

NUMBER SENSE
Grade 5

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 5
1.1 Demonstrating meanings for whole numbers, and commonly-used fractions and decimals (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75), and representing equivalent forms of the same number through the use of physical models, drawings, calculators, and computers.	<ul style="list-style-type: none"> • Locate commonly used positive rational numbers including terminating decimals through hundredths, fractions (halves, thirds, fourth, eighths, and tenths), mixed number, and percents on a number line. • Using concrete materials, demonstrate the equivalence of commonly-used fractions, terminative decimals, and percents (e.g., $\frac{7}{10} = 0.7 = 70\%$). • Demonstrate the meaning of square numbers using pictorial or concrete materials.
1.2 Reading and writing whole numbers and knowing place-value concepts and numeration through their relationships to counting, ordering, and grouping.	<ul style="list-style-type: none"> • Read, write, and order positive rational numbers, including commonly-used fractions and terminating decimals through hundredths. • Compare commonly-used proper fractions and terminating decimals. • Rounds to the nearest 1,00, 10,000 and 100,000. • Rounds decimals to the nearest tenth, and hundredth.
1.3 Using numbers to count, to measure, to label, and to indicate location.	<ul style="list-style-type: none"> • Identify factors, multiples, and prime/composite numbers. • Recognize equivalent representations for the same number and generate them by decomposing and composing numbers (e.g., 36 can be represented as $30+6$, $20+16$, 9×4, $40-4$, three dozen and/or the square of 6). • Describe numbers by their characteristics (e.g., even, odd, prime, square).
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"> • Demonstrate the equivalent relationships among commonly used fractions, decimals, and percents using pictorial or concrete materials. • Convert between mixed numbers and improper fractions and simplifies fractions and vice versa.
1.5 Developing, testing, and explaining conjectures about properties of integers and rational numbers.	<ul style="list-style-type: none"> • Develop, test, and explain conjectures about properties of whole numbers and commonly-used fractions and decimals. • Use number properties (commutative, associative, identity) to evaluate numeric expressions and solve equations.
1.6 Using number sense to estimate and justify the reasonable ness of solutions to problems involving integers, rational numbers, and common irrational numbers such as $\sqrt{2}$, $\sqrt{5}$, and π .	<ul style="list-style-type: none"> • Use number sense to estimate sums and differences of fractions and decimals using benchmarks (e.g., $\frac{5}{6} + \frac{7}{8}$ must be equal to an amount less than 2, since each fraction is less than 1). • Use appropriate techniques to estimate, determine, and then justify the reasonableness of solutions to problems involving whole numbers. • Uses and understands exponents.

ALGEBRA
Grade 5

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 5
2.1 Reproducing, describing, and analyzing patterns and relationships using tables, graphs, verbal rules, and standard algebraic notation.	<ul style="list-style-type: none"> • Represent, describe, and analyze geometric and numeric patterns (whole numbers). • Recognize that a variable is used to represent an unknown quantity. • Identify such properties as commutativity, associativity, and distributivity and use them to compute with whole numbers.
2.2 Describing patterns using variables, expressions, equations, and inequalities in problem-solving situations.	<ul style="list-style-type: none"> • Solve problems by representing and analyzing patterns using words, tables, and graphs. • Understands and uses basic order of operations.
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).	<ul style="list-style-type: none"> • Describe how a change in one quantity results in a change in another quantity.
2.4 Distinguishing between linear and nonlinear functions through informal investigations.	<ul style="list-style-type: none"> • Match a description of a situation with its continuous graph.
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"> • Use tables, charts, concrete objects, or pictures to solve problems involving linear relationships with whole numbers.

STATISTICS AND PROBABILITY
Grade 5

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 5
3.1 Reading and constructing displays of data using appropriate techniques (e.g., line graphs, circle graphs, scatter plots, box plots, stem-and-leaf plots) and appropriate technology.	<ul style="list-style-type: none"> • Differentiate between categorical and numerical data. • Organize, construct, and interpret displays of data including tables, charts, pictographs, line plots, bar graphs, and line graphs. • Read, interpret, and draw conclusions from various displays of data. • From a given scenario, choose the correct graph from possible graph representations.
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"> • Distinguish between the median and mode of a data set. • Determine the range of a set of data. • Solve simple problems involving mean.
3.3 Evaluating arguments that are based on statistical claims.	<ul style="list-style-type: none"> • Analyze data and draw conclusions based on data displays such as tables, charts, line graphs, bar graphs, pictographs, and line plots, and Venn diagrams.
3.4 Formulating hypotheses, drawing conclusions, and making convincing arguments based on data analysis.	<ul style="list-style-type: none"> • Describe how data collection methods affect the nature of the data set. • Make convincing arguments based on data analysis.
3.5 Determining probabilities through experiments or simulations.	<ul style="list-style-type: none"> • Describe events such as likely or unlikely and explain the degree of likelihood using words, such as certain, equally likely, and impossible. • Use zero to represent the probability of an impossible event and one to represent the probability of a certain event. • Use common fractions to represent the probability of events that are neither certain nor impossible.
3.6 Making predictions and comparing results using both experimental and theoretical probability drawn from real world problems.	<ul style="list-style-type: none"> • Using one chance device, such as a number cube or a spinner, design a fair game and an unfair game, and explain why they are fair and unfair. • Make predictions based on data obtained from simple probability experiments.
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"> • Solve problems using strategies for finding all possible combinations and/or arrangements.

