

NUMBER SENSE
Grade 6

CONTENT STANDARD 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

State Model Content Standards Grades 5-8	District Expectations Grade 6
1.1 Demonstrate meanings for integers, rational numbers, percents, exponents, square roots, and pi (π) using physical materials and technology in problem-solving situations.	<ul style="list-style-type: none"> • Locate integers and commonly used positive rational numbers, including fractions, mixed numbers, terminating decimals through thousandths, and percents, on the number line. • Demonstrate the equivalence of commonly used fractions, decimals, and percents. • Demonstrate the meaning of square roots of perfect square numbers. • Model equivalent fraction and decimal quantities using manipulatives. • Demonstrate the meaning of percent as part per 100. • Demonstrate the meaning of exponents (e.g., 3^2 means 3×3).
1.2 Reading, writing, and ordering rational numbers (e.g., π)	<ul style="list-style-type: none"> • Read, write, and order positive rational numbers, including commonly used fractions and terminating decimals through thousandths. • Compare positive fractions and decimals using the symbols =, <, > • Apply place value concepts from thousandths through millions.
1.3 Applying number theory concepts (e.g., primes, factors, multiples; to represent number in various ways.)	<ul style="list-style-type: none"> • Write the prime factorization of whole numbers in exponential form (e.g., $36 = 2^2 \times 3^2$). • Determine the greatest common factor, least common multiple, primes, composites, and divisibility.
1.4 Using the relationships among fractions, decimals, and percents, including the concepts of ratio and proportion in problem-solving situations.	<ul style="list-style-type: none"> • Represent fractions, decimals, and percents as ratios. • Demonstrate the similarities and difference between ratios and fractions. • Interpret and use ratios in different contexts (e.g., batting averages, miles per hour; to show the relative sizes of two quantities using appropriate notations, including a/b, a to b, $a:b$).
1.5 Developing, testing, and explaining conjectures (statements which can be shown to be true or false) about properties of integers and rational numbers.	<ul style="list-style-type: none"> • Demonstrate that division by zero is undefined. • Demonstrate the vocabulary of number sets (e.g., integers, rational, whole, counting).
1.6 Using number sense to estimate and justify the reasonableness of solutions to problems involving integers and rational numbers.	<ul style="list-style-type: none"> • Estimate using appropriate techniques, determine, and then justify the reasonableness of solutions to problems involving whole numbers and sums and differences of commonly used fractions and decimals. (e.g., \cdot, $1/2 + 1/3$; is it closer to 0, $1/2$,or 1?)

ALGEBRA
Grade 6

CONTENT STANDARD 2: Students use algebraic methods to explore, model and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

State Model Content Standards Grades 5-8	District Expectations Grade 6
2.1 Representing, describing, and analyzing patterns and relationships using table, graphs, verbal rules, and standard algebraic notation.	<ul style="list-style-type: none"> • Represent, describe, and analyze patterns for relationships involving positive rational numbers. • Use variables such as boxes, letters, or other symbols to describe a general rule and to solve problems. • Use manipulatives to model mathematical situations. • Write number sentences to represent math problem situations. • Create and extend patterns using manipulatives, numbers, and graphic representations. • Make a T-chart from data to represent the relationship existing in the data. • Compare similar patterns that occur in different situations (e.g., 1, 4, 9...and the graphic display).
2.2 describing patterns using variables, expressions, equations, and inequalities in problem-solving situations.	<ul style="list-style-type: none"> • Solve problems from patterns involving positive rational numbers using tables, graphs, and rules. • Use equal, greater than, and less than symbols to show the relationship between two whole numbers, fractions and/or decimals. • . • Use the rules for order of operations to solve multi-step problems.
2.3 analyzing functional relationships to explain how a change in one quantity results in a change in another (e.g., how the area of a circle changes as the radius increased, or how a person's height changes over time.	<ul style="list-style-type: none"> • Describe how a change in one quantity affects the other in any functional relationship involving positive rational numbers. • Demonstrate the concepts of balance and equality by considering what happens when quantities are added to or subtracted from either or both sides of an equation
2.4 Distinguishing between linear and nonlinear functions through informal investigations.	<ul style="list-style-type: none"> • Explain whether data presented in a chart or graph is changing at a constant rate.
2.5 Solving simple linear equations in problem-solving situations using a variety of methods (informal, formal, and graphical) and a variety of tools (physical materials, calculators and computers).	<ul style="list-style-type: none"> • Solve problems using tables or pictures involving linear relationships with whole numbers.

STATISTICS AND PROBABILITY
Grade 6

CONTENT STANDARD 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning and processes used in solving these problems.

State Model Content Standards Grades 5-8	District Expectations Grade 6
3.1 Reading and constructing displays of data using appropriate techniques (e.g., line graphs, circle graphs, scatter plots, box-and-whisker plots, stem-and-leaf plates; and appropriate technology.	<ul style="list-style-type: none"> • Organize and display data using appropriate graphs (e.g., line, bar, circle, plots, frequency tables, stem-and-leaf, and histograms). • Read, interpret, and draw conclusions from various displays of data. • Collect data using a variety of appropriate data collection instruments (e.g., survey, interview, etc).
3.2 Displaying and using measures of central tendency, such as mean, median, and mode, and measures of variability, such as range and quartiles.	<ul style="list-style-type: none"> • Determine the mean of a set of data by using an algorithm. • Distinguish between mean, median, and mode. • Determine which measure of central tendency is most evident when given various displays of the same set of data (e.g., line, bar, circle, stem-and-leaf, and histograms) • Determine which measure of central tendency is most evident when given various displays of the same set of data (e.g., line, ...) • Determine the range of a set of data.
3.3 Evaluating arguments that are based on statistical claims.	<ul style="list-style-type: none"> • Recognize a misleading display of data due to scaling. • Recognize the use or the misuse of statistics.
3.4 Formulating hypotheses, drawing conclusions, and making convincing arguments based on data analysis.	<ul style="list-style-type: none"> • Analyze data and draw conclusions to predict outcomes based on data displays such as line graphs, bar graphs, or frequency tables.
3.5 Determining probabilities through experiments or simulations.	<ul style="list-style-type: none"> • Pictorially demonstrate the equivalence of probabilities as either a common fraction, decimal, or percent.
3.6 Making predictions and comparing results using both experimental and theoretical probability drawn from real-world problems.	<ul style="list-style-type: none"> • Predict the probability of independent compound events, such as the sum of two number cubes, conduct an experiment or simulation to determine the probability, and assign the probability to all possible sums of two number cubes. • Demonstrate that the sum of all probabilities of two number cubes equals one. • Design a fair game, an unfair game, and write the directions for each game using two chance devices, such as two number cubes or two spinners.
3.7 Using counting strategies to determine all the possible outcomes from an experiment (e.g., the number of ways students can line up to have their picture taken).	<ul style="list-style-type: none"> • Determine the number of outcomes of independent compound events, such as the sum of tossing two number cubes, by making a list or tree diagram.

GEOMETRY
Grade 6

CONTENT STANDARD 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.

State Model Content Standards Grades 5-8	District Expectations Grade 6
4.1 Constructing two-and-three-dimensional models using a variety of materials and tools.	<ul style="list-style-type: none"> • Build models of triangular prisms including their nets. • Use a compass to draw circular figures.
<p>4.2 Describing, analyzing, and reasoning about the properties (e.g., parallelism, perpendicularity, congruence) of two-and three-dimensional figures;</p> <p style="text-align: center;">And</p> <p>Applying the concepts of ration, proportion, and similarity in problem-solving situations.</p>	<ul style="list-style-type: none"> • Identify, compare, and analyze thee attributes of two and three-dimensional shapes and develop vocabulary to describe these attributes (<i>e.g., acute, obtuse, right angle, parallel lines, perpendicular lines, intersecting lines, and line segments</i>). • Make and test conjectures about geometric relationships and e=develop logical arguments to justify conclusions.
4.3 Solving problems using coordinate geometry.	<ul style="list-style-type: none"> • Identify the four quadrants of the coordinate plane. • Set up a coordinate graph (include axes, origin, and scale) and use it to mark and read coordinate pairs in all four quadrants. • Draw a graph from a given scenario.
4.4 Solving problems involving perimeter and area in two dimensions, and involving surface area and volume in three-dimensions.	<ul style="list-style-type: none"> • Solve problems involving perimeter and area of parallelograms and rhombuses. • Solve problems involving volume of triangular prisms. • Solve problems involving surface area of rectangular prisms.
4.5 Transforming geometric figures using reflections, translations, and rotations to explore congruence.	<ul style="list-style-type: none"> • Identify congruent shapes using reflections, rotations, and translations. • Show lines of symmetry on a two-dimensional figure.

