NUMBER SENSE
Grade 7

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 7
1.1 Demonstrate meanings for integers, rational numbers, percents, exponents, square roots, and pi (π) using physical materials and technology in problem-solving situations.	• Recognize the equivalence of positive fractions, decimals, and percents. • Use models to represent integers. • Use exponents to indicate how many times a base is used as a factor for positive integers. • Identify subsets of rational numbers, including counting and whole numbers and integers. • Demonstrate the meaning of square roots of perfect square numbers. • Demonstrate the meaning of percent as part per 100.
1.1 Reading, writing, and ordering rational numbers (e.g., pi [π]).	• Read, write, order, and compare positive rational numbers and integers. • Locate positive rational numbers and integers on a number line (e.g., -6, 1.81, 1 2/3).
1.2 Applying number theory concepts (e.g., primes, factors, multiples) to represent numbers in various ways.	• Describe numbers by their characteristics (e.g., even, odd, prime, composite, divisibility, square).
1.3 Using the relationships among fractions, decimals, and percents, including the concepts of ratio and proportion in problem-solving situations.	• Demonstrate the equivalent relationships among fractions, decimals, and percents. • Explore the concepts of ratio and proportion in problem solving situations.
1.4 Developing, testing, and explaining conjectures (statements which can be shown to be true or false) about properties of integers and rational numbers.	• Develop, test, and explain conjectures about properties of numbers (associative, commutative, identity, distributive, multiplicative) property of zero on whole and rational numbers.
1.6 Using number sense to estimate and justify the reasonableness of solutions to problems involving integers, rational numbers, and common irrational numbers (e.g. pi (π).	• Estimate using appropriate techniques, solve, and then justify the reasonableness of solutions to problem involving positive rational number or integers.

ALGEBRA
Grade 7

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 7
2.1 Representing, describing, and analyzing patterns and relationships using tables, graphs, verbal rules, and standard algebraic notation.	• Represent, describe, and analyze numeric or geometric patterns with positive rational numbers and integers using tables, graphs, rules or symbols.
2.2 Describing patterns using variables, expressions, equations, and in equalities in problem-solving situations.	• Solve problems from patterns involving positive rational numbers and integers using tables, graphs, and rules. • Find the rule (formula) that describes a simple pattern.
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 increases, or how a person's height changes over time.	• Predict and describe how a change in one quantity results in a change in another quantity in a line or relationship.
2.4 Distinguishing between linear and nonlinear functions through informal investigations.	• Distinguishing between linear and nonlinear functions through informal investigations.
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.)	• Solve simple linear equations in problem solving situations using a variety of methods (informal, formal, and graphic). • Translate written words to algebraic expressions/equations to words.

DATA
Grade 7

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 7
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 plots; and appropriate technology.	• Construct a histogram or stem-and-leaf plot from a set of data. • Read, interpret, and draw conclusions from histograms, circles graphs, stem-and-leaf plots and scatter plots.
3.2 Displaying and using measures of central tendency, such as mean, median, and mode, and measures of variability, such as range and quartiles.	• Given a display of data (e.g., line plot, stem-and-leaf plot, list of data; determine mean, median, mode, and range. • Identify the most appropriate measure of central tendency which typifies each set and justify the reasoning when given sets of data.
3.3 Evaluating arguments that are based on statistical claims.	• Evaluate arguments that are based on measures of central tendency or data displays. • Recognize the use and/or misuse of statistics in society.
3.4 Formulating hypotheses, drawing conclusions, and making convincing arguments based on data analysis.	• Analyze data and draw conclusions and make predictions based on data displays (e.g., histograms and stem-and-leaf plots).
3.5 Determining probabilities through experiments or simulations.	• Determine probabilities through experiments or simulations.
3.6 Making predictions and comparing results using both experimental and theoretical probability drawn from real-world problems.	• Report the probability of an event in fraction, decimal and percent form. • Determine the probability of simple independent events (e.g., tossing a coin and rolling a die). • Make predictions based on theoretical probability.
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.	• Determine the number of outcomes for a given event using a variety of strategies (e.g., a list, tree diagram, or an organized list).