GEOMETRY
Grade 5

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 5
4.1 Constructing two- and three-dimensional models using a variety of materials and tools.	<ul style="list-style-type: none"> • Represent a three-dimensional shape in two dimensions (e.g., recognizing a three-dimensional figure from its net).
4.2 Describing, analyzing, and reasoning informally about the properties (e.g., parallelism, perpendicularity, congruence) of two- and three-dimensional figures.	<ul style="list-style-type: none"> • Identify, compare, and analyze the attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes (e.g., acute, obtuse, right angle, parallel lines, perpendicular lines, intersecting lines, and line segments). • Make and test conjectures about geometric relationships and develop logical arguments to justify conclusions.
4.3 Applying the concept of ratio, proportion, and similarity in problem-solving situations.	<ul style="list-style-type: none"> • Compare and identify similarities and differences in real-world situations.
4.4 Solving problems using coordinate geometry.	<ul style="list-style-type: none"> • Given a coordinate graph, read coordinate pairs in quadrant one. • Choose the coordinate graph, which represents a given data set. • Use maps and grids to locate points, create paths and measure distances within a coordinate system.
4.5 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 the perimeter of polygons. • Solve problems involving the area of rectangles and squares.
4.6 Transforming geometric figures using reflections, translations, and rotations to explore congruence.	<ul style="list-style-type: none"> • Predict and describe the results of flipping, sliding, or turning a two-dimensional shape. • Show lines of symmetry for geometrical shapes. • Identify and recognize congruent and similar shapes.

MEASUREMENT
Grade 5

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 5
5.1 Estimating, using and describing measures of distance, perimeter, area, volume, capacity, weight, mass, and angle comparison.	<ul style="list-style-type: none"> • Determine the appropriate unit of measure (metric and US customary) when estimating distance, capacity, and weight. • Estimate the length of common objects. • Estimate the perimeter of polygons. • Estimate the measures of angles (e.g., 90°, less than 90°, more than 90°). • Describe angles as acute, obtuse and right.
5.2 Estimating, making, and using direct and indirect measurements to describe and make comparisons.	<ul style="list-style-type: none"> • Determine perimeter of a figure using standard and nonstandard units.
5.3 Reading and interpreting various scales including those based on number lines, graphs, and maps.	<ul style="list-style-type: none"> • Read and interpret scales on number lines, graphs, thermometers, and maps. • Select the appropriate scale for a given problem (e.g., using the appropriate scale when setting up a graph).
5.4 Developing and using formulas and procedures to solve problems involving measurement.	<ul style="list-style-type: none"> • Find the perimeter and area of rectangles and squares, using appropriate units and solves problems with information. • Solves difficult problems involving elapsed time. • Determine area of shapes with partial square units.
5.5 Describing how a change in an object's linear dimensions affects its perimeter, area, and volume.	<ul style="list-style-type: none"> • Demonstrate how changing one of the dimensions of a rectangle affects its perimeter (using concrete materials or graph paper). • Demonstrate how changing one of the dimensions of a rectangle affects its area (using concrete materials or graph paper).
5.6 Selecting and using appropriate units and tools to measure to the degree of accuracy required in a particular problem-solving situation.	<ul style="list-style-type: none"> • Select and use the appropriate unit and tool to measure to the degree of accuracy required in a particular problem. • Measure the sides of rectangles, squares, and triangles to the nearest $\frac{1}{4}$ inch and nearest centimeter.

COMPUTATION
Grade 5

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 5
6.1 Using models to explain how ratios, proportions, and percents can be used to solve real-world problems.	<ul style="list-style-type: none"> • Use concrete materials or pictures; determine commonly-used percentages (e.g., 25%, 50%) in problem-solving situations.
6.2 Constructing, using, and explaining procedures to compute and estimate with whole numbers, fractions, decimals, and integers.	<ul style="list-style-type: none"> • Demonstrate the conceptual meaning of the four basic arithmetic operations (addition, subtraction, multiplication, and division). • Use and explain strategies to add, subtract, multiply and divide whole numbers in problem-solving situations. • Demonstrate proficiency of addition, subtraction, multiplication, and division of whole numbers in problem-solving situations. • Use and explain strategies to add and subtract commonly-used fractions with like-denominators in problem-solving situations. • Use and explain strategies to add and subtract commonly-used decimals in problem-solving situations. • Add and subtract mixed numbers with unlike denominators. • Add and subtract decimals through the hundredth place. • Multiplies four or more digit number proficiently by a two or three digit number. • Divides a four digit number by a two digit number.
6.3 Developing, applying and explaining a variety of different estimation strategies in problem-solving situations, and explain 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 and explain a variety of estimation techniques to solve problems.
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 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. • Given a real-world problem, use an appropriate method (mental arithmetic, estimