ST. JOHN'S EVANGELICAL LUTHERAN SCHOOL
Curriculum in Mathematics

"Where were you when I laid the earth's foundation? Tell me, if you understand. Who marked off its dimensions? Surely you know! Who stretched a measuring line across it? On what were its footings set, or who laid its cornerstone…?"

Job 38:4-6

Scriptural Rationale:

God's pattern in nature shows itself in spatial and quantitative works of God. The universe itself shows an intelligent design from our omniscient God. God shows us that he ordered all things so that each part works within the whole. The Bible refers to mathematical concepts.

Math is a necessary skill we need in order to live a life of service to God and our fellow man. The use of math can have implications involving Christian ethics and stewardship. Real world discussions and problem solving in math and finance might be one of the best places to teach children about honesty, fairness, and generosity from a Christian point of view. Math also has relevance to the students' future careers in which they will put their talents to use serving God and others. Finally, math patterns and orderliness display the wisdom and orderliness of our Creator God.

General Objectives:

Through a study of mathematics students will:

- Improve their understanding that God's world is interrelated—each part working within the whole.
- Develop an appreciation of how God brought various systems together in complementary equilibrium.
- Realize that creation's organization is based on the plans and decrees of God.
- Gain understanding of how something is "unique"—each thing assigned its place, given a role by God.
- Appreciate math as a system by which God runs His world.
- Learn perseverance in difficult tasks.

Grade-Specific Measurable Objectives:

Grades K3-K4 students will be able to…

Content Area	*Objectives*
Number and Numeration	Verbally count in sequence to 10 and beyond (to 31). Demonstrate flexibility in counting, including counting on and counting backward. Count objects with one-to-one correspondence and know that the last counting word tells "how many." Associate number names, quantities, and written numerals. Recognize and use different ways to represent numbers (for example, groups of objects or dots). Compare and order groups of objects using "more", "fewer", "less", and "same."
Operations and Computation	Solve and create number stories using concrete modeling, explore part-whole relationships (5 is made of 2 and 3).
Data and Chance	Collect and represent data in a variety of ways, focusing on concrete and pictorial representations. Use graphs to answer simple questions.
Measurement and Reference Frames	Distinguish and describe size attributes, including length, weight, and capacity or volume; compare objects according to various size attributes. Recognize standard measuring tools and their uses, begin to understand the concept of measurement units and the idea that measurement can be quantified. Sequence familiar events in time.
Geometry	Recognize and describe basic 2-dimensional geometric shapes; explore the relationships between basic 2-dimensional shapes and 3-dimensional shapes. Recognize and describe the position and location of objects. Use spatial reasoning in concrete tasks, such as putting together puzzles and creating collages and block structures.

Content Area	*Objectives*
Patterns, Functions, and Algebra	Recognize and match attributes of objects, such as size, shape, and color; use rules to sort objects; use rules to create and extend repeating patterns.

Grades K5 students will be able to…

Content Area	*Objectives*
Number and Numeration	Understand the meanings, uses, and representations of numbers:
	Count on by 1s to 100; count on by 2s, 5s, 10s, and count back by 1s with number grids, number lines and calculators.
	Count 20 or more objects; estimate the number of objects in a collection.
	Model numbers with manipulatives; use manipulatives to exchange 1s for 10s and 10s for 100s; recognize that digits can be used and combined to read and write numbers; read numbers up to 30.
	Use manipulatives to model half of a region or a collection; describe the model.
	Understand equivalent names for numbers:
	Use manipulatives, drawings, and numerical expressions involving addition and subtraction of 1-digit numbers to give equivalent names for whole numbers up to 20.
	Understand common numerical relations:
	Compare and order whole numbers up to 20.

Content Area	*Objectives*
Operations and Computation	Compute accurately:
	Use manipulatives, number lines, and mental arithmetic to solve problems involving the addition and subtraction of single-digit whole numbers; demonstrate appropriate fluency with addition and subtraction facts within 5.
	Understand the meanings of operations:
	Identify join and take-away situations.
Data and Chance	Select and create appropriate graphical representations of collected or given data:
	Collect and organize data to create class-constructed tally charts, tables, and bar graphs.
	Analyze and interpret data:
	Use graphs to answer simple questions.
	Understand and apply basic concepts of probability:
	Describe events using certain, possible, impossible, and other basic probability terms.
Measurement and Reference Frames	Understand the systems and processes of measurement; use appropriate techniques, tools, units, and formulas in making measurements:
	Use non-standard tools and techniques to estimate and compare weight and length; identify standard measuring tools.
	Identify pennies, nickels, dimes, quarters, and dollar bills.

Content Area	*Objectives*
Measurement and Reference Frames (cont.)	Use and understand reference frames: Describe temperature using appropriate vocabulary, such as hot, warm, and cold; identify a thermometer as a tool for measuring temperature. Describe and use measure of time periods relative to a day and week; identify tools that measure time.
Geometry	Investigate the characteristics and properties of two- and three-dimensional geometric shapes: Identify and describe plane and solid figures including circles, triangles, squares, rectangles, spheres, and cubes. Apply transformations and symmetry in geometric situations: Identify shapes having line symmetry.
Patterns, Functions, and Algebra	Understand patterns and functions. Extend, describe, and create visual, rhythmic, and movement patterns; use rules, which will lead to functions, to sort, make patterns, and play "What's My Rule?" and other games. Use algebraic notation to represent and analyze situations and structures. Read and write expressions and number sentences using the symbols +, - and =.

Grade 1 students will be able to…

Content Area	*Objectives*
Numbers and Numeration	Count on by 1s, 2s, 5s and 10s past 100 and back by 1s from any number less than 100 with and without number grids, number lines, and calculators. Count collections of objects accurately and reliably; estimate the number of objects in a collection. Read, write, and model with manipulatives whole numbers up to 1, 00; identify places in such numbers and the values of the digits in those places. Use manipulatives and drawings to model halves, thirds, and fourths as equal parts of a region or a collection; describe the model. Use manipulative to identify and model odd and even numbers. Use manipulatives, drawings, tally marks, and numerical expressions involving additions and subtraction of 1- or 2-digit numbers to give equivalent names for whole numbers up to 100. Compare and order whole numbers up to 1,000.
Operations and Computation	Demonstrate appropriate fluency with addition and subtraction facts through 10 +10. Use manipulatives, numbers grids, tally marks, mental arithmetic, and calculators to solve problems involving the addition and subtraction of 1-digit whole numbers with 2-digit whole numbers Calculate and compare the values of combinations of coins. Estimate reasonableness of answers to basic fact problems (e.g., Will 7+8 be more or less than 10?). Identify change-to-more, change-to-less, comparison, and parts-and-total situations.
Data and Chance	Collect and organize data to create tally charts, tables, bar graphs, and line plots. Use graphs to answer simple questions and draw conclusions; find the maximum of a data set. Describe events *using certain, likely, unlikely, impossible* and other basic probability terms.