MEASUREMENT
Grade 6

CONTENT STANDARD 5: Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

State Model Content Standards Grades 5-8	District Expectations Grade 6
<p>5.1 Estimating, using, and describing measures of distance, perimeter, area, volume capacity, weight, mass, and angle comparison.</p> <p>Estimating, making, and using direct and indirect measurements to describe and make comparisons.</p>	<ul style="list-style-type: none"> • Compare the estimate and direct measurement of the length of the sides and height of parallelograms and rhombuses. • Compare the estimate and direct measurement of the perimeter and area of parallelograms and rhombuses. • Compare the estimate and direct measurement of the volume of triangular prisms. • Compare the estimate and direct measurement of the surface area of rectangular prisms. • Continue to estimate and use capacity, length, area, perimeter, weight, and mass measurements. • Compare the estimate and direct measurement of measures of angles. • Draw, compare and classify acute, obtuse, right, and straight angles. • Compare the estimate and direct measurement of acute, obtuse, and right angles. • Use a protractor to measure and draw angles. • Demonstrate and compare the connections between area and perimeter and shape and capacity.
<p>5.2 Reading and interpreting various scales including those based on number lines, graphs, and maps.</p>	<ul style="list-style-type: none"> • Read and interpret scales on number lines, graphs, and maps. • Select the appropriate scale for a given problem. • Construct scale drawings.
<p>5.3 Developing and using formulas and procedures to solve problems involving measurement.</p>	<ul style="list-style-type: none"> • Develop, use and compare formulas for perimeter and area of parallelograms and rhombuses using appropriate units. • Develop, use and compare the formula for volume of triangular prisms using appropriate units. • Find and compare the relationship between the circumference and diameter of a circle (e.g., the value of pi). • Find the circumference of a circle and begin to use the formula. • Compare the relationship between a process used to find area of rectangles, triangles, and parallelograms and the formula for finding these areas. • Develop the formula for finding the volume of rectangular prisms and cubes by using cubic manipulatives.
<p>5.4 Describing how a change in an object's linear dimensions affects its perimeter, area, and volume.</p>	<ul style="list-style-type: none"> • Describe how changes in the base of a triangle affect its area when its height is constant. • Describe how changes in one of the dimensions of a rectangular prism affect its volume.
<p>5.5 Selecting and using appropriate units and tools to measure to the degree of accuracy required in a particular problem-solving situation.</p>	<ul style="list-style-type: none"> • Select, use and compare the appropriate units and tools to measure to the degree of accuracy required in a particular problem. • Measure the length of the sides and heights of parallelograms and rhombuses to the nearest $\frac{1}{2}$ inch and/or nearest millimeter. • Measure angles and draw complements and supplements, where possible, using a protractor. • Use the formulas for finding the area of rectangles, triangles, and parallelograms to solve problems.

COMPUTATION
Grade 6

CONTENT STANDARD 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning involved in solving these problems.

State Model Content Standards Grades 5-8	District Expectations Grade 6
3.1 Using models to explain how ratios, proportions, and percents can be used to solve real-world problems	<ul style="list-style-type: none"> • Demonstrate the equivalence of fractions, decimals, and percents. • Use concrete materials to determine commonly used percentages in real-world problems.
3.2 Constructing, using and explaining procedures to compute and estimate with whole numbers, fractions, decimals, and integers.	<ul style="list-style-type: none"> • Demonstrate order of operations including exponents with whole numbers. • Demonstrate with proficiency division of whole numbers with a two-digit divisor. • Choose the appropriate representation of the remainder in a division problem. • Demonstrate equivalencies of mixed numerals and improper fractions. • Simplify fractions. • Use paper and pencil to demonstrate with proficiency addition and subtraction of fractions including mixed numerals. • Count change up to the amount given. • Maintain computation skills in problem situations requiring: <ul style="list-style-type: none"> • Addition, subtraction, multiplication of whole numbers. • Division with 3-digit dividend and 1-digit divisor. • Division with 3-digit dividend and a multiple of 5, 10 or 100 as divisor. • Addition and subtraction of fractions with like and unlike denominators. • Addition and subtraction of decimals through hundredths.
3.3 Developing, applying and explaining a variety of different estimation strategies in problem-solving situations, and explaining why an estimate may be acceptable in place of an exact answer.	<ul style="list-style-type: none"> • Determine from real-world problems whether an estimated or exact answer is acceptable. • Use estimation techniques before performing operations. • Use mental mathematics strategies to solve computation problems.
3.4 Selecting and using appropriate methods for computing with commonly used fractions and decimals, percents, and integers in problem-solving situations from among mental arithmetic, estimation, paper and pencil calculator, and computer methods, and determining whether the results are reasonable.	<ul style="list-style-type: none"> • Determine whether information given in a problem-solving situation is sufficient, insufficient, or extraneous. • Use the correct operation and appropriate method when given a real-world problem-solving situation (e.g., mental math, estimation, paper and pencil, calculator, or computer to solve the problem). • Create and illustrate a real-world problem when given a math sentence with sums and differences of common fractions and decimals.