GEOMETRY
Grade 7

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 7
4.1 Constructing two-and three –dimensional models using a variety of materials and tools.	• Construct two-and three–dimensional models using a variety of materials and tools.
4.2 Describing, analyzing, and reasoning about the properties (e.g., parallelism, perpendicularity, congruence) of two- and three-dimensional figures	• Describe, analyze and reason informally about the attributes of two- and three-dimensional shapes (e.g., angles, sides, edges, faces, vertices).
4.3 Applying the concepts of ration, proportion, and similarity in problem-solving situations.	• Identify and compare similar shapes using ratio, proportion, or scale factor.
4.4 Solving problems using coordinate geometry.	• Construct a coordinate graph and plot ordered integer pairs in all four quadrants.
4.1 Solving problems involving perimeter and area in two dimensions, and involving surface area and volume in three-dimensions.	• Solve problems involving the circumference of a circle (formulas not provided). • Solve problems involving the areas of circles, triangles, and parallelograms (formulas not provided). • Solve problems involving the surface area of rectangular prisms (formulas not provided).
4.2 Transforming geometric figures using reflections, translations, and rotations to explore congruence.	• Use reflections, translations, and/or rotations, to determine congruence between figures.

MEASUREMENT
Grade 7

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 7
5.1 Estimating, using, and describing measures of distance, perimeter, area, volume, capacity, weight, mass, and angle comparison.	• Estimate area of irregular shapes, angle measurement, or weight of common objects.
5.2 Estimating, making, and using direct and indirect measurements to describe and make comparisons.	• Estimate, make, and use direct and indirect measurements to describe and make comparisons.
5.3 Reading and interpreting various scales including those used on number lines, graphs, and maps.	• Read and interpret scales on number lines, graphs, and maps (e.g., given a map and a scale, determine the distance between two point on the map. • Select the appropriate scale for a given problem (e.g., using the appropriate scale when setting up a graph or intervals on a histogram).
5.4 Developing and using formulas and procedures to solve problems involving measurement.	• Develop a procedure or formula to find the area and perimeter of irregularly shaped polygons. (e.g., trapezoids, regular hexagons, regular octagons).
5.5 Describing how a change in an object's linear dimensions affects its perimeter, area, and volume.	• Describe how a change in an object's linear dimensions affects its perimeter and area (e.g., how a change in the radius or diameter will affect the circumference and area of a circle).
5.6 Selecting and using appropriate units and tools to measure to the degree of accuracy required in a particular problem-solving situation.	• Select and use the appropriate units and tools to measure to the degree of accuracy required in a particular problem, (e.g., reconstruct a replica of a given figure).

COMPUTATION
Grade 7

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 7
6.1 Using models to explain how ratios, proportions, and percents can be used to solve real-world problems.	• Use concrete materials or pictures to explain how ratios, proportion, and percents can be used to solve real world problems.
6.2 Constructing, using, and explaining procedures to compute and estimate with whole numbers, fractions, decimals, and integers.	• Apply order of operations (including exponents) with positive rational numbers. • Add, subtract, multiply, and divide positive rational numbers or integers. • Explain strategies to add, subtract and multiply positive rational numbers.
6.3 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.	• Determine from real-world problems whether an estimated or exact answer is acceptable. • Use estimation techniques before performing operations.
6.4 Selecting and using appropriate methods for computing with commonly-used fractions and decimals, percents, and integers in problem-solving situations from among mental math, estimation, paper and pencil, calculator, and computer methods, and determining whether the results are reasonable.	• Determine what information is necessary or missing in a problem solving situation. • Solve problems involving positive rational numbers and/or integers. • Create a situation that matches a given number sentence involving positive rational numbers or integers, excluding division of fractions and decimals. • Justify the reasonableness of a solution in a problem solving situation.