Content Area	*Objectives*
Measurement and Reference Frames	Use nonstandard tools and techniques to estimate and compare weight and length; measure length with standard measuring tools. Know and compare the value of pennies, nickels, dimes, quarters and dollar bills; make exchanges between coins. Identify a thermometer as a tool for measuring temperature; read temperatures on a Fahrenheit and Celsius thermometers to the nearest 10° Use a calendar to identify days, weeks, months, and dates; tell and show time to the nearest half and quarter hour on an analog clock.
Geometry	Identify and describe plane and solid figures including circles, triangles, squares, rectangles, spheres, cylinders, rectangular prisms, pyramids, cones, and cubes. Identify shapes having line symmetry; complete line-symmetric shapes or designs.
Patterns, Functions, and Algebra	Extend, describe, and create numeric, visual, and concrete patters; solve problems involving function machines, "What is My Rule?" tables, and Frames-and-Arrows diagrams. Read, write, and explain expressions and number sentences using the symbols +, -, and = and the symbols > and < with cues; solve equations involving addition and subtraction. Apply the Commutative and Associative Properties of Addition and the Additive Identity to basic addition fact problems.

Grade 2 students will be able to…

Unit	*Objectives*
Unit 2-1: Numbers	To review number patterns, number sequences, number grids, and number lines. To review month, weeks, days, and telling time. To practice addition facts. To give equivalent names for numbers. To compare numbers using the symbols < , > , and =.

Unit	*Objectives*
Unit 2-2: Addition and Subtraction Facts	To make up, represent, and solve addition and subtraction number stories. To review and apply alternative strategies for addition and subtraction. To practice addition and subtraction facts for sums and differences up to and including 10.
Unit 2-3: Place Value, Money, and Time	To review place value in 2-digit and 3-digit numbers. To review coin values and exchanges among coins. To tell time and write time in digital-clock notation. To gather data by counting and to analyze data.
Unit 2-4: Addition and Subtraction	To solve number stories. To read and show temperatures. To develop different strategies for adding 2 and 3-digit numbers.
Unit 2-5: 3-D and 2-D shapes	To develop the concepts of point and line segment. Identify, name and classify polygons. To observe similarities and differences among 3-dimensional shapes. To explore symmetry.
Unit 2-6: Whole Number Operations and Number Stories	To introduce and practice array models. To review strategies for solving addition and subtraction problems. To develop procedures for multiplication/division problems.
Unit 2-7: Patterns and Rules	To describe patterns that result from skip counting by 2's, 5's, and 10's. To build mental arithmetic skills for adding 1-digit and multi-digit numbers. To make frequency tables, line plots, and bar graphs from real-life data.
Unit 2-8: Fractions	To review basic fraction concepts. To use fractions to name parts of a whole and of a collection. To find pairs of equivalent fractions. To solve number stories involving fractions.

Unit	*Objectives*
Unit 2-9: Measurement	To review measuring with yards and meters. To measure longer differences. To develop the concepts of perimeter and area. To know units of weight.
Unit 2-10: Decimals and Place Value	To review notation and equivalencies for money amounts. To provide experiences with comparing prices, estimating costs, and making change. To develop and extend place value concepts.
Unit 2-11: Whole Number Operations Revisited	To review addition and subtraction algorithms using sums of money. To introduce and practice the trade-first subtraction algorithm. To solve multiplication and division number stories. To practice multiplication and division facts using a products table and fact families.
Unit 2-12: Year End Reviews and Extensions	To review time equivalencies and calendar facts; to read times in different ways and show time on a clock face. To show events on a time line. To review and extend shortcuts and strategies for learning multiplication facts; to investigate the relationship multiplication and division. To collect and analyze data related to measurement, using line plots, frequency tables, and bar graphs; to identify the range, median, and mode.

Grade 3 students will be able to…

Content Area	*Objectives*
Numbers and Operations	Compare, order, read, and write numbers to 100,000. Identify the place value for each digit in numbers to 100,000; use expanded notation to represent this (e.g., 42,728 = 40,000 + 2,000 + 700 + 20 + 8). Round off numbers to the nearest tens, hundreds, thousands, and ten thousands to estimate sums and differences. Use addition and subtraction with numbers up to 100,000.

Content Area	*Objectives*
Numbers and Operations (cont.)	Memorize multiplication tables for numbers 1 through 10. Explore the unique properties of 0 and 1 in multiplication and division. Recognize and use the inverse relationship of multiplication and division. Solve simple problems involving multi-digit numbers multiplied or divided by a one-digit number. Verbalize how the remainder in a division expression could impact a real-life situation (e.g., with 3 children dividing up 10 pennies, what could you do with the last penny). Represent fractions and mixed numbers with numerals, concrete materials, drawings, and words. Locate whole and fractional numbers (1/4, 1/2, 3/4) on a number line. Use drawings and concrete materials to compare fractions (1/4, 1/2, 3/4), determining equivalency or if greater or less than. Demonstrate that fractions and decimals are different ways to represent the same concept (e.g., 1⁄10 = .1). Add and subtract numbers using simple fractions (with the same denominator) or decimal points.
Algebra	Choose appropriate operational symbols to make an expression (number statement) true (e.g., 5 __ 2 = 10). Solve problems and demonstrate relationships of numerical quantities using expressions, equations, or inequalities. Apply strategies and results from simpler problems to solve more complex problems. Recognize the principals of the commutative and associative properties, as used with addition, also can be used with multiplication; explore why these properties do not work with subtraction and division. Explain the relationships between addition and subtraction, multiplication and division, and addition and multiplication. Recognize and extend a linear pattern after determining its pattern or rule (e.g., insects have 6 legs, so multiply 5 insects by 6 to determine the total number of legs). Recognize that unlike addition, multiplication may involve different units. Develop and use strategies for making reasonable estimates.

Content Area	*Objectives*
Measurement	Determine and use the appropriate tools and units (U.S. and metric) to measure length, liquid volume (capacity), and weight. Read thermometers and compare temperatures in both Fahrenheit and Celsius. Carry out simple unit conversion within a measurement system (e.g., feet to inches, centimeters to meters, pounds to ounces). Use half units when measuring distances. Count money and make change using coins and bills by counting up to the nearest dollar. Tell time to the minute, using digital and analog clocks. Determine elapsed time to the minute. Know relationships among units of time. For example: know the number of minutes in an hour, days in a week, days in each month, and months in a year.
Geometry	Identify and draw points, lines, and segments. Identify parallel and perpendicular lines in various contexts and use them to describe and create geometric shapes such as right triangles, rectangles, and trapezoids. Make a physical model to show different size angles; identify angles as right, acute, obtuse, and straight angles. Classify and describe polygons using exact vocabulary (e.g., triangle, quadrilaterals, hexagon, and octagon). Determine the perimeter of simple geometric shapes. Explore the area and volume of solid figures through several means, i.e., by covering them with equal-size squares or counting the number of cubes needed to fill them. Identify and classify common three-dimensional geometric objects (e.g., sphere, pyramid, cone, cylinder) and find examples in the classroom environment; recognize the shapes from different perspectives. Explore symmetry using a mirror; find the line of symmetry of non-geometrical shapes, such as in some of the letters of the alphabet.
Data Analysis	Collect, display, and interpret data using frequency tables, bar graphs, picture graphs, and number line plots with a variety of scales. Use appropriate titles, labels, and units.

Grade 4 students will be able to…

Content Area	*Objectives*
Operations and Algebraic Thinking	Solve problems with whole number and all operations:
	Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations.
	Multiply or divide to solve word problems involving multiplicative comparison.
	Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess answers using mental computation and estimation strategies including rounding.
	Gain familiarity with factors and multiples:
	Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors.
	Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number.
	Determine whether a given whole number in the range 1–100 is prime or composite.
	Generate and analyze patterns:
	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

Content Area	*Objectives*
Numbers and Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers:

Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.

Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Use place value understanding to round multi-digit whole numbers to any place.

Use place value understanding and properties of operations to perform multi-digit arithmetic:

Fluently add and subtract multi-digit whole numbers using the standard algorithm.

Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Content Area	*Objectives*
Numbers and Operations: Fractions	Extend understanding of fraction equivalence and ordering: Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. Compare two fractions with different numerators and denominators. Recognize that comparisons are only valid when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers: Understand a fraction a/b with $a > 1$ as a sum of fractions 1/b. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Add and subtract mixed numbers with like denominators. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

Content Area	*Objectives*
Numbers and Operations: Fractions (cont.)	Understand a fraction a/b as a multiple of 1/b.
	Understand a multiple of *a*/*b* as a multiple of 1/*b*, and use this understanding to multiply a fraction by a whole number.
	Solve word problems involving multiplication of a fraction by a whole number.
	Understand decimal notation for fractions, and compare decimal fractions:
	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.
	Use decimal notation for fractions with denominators 10 or 100.
	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions.
Measurement and Data	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit:
	Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.

Content Area	*Objectives*
Measurement and Data (cont.)	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. Represent and interpret data: Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots Understand concepts of angle and measure angles: Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

Content Area	*Objectives*
Measurement and Data (cont.)	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problem.
Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles: Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Grade 5 students will be able to…

Content Area	*Objectives*
Multiplication	Model multiplication. Understand the relationship between multiplication and repeated addition. Multiply by one-digit whole numbers. Multiply by two-digit whole numbers.

Content Area	*Objectives*
Multiplication (cont.)	Multiply by three-digit whole numbers. Use regrouping in multiplication. Multiply by multiples of 10, 100, and 1,000. Multiplies decimal numbers. Multiplies fractions and mixed numbers.
Division	Model division. Divide whole numbers. Understand and use division notations: division box, division sign, and division bar. Solve division problems with remainders. Divide decimal numbers. Divide fractions and mixed numbers. Divide by multiples of 10 and 100.
Properties of Numbers and Operations	Identify even and odd numbers. Identify and use multiples. Identify and use factors. Understand divisibility. Use divisibility rules. Identify prime and composite numbers. Find the greatest common factor (GCF). Find the least common multiple (LCM). Use positive exponents with whole numbers. Understand the concept of square numbers and square roots. Use the correct order of operations. Learn fact families and understands inverse operations.
Fractions, Decimals, and Percents	Read and write fractions and mixed numbers. Locate and name fractions and mixed numbers on a number line. Compare and order fractions. Model a fractional part of a whole.

Content Area	*Objectives*
Fractions, Decimals, and Percents (cont.)	Name a fractional part of a whole. Model a fractional part of a group or set. Name a fractional part of a group or set. Find equivalent fractions. Find the least common denominator (LCD). Convert between improper fractions and mixed numbers. Simplify fractions. Read and write decimals. Locate and name decimals on a number line 102 66, 104. Compare and order decimals. Convert between fractions, decimals, and percents. Find a percent of a whole. Find a percent of a group or set. Write reciprocals of numbers. Find rates and ratios.
Estimation	Round whole numbers. Round decimals and mixed numbers. Round money amounts to the nearest dollar. Round money amounts to the nearest 25 cents. Estimate sums, differences, and products. Estimate quotients. Use compatible numbers.
Patterns, Relations, and Functions	Describe and extend an arithmetic or geometric sequence. Recognize patterns in multiplication. Complete function tables. Analyze a pattern or sequence to name a rule.

