middle) of a set of data.

6th Grade

3. Central Tendency - Find the measures of central tendency (mean, median, mode, and range) of a set of data (with and without outliers) and understand why a specific measure provides the most useful information in a given context.

7th Grade

3. Central Tendency - Compute the mean, median, mode, and range for data sets and understand how additional data or outliers in a set may affect the measures of central tendency.

8th Grade

3. Central Tendency - Find the measures of central tendency (mean, median, mode, and range) of a set of data and understand why a specific measure provides the most useful information in a given context.