Content Area	*Objectives*
Variables, Expressions, and Equations	Solve addition equations using concrete and pictorial models. Solve subtraction equations using concrete and pictorial models. Solve multiplication equations using concrete and pictorial models. Solve division equations using concrete and pictorial models. Write and solve equations to solve word problems. Choose an appropriate formula to solve a problem. Solve one-step equations with whole numbers. Solve two-step equations with whole numbers.
Geometry	*Basic terms:* Describe and name points. Describe, identify, and draw segments. Describe, identify, and name angles. Describe, identify, and draw rays. Describe, identify, and draw lines. Describe planes. *Properties and relationships of lines:* Describe, identify, and draw parallel and perpendicular lines. Describe, identify, and draw horizontal, vertical, intersecting, and oblique lines. *Properties and relationships of angles:* Describe, identify, and draw acute, obtuse, right, and straight angles. Identify and describe interior and exterior angles. Calculate to find unknown angle measures. *2-Dimensional figures:* Identify and describe polygons by their attributes. Classify quadrilaterals. Understand congruence and similarity. Identify parts of a circle.

Content Area	*Objectives*
Geometry (cont.)	*3-Dimensional figures:* Identify and describe geometric solids by their attributes. Identify congruent parts of geometric solids. *Coordinate geometry:* Name and graph ordered pairs. Identify types of symmetry. Identify transformations. Graph reflections.
Measurement	*Measuring physical attributes:* Use customary units of length. Use customary units of weight. Use customary units of capacity. Use metric units of length. Use metric units of mass. Use metric units of capacity. Use temperature scales: Fahrenheit, Celsius. Measure time. *Measuring elapsed time:* Choose an appropriate unit of measurement. *Systems of measurement:* Convert in the U.S. Customary System. Convert in the metric system. *Solving measurement problems:* Find the perimeter of polygons. Estimate perimeter.

Content Area	*Objectives*
Measurement (cont.)	Find the area of rectangles. Find the area of complex figures. Find the volume of rectangular prisms. Estimate volume. Find the measures of a circle. *Solving problems of similarity:* Solve problems involving scale factor. Solve problems involving scale drawings: two- and three- dimensional problems. *Using appropriate measurement instruments:* Use rulers (U.S. Customary and metric). Use a thermometer. Use a stopwatch. Use a compass. Use a protractor.
Data Analysis and Probability	*Data collection and representation:* Collects and displays data. Represents and interprets data using pictographs. Represents and interprets data using bar graphs. Represents and interprets data using tables and charts. Represents and interprets data using frequency tables. Represents and interprets data using line graphs. Represents and interprets data using circle graphs. Represents and interprets data using line plots. Represents and interprets data using histograms. Represents and interprets data using stem-and-leaf plots. Represents and interprets data using Venn diagrams. Chooses an appropriate graph . Draws and compares different representations.

Content Area	*Objectives*
Data Analysis and Probability (cont.)	*Data set characteristics:* Finds the mean, median, mode, and range. *Probability:* Describes the likelihood that an event will occur. Calculates simple probability. Calculates experimental probability. Makes predictions based on experiments.
Problem Solving and Connections	*Focus Strategies:* Act it out or makes a model. Draw a picture or diagram. Find/extend a pattern. Guess and check. Make an organized list. Make it simpler. Make or use a table, chart, or graph. Use logical reasoning. Work backwards. Write a number sentence or equation. *Communication:* Question and respond. Work with partners or in groups. Communicate mathematical ideas through objects, words, pictures, numbers, technology, and symbols. Write about math.

Content Area	*Objectives*
Problem Solving and Connections (cont.)	*Mathematical Reasoning:* Use algebraic reasoning. Use spatial reasoning. Classify and sort. Explain an answer. Make generalizations. Justify conclusions. *Connections:* Connect math to geography. Connect math to history. Connect math to science. Connect math to sports.

Grade 6 students will be able to…

Content Area	*Objectives*
Using Digits	Read and write whole numbers and decimals. Understand place value to trillions. Understand place value to hundred trillions. Use a number line (integers, fractions). Use a number line (rational and irrational numbers). Read and write numbers in expanded notation. Use comparison symbols (=, <, >). Use comparison symbols (=, <, >, ≤, ≥). Compare and orders rational numbers. Compare and orders real numbers. Read and write numbers in scientific notation.

Content Area	*Objectives*
Addition	Add integers. Add decimal numbers. Add fractions and mixed numbers. Add algebraic terms. Add polynomials. Add radical expressions. Solve addition problems with regrouping.
Subtraction	Subtract integers. Subtract decimal numbers. Subtract fractions and mixed numbers. Subtract algebraic terms. Subtract polynomials. Solve subtraction problems with regrouping.
Multiplication	Multiply integers. Multiply decimal numbers. Multiply fractions and mixed numbers. Multiply algebraic terms. Multiply radical expressions. Multiply binomials. Solve multiplication problems with regrouping. Understand multiplication notations: $a \times b$, $a \cdot b$, $a(b)$.
Division	Understand division notations: division box, division sign, and division bar. Divide integers. Solve division problems with remainders. Divide decimal numbers. Divide fractions and mixed numbers. Divide algebraic terms.

Content Area	*Objectives*
Properties of Numbers and Operations	Identify even and odd integers. Identify factors. Identify multiples. Understand divisibility. Identify prime and composite numbers. Find the greatest common factor (GCF). Find the least common multiple (LCM). Use divisibility tests (2, 3, 5, 9, 10). Use divisibility tests (4, 6, 8). Find the prime factorization of whole numbers. Use positive exponents with whole numbers, decimals, fractions. Use positive exponents with integers. Use negative exponents with whole numbers. Use negative exponents with rational numbers. Find square roots. Find cube roots. Follow the order of operations. Use inverse operations.
Estimation	Round whole numbers, decimals, mixed numbers. Estimate sums, differences, products, quotients. Estimate squares and square roots. Determine the reasonableness of a solution. Find approximate irrational numbers. Find a fractional part of a whole, group, set, or number. Write equivalent fractions. Convert between fractions, terminating decimals, and percents. Convert between fractions, repeating decimals, and percents. Find the reciprocals of numbers. Simplify complex fractions involving one term in numerator/denominator. Simplify complex fractions involving two terms in numerator/denominator.

Content Area	*Objectives*
Estimation (cont.)	Find a percent of a whole, group, set, or number. Work with percents greater than 100%. Solve percent of change problems. Solve proportions with an unknown in one term. Find unit rates and ratios in proportional relationships. Apply proportional relationships such as similarity, scaling, and rates. Estimate and solves application problems involving percent. Estimate and solves application problems involving proportional relationships such as similarity and rate. Compare and contrast proportional and non-proportional linear relationships(direct and inverse variations).
Patterns, Relations, and Functions	Generate an alternate representation of data. Use, describe, and extend arithmetic sequences (with a constant rate of change). Complete input/output tables. Analyze a pattern to verbalize a rule. Analyze a pattern to write an algebraic expression. Evaluate an algebraic expression to extend a pattern. Compare and contrast linear and nonlinear functions.
Variables, Expressions, Equations, and Inequalities	Solve equations using concrete and pictorial models. Formulate a problem situation for a given equation with one unknown variable. Formulate an equation with one unknown variable given a problem situation. Solve one-step equations with whole numbers. Solve two-step equations with whole numbers. Solve one-step equations with fractions and decimals. Solve two-step equations with fractions and decimals. Solve equations with exponents. Solve systems of equations with two unknowns by graphing. Graph an inequality on a number line. Graph pairs of inequalities on a number line.

Content Area	*Objectives*
Variables, Expressions, Equations, and Inequalities (cont.)	Solve inequalities with one unknown. Validate an equation solution using mathematical properties.
Geometry	*Basic terms:* Describe and names points. Describe, identify, and draw segments. Describe, identify, and draw rays. Describe, identify, and draw lines. Describe, identify, and name angles. Describe planes. *Properties and relationships of lines:* Describe, identify, and draw parallel, perpendicular, and intersecting lines. Describe, identify, and draw horizontal, vertical, and oblique lines. Find and use the slope of a line. *Properties and relationships of angles:* Describe, identify, and draw acute, obtuse, right, and straight angles. Identify complementary and supplementary angles. Identify and find the measures of angles formed by transversals. Construct an angle bisector. Identify vertical angles. Calculate to find unknown angle measures. *Properties and relationships of polygons:* Identify and describe regular polygons. Identify and describe interior and exterior angles. Find and use the sum of angle measures. Understand the effects of scaling on area . Understand and applies similarity and congruence. Classify triangles and quadrilaterals.

Content Area	*Objectives*
Geometry (cont.)	*3-Dimensional figures:* Represent three-dimensional figures in two-dimensional world using nets. Draw three-dimensional figures. *Coordinate geometry:* Name and graph ordered pairs. Determine slope from the graph of line. Identify reflections, translations, rotations, and symmetry. Graph reflections across the horizontal or vertical axes.
Measurement	*Measuring physical attributes:* Use customary units of length, area, volume, weight, capacity. Use metric units of length, area, volume, weight, capacity. Use temperature scales: Fahrenheit, Celsius. Use units of time. *Systems of measurement:* Convert units of measure in the U.S. Customary System. Convert units of measure in the metric system. Convert between systems, including by using unit multipliers. *Solving measurement problems:* Find the perimeter of polygons, circles, and complex figures. Find the area of triangles, rectangles, and parallelograms. Find the area of circles. Find the area of semicircles and sectors. Find the area of complex figures. Find the surface area of right prisms and cylinders. Estimate area and volume.. Find the volume of right prisms, cylinders, pyramids, and cones.

Content Area	*Objectives*
Measurement (cont.)	*Solving problems of similarity:* Solve problems involving scale factors. Solve problems involving similar triangles. Solve problems involving scale drawings: two-dimensional. *Using appropriate measurement instruments:* Use rulers (U.S. Customary and metric). Use a compass. Use a protractor. Use a thermometer.
Data Analysis and Probability	*Data collection and representation:* Collect and display data. Make and interpret tables and charts. Make and interpret frequency tables. Make and interpret pictographs. Make and interpret line graphs. Make and interpret histograms. Make and interpret bar graphs. Make and interpret circle graphs. Make and interpret line plots. Make and interpret stem-and-leaf plots. Choose an appropriate graph. Draw and compare different representations. *Data set characteristics:* Find mean, median, mode, and range. Select the best measure of central tendency for a given situation.

Content Area	*Objectives*
Data Analysis and Probability (cont.)	*Probability:* Calculate experimental probability. Make predictions based on experiments. Evaluate accuracy of predictions in experiments. Calculate theoretical probability. Identify sample spaces. Calculate simple probability. Calculate the probability of compound events. Calculate the probability of independent events.
Problem Solving and Connections	*Focus Strategies:* Act it out or makes a model. Draw a picture or diagram. Find/extend a pattern. Guess and check. Make an organized list. Make it simpler. Make or use a table, chart, or graph. Use logical reasoning. Work backwards. Write a number sentence or equation. *Communication:* Question and respond. Work with partners or in groups. Communicate mathematical ideas through objects, words, pictures, numbers, technology, and symbols. Write about math.

Content Area	*Objectives*
Problem Solving and Connections (cont.)	*Mathematical Reasoning:* Use algebraic reasoning. Use spatial reasoning. Classify and sort. Explain an answer. Make generalizations. Justify conclusions. *Connections:* Connect math to art. Connect math to geography. Connect math to history. Connect math to science. Connect math to social studies. Connect math to sports.

Grade 7 students will be able to…

Content Area	*Objectives*
Numbers and Operations	*Seventh-grade students will develop knowledge about numbers and their related operations, increase in computational skill, and explore using a growing numerical sense in real-life situations:* Explain the meaning of exponents that are negative or zero. Write, compare, and solve problems using large numbers in scientific notation. Explore integers, rational numbers, and common irrational numbers; order and compare these numbers; and place them on a number line.

Content Area	*Objectives*
Numbers and Operations (cont.)	Explain the meaning of adding, subtracting, multiplying, and dividing integers. Use integers to solve real-life problems. Develop and use strategies to estimate and judge the reasonableness of results. Explain, expand, and compute whole number powers of whole numbers. Explore the inverse relationship between squaring positive integers and taking the square root of the result. Determine without a calculator the two integers between which the square root of a number lies. Multiply and divide expressions involving exponents with a common base. Find the prime factorization of whole numbers, and represent using exponents when applicable. Use the concepts of greatest common factor, least common multiple, prime factorization, and relatively prime numbers to solve problems. Represent and solve problem situations that can be modeled by and solved using the concepts of absolute value, exponents, and square roots. Explore differences between rational and irrational numbers. Convert terminating decimals into fractions in reduced form. Use order of operations and properties to simplify numerical expressions involving integers, fractions, and decimals. Interpret, model, and use percents greater than 100 and less than 1 to solve problems. Develop and analyze algorithms for computing with percents. Calculate the percentage increase and decrease of a given quantity.

Content Area	*Objectives*
Numbers and Operations (cont.)	Compute simple fractions, decimals, and powers using mental arithmetic. Convert among fractions, decimals, and percents. Use the appropriate form of a rational number (fraction, decimal, or percent) when problem solving. Use estimation to decide if answers are reasonable. Use division to find unit rates and ratios in proportional relationships such as speed, density, price, recipes, and student-teacher ratio. Calculate discounts, markups, interest rates, taxes, tips, and commissions in real-life scenario problem solving.
Algebra	*Seventh-grade students will investigate quantitative patterns and relationships, representing them with algebraic symbols and statements and using strategies to draw logical conclusions.* Represent and analyze patterns, rules, and functions with words, tables, graphs, and simple variable expressions. Write an expression, a formula, an equation, or an inequality that represents a verbal description using variables and appropriate operations. Recognize a variety of uses for variables (e.g., placeholder for an unknown quantity, generalization for a pattern). Use formulas in problem-solving situations. Use properties of rational numbers and order of operations to evaluate numerical expressions and simplify algebraic expressions. Justify each step in the process. Algebraically represent situations and solve problems involving two-step linear equations and inequalities in one variable using inverse operations, and check the answers. Analyze how a change in one variable results in the change of another.

Content Area	*Objectives*
Algebra (cont.)	Solve an equation or formula including two variables for a given variable. Evaluate expressions and formulas by substituting integers. Use correct algebraic terminology (e.g., variable, equation, term, coefficient, inequality, expression, and constant). Define slope as vertical change per unit of horizontal change. Recognize that a straight line has a constant slope or rate of change. Identify and describe situations with constant or varying rates of change. Determine the slope of a line from its graph. Draw the graph of a line given an equation, two points on the line, or one point and the slope of the line. Examine the characteristics of functions in tables, graphs, and equations. Identify whether a function is linear or nonlinear. Use graphing, with or without technology, to estimate solutions, and check the estimates with analytic approaches. Represent inequalities on a number line or a coordinate plane. Use inductive reasoning to make and test conjectures. Analyze problems by identifying relationships, determining relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns. Determine whether an exact or approximate solution is appropriate.

Content Area	*Objectives*
Algebra (cont.)	Apply strategies and results from simpler problems to solve more complex problems.
	Know, use, and translate calculator notational conventions to mathematical notation. Explain why the use of a calculator does not replace the need for mental computation.
Measurement	*Seventh-grade students will explore a variety of measurement forms and apply them functionally, using the appropriate tools and procedures:*
	Use appropriate tools to record measurements to a desired accuracy.
	Compare and convert lengths, areas, volumes, weights, capacities, times, and temperatures within measurement systems.
	Analyze problem situations involving measurement concepts, select appropriate strategies, and use an organized approach to solve increasingly complex problems.
	Use manipulatives, technology, experimentation, and modeling to visualize similar objects and solve problems involving similarity.
	Interpret and create scale drawings, construct scale models, and solve problems related to scale factors and proportional relationships.
	Use and explore formulas to determine the perimeter and area of basic two-dimensional shapes and the surface area and volume of basic three-dimensional shapes.
	Estimate and compute the area of irregular two-dimensional shapes by dividing them into basic shapes.
	Use manipulatives and modeling tools to compute the surface area and volume of three-dimensional objects built from rectangular solids.

Content Area	*Objectives*
Measurement (cont.)	Explain the difference between surface area and volume, and demonstrate that two objects may have the same surface area but different volumes or vice versa.
	Describe the affect on the surface area and volume of a three-dimensional object when the measurements of the object are changed.
	Select appropriate units for measuring derived measurements.
	Decide whether a solution is reasonable in the context of the original problem.
Geometry	*Seventh-grade students will grow in understanding the characteristics and relationships of geometric shapes, and will use spatial reasoning to analyze and solve problems:*
	Describe and express relationships between parts and attributes of similar and congruent figures using proportional reasoning. Determine and use scale factors for similar figures to solve problems.
	Compare and contrast two-dimensional figures or three-dimensional objects by their characteristics (e.g., all squares are rectangles).
	Identify important characteristics of two-dimensional figures (e.g., median, altitude).
	Identify parallel and intersecting lines and pairs of angles formed by parallel lines cut by a transversal, and determine their measure. Recognize complementary and supplementary angles.
	Use triangle sum relationships to solve problems.
	Use the Pythagorean theorem to solve problems involving right triangles. Test the theorem using direct measurement.

Content Area	*Objectives*
Geometry (cont.)	Explore necessary conditions for triangle congruence.
	Apply properties of similar and congruent triangles to solve problems involving missing length and angle measures.
	Use coordinate graphs to plot simple shapes, find lengths and areas related to shapes, and find images under translations (slides), rotations (turns), and reflections (flips).
	Explore transformations of two-dimensional figures using a variety of methods (e.g., paper folding, tracing, and graph paper). Recognize that some transformations preserve the length of segments, and that figures resulting from slides, turns, and flips are congruent to the original figures.
	Identify the line and rotation symmetries of two-dimensional figures to solve problems.
	Draw representations of three-dimensional geometric objects. Make two-dimensional nets (patterns) for three-dimensional objects.
	Identify and construct basic elements of geometric figures by using a compass and straightedge.
Data Analysis	*Seventh-grade students will collect data, organize and display information through appropriate methods, and interpret and evaluate statistics to draw conclusions and make decisions:*
	Analyze, interpret, and display data in appropriate bar, line, or circle graphs; stem-and leaf plots; scatter plots; or box-and-whisker plots. Justify the choice of display.
	Analyze a set of data by using and comparing combinations of measures of center (mean, median, and mode) and measures of spread (range, quartile), and describe how they may be affected by additional data, particularly outliers.

Content Area	*Objectives*
Data Analysis (cont.)	Make predictions based on statistical data. Analyze data displays, including ways they can be misleading (e.g., size of classes in a histogram, scale, number of categories in a circle graph). Construct opposing arguments based on analysis of the same data, using different graphical representations. Analyze ways in which the wording of questions or selection of data samples can influence survey results. Identify methods for selecting a sample (e.g., convenience sampling, responses to survey, random sample) that are representative of a population. Distinguish between random and biased samples, and identify possible sources of bias in sampling. Identify misuses of statistical data in articles, advertisements, and other media. Find the number of possible permutations (arrangements) of a group of objects using a tree diagram. Express probabilities as percentages, fractions, proportions, and decimals. Given that p is the probability of an event occurring, determine the probability of the event not occurring (1– p). Recognize that the probability of either one or the other of two disjointed events occurring is the sum of the two individual probabilities. Compute probabilities of compound events (e.g., multiple coin tosses, multiple number cubes), using such methods as organized lists, tree diagrams, and area models. Make predictions based on theoretical probabilities, design and conduct an experiment, compare actual results to predicted results, and explain differences.

Grade 8 students will be able to…

Content Area	*Objectives*
Numbers and Operations	*Eighth-grade students will develop knowledge about numbers and their related operations, increase in computational skill, and explore using a growing numerical sense in real-life situations:*
	Read, write, compare, and solve problems using large and small numbers in scientific notation.
	Recognize natural numbers, whole numbers, integers, rational numbers, and irrational numbers and their relation to the set of real numbers.
	Describe the effects of multiplication and division on integers.
	Evaluate negative integer exponents. Interpret positive integer powers as repeated multiplication and negative integer powers as repeated division or multiplication by the multiplicative inverse.
	Apply order of operations to simplify expressions and perform computations involving integers, exponents, and radicals.
	Explain and use the inverse and identity properties and use inverse relationships in problem-solving situations.
	Determine when an estimate is sufficient and when an exact answer is necessary in problem situations.
	Compare and order rational numbers and percents. Know that every rational number is terminating or repeating and that every irrational number is non-repeating.
	Understand that computations with an irrational number and a rational number (other than zero) produce an irrational number.

Content Area	*Objectives*
Numbers and Operations (cont.)	Estimate, compute, and solve problems involving rational numbers, including ratio, proportion, and percent. Evaluate the reasonableness of solutions.
	Find the square root of perfect squares. Place non-perfect squares on an integer number line. Use, explain, and simplify fractional exponents.
	Solve problems by computing simple and compound interest.
	Use mental techniques to compute with common fractions, decimals, powers, and percents.
	Demonstrate an understanding that use of a calculator requires appropriate mathematical reasoning and does not replace the need for mental computation.
Algebra	*Eighth-grade students will investigate quantitative patterns and relationships, representing them with algebraic symbols and statements and using strategies to draw logical conclusions:*
	Describe a relationship using a variety of representations (e.g., table, graph, symbolic form), and compare and contrast the forms.
	Generalize patterns and sequences represented graphically or numerically using words, a formula for the nth term, or recursive notation. Compare and contrast the various forms. Recognize arithmetic or geometric progressions.
	Use physical models to add and subtract monomials and polynomials and to multiply a polynomial by a monomial.
	Demonstrate an understanding of rate as a measure of one quantity with respect to another quantity.

Content Area	*Objectives*
Algebra (cont.)	Describe the relationship between the graph of a line and its equation. Explain the meaning of slope as a constant rate of change. Interpret the y-intercept in real-world problems. Identify and graph linear functions, and identify lines with positive, negative, parallel, and perpendicular slopes. Find the slope of a linear function given the equations, and write the equation of a line given the slope and any point on the line. Write, simplify, and evaluate algebraic expressions and equations. Use symbolic algebra, graphs, and tables to represent situations and solve problems. Extend the use of covariants where **y** depends on **x**. Determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic equation. Determine if the relation is a function. Use graphing to estimate solutions and check their estimates with analytic approaches. Write and solve linear equations and inequalities graphically, symbolically, and using technology, including those involving absolute values. Solve systems of two linear equations using the substitution method, and identify approximate solutions graphically. Apply basic factoring technique to polynomials, including finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials.

Content Area	*Objectives*
Algebra (cont.)	Represent simple quadratic functions using verbal descriptions, tables, graphs, and formulas, and translate among these representations. Solve quadratic equations by factoring, the quadratic formula, or completing the square. Know that the roots are the x intercepts. Simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms. Analyze non-routine problems by identifying relationships, modeling, guessing, illustrating, telling relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns. Decide whether a solution is reasonable in the context of the original situation. Appropriately use examples and counterexamples to make and test conjectures, justify solutions, and explain results.
Measurement	*Eighth-grade students will explore a variety of measurement forms and apply them functionally, using the appropriate tools and procedures:* Compare and order the relative size of U.S. customary units and metric units. Convert units from one measurement system to another through proportional relationships and formulas. Identify equivalent area and volume measurements within a system of measurement (e.g., square feet to square inches). Derive formulas for surface area and volume, and justify them using geometric models and common materials. Use formulas, models, and graphs to solve and determine the reasonableness of the results for problems involving rates and measurements, such as velocity and density.

Content Area	*Objectives*
Measurements	Use ratio and proportion to solve problems involving scale factors, area, and volume.
	Make indirect measurements, including heights and distances, using proportions.
	Find the sum of the interior angles of regular convex polygons with and without measuring the angles with a protractor.
	Use conventional formulas to find surface area and volume of basic three-dimensional shapes.
	Estimate and compute the area of irregular two-dimensional shapes and the volume of irregular three-dimensional objects by breaking them down into more basic geometric objects.
Geometry	*Eighth-grade students will grow in understanding the characteristics and relationships of geometric shapes and will use spatial reasoning to analyze and solve problems:*
	Identify and describe basic properties of geometric shapes: altitudes, diagonals, angle and perpendicular bisectors, central angles, radii, diameters, and chords.
	Perform simple constructions such as bisectors of segments and angles, copies of segments and angles, and perpendicular segments.
	Recognize the angles formed and the relationship between the angles when two lines intersect and when parallel lines are cut by a transversal.
	Use the Pythagorean theorem and its converse to solve problems in two and three dimensions.
	Use proportions to solve problems involving similar figures.

Content Area	*Objectives*
Geometry (cont.)	Represent and analyze shapes using coordinate geometry.
	Draw the results of translations, reflections, rotations, and dilations of objects in the coordinate plane, and determine characteristics of objects that remain fixed.
	Determine the number of rotational symmetries of regular polygons.
	Create isometric drawings for three-dimensional figures.
	Construct, develop, and communicate logical arguments about geometric figures and patterns.
Data Analysis	*Eighth-grade students will collect data, organize and display information through appropriate methods, and interpret and evaluate statistics to draw conclusions and make decisions:*
	Formulate questions, design studies, and collect data about a characteristic. Identify different methods of selecting samples, analyzing the strengths and weaknesses of each method and the possible bias in a sample or display.
	Analyze, interpret, and display single- and two-variable data in appropriate bar, line, and circle graphs; stem-and-leaf plots; and box-and-whisker plots. Compare different representations of the same data, and evaluate how well each representation shows important aspects of the data.
	Find, use, and interpret measures of center, outlier, and spread, including range and interquartile range.
	Make conjectures about the results of experiments.

Content Area	*Objectives*
Data Analysis (cont.)	Represent two-variable data with a scatterplot on the coordinate plane, and describe how the data points are distributed. If the pattern appears to be linear, draw a line that appears to best fit the data, and write the equations of that line. Identify a hypothesis and conclusion in logical deduction. Use counterexamples to show that an assertion is false, and recognize that a single counterexample is sufficient to refute an assertion. Identify claims based on statistical data and, in simple cases, evaluate the reasonableness of the claim. Convert between odds and probabilities. Understand and recognize equally likely events. Explain and use appropriate terminology to describe complementary and mutually exclusive events and determine their probabilities. Find the number of possible arrangements of several objects by using the basic counting principle. Explain the difference between inductive and deductive reasoning, and identify and provide examples of each. Make and test conjectures using inductive reasoning.

In addition to the standard mathematics curriculum for Grades K3 through 8, qualified students are eligible to study the following Grade 9 algebra concepts:

Classify real numbers
Understand variables and expressions
Simplify expressions using the product property of exponents
Use order of operations
Find absolute value and add real numbers
Subtract real numbers
Simplify and compare algebraic expressions
Use unit analysis to convert measures
Evaluate and compare algebraic expressions
Add and subtract real numbers
Determine the experimental probability of an event
Multiply and divide real numbers
Use the properties of real numbers to simplify expressions
Calculate and compare square roots
Determine the theoretical probability of an event
Use the distributive property to simplify expressions
Simplify and evaluate variable expressions
Translate between words and algebraic expressions
Combine like terms
Solve one-step equations by adding or subtracting
Graph on a coordinate plane
Graph a relationship
Solve one-step equations by multiplying or dividing
Analyze and compare statistical graphs
Solve two-step equations
Solve decimal equations
Differentiate between relations and functions
Solve multi-step equations
Identify misleading representations of data
Solve equations with variable on both sides
Solve literal equations
Graph functions
Analyze the effects in sampling, surveys, and bar graphs
Use rates, ratios, and proportions
Simplify and evaluate expressions with integer and zero exponents
Find the probability of independent and dependent events
Recognize and extend arithmetic sequences
Locate and use intercepts
Write and solve proportions
Use scientific notation
Simplify expressions using the GCF
Use the distributive property to simplify rational expressions
Simplify and evaluate expressions using the power property of exponents
Use deductive and inductive reasoning
Find rates of change and slope
Solve percent problems
Simplify rational expressions
Find slope using the slope formula
Translate between words and inequalities
Simplify expressions with square roots and higher-order roots
Solve problems involving the percent of change
Analyze measures of central tendency
Write equations in slope-intercept form
Graph inequalities
Use logical reasoning in investigation
Simplify like expressions with like denominators
Determine the equation of a line given two points
Add and subtract polynomials

Display data in a box-and-whisker plot
Solve systems of linear equations by graphing
Identify, write and graph direct variation
Find the least common multiple
Multiply polynomials
Solve systems of linear equations by substitution
Find special products of binomials
Transform linear functions
Simplify radical expressions
Display data in stem-and-leaf plots and histograms
Solve systems of linear equations by elimination
Identify, write and graph inverse variation
Write equations of parallel and perpendicular lines
Solve inequalities by adding or subtracting
Solve and classify special systems of linear equations
Identify mutually exclusive and inclusive events
Add and subtract radical expressions
Solve inequalities by multiplying or dividing
Compare direct and inverse variation
Make and analyze scatter plots
Factor trinomials
Solve compound inequalities
Solve absolute-value equations
Multiply radical expressions
Solve two-step and multi-step inequalities
Graph rational functions
Factor trinomials using the GCF
Calculate frequency distributions
Identify and write joint variation
Solve inequalities with variable on both sides
Solve multi-step compound inequalities
Factor special products
Identify quadratic functions
Solve problems using the Pythagorean Theorem
Calculate the midpoint and length of a segment
Factor polynomials by grouping
Multiply and divide rational expressions
Identify characteristics of quadratic functions
Add and subtract rational expressions
Choose a factoring method
Solve absolute-value inequalities
Simplify complex fractions
Divide polynomials
Solve multi-step absolute-value equations
Combine rational expressions with unlike denominators
Graph quadratic functions
Graph linear inequalities
Solve quadratic equations by factoring
Solve rational equations
Solve quadratic equations by graphing
Transform quadratic functions
Solve multi-step absolute-value inequalities
Solve quadratic equations using square roots
Divide radical expressions
Solve quadratic equations by completing the square
Recognize and extend geometric sequences
Solve radical equations
Graph absolute-value functions
Identify and graph exponential functions
Graph systems of linear inequalities
Use the quadratic formula
Investigate exponential growth and decay
Solve problems involving permutations
Graph and solve systems of linear and quadratic equations

Interpret the discriminant
Graph square-root functions
Graph cubic functions
Solve simple and compound interest problems
Use trigonometric ratios
Solve problems involving combinations
Graph and compare linear, quadratic and exponential functions
Use geometric formulas to find the probability of an event
Investigate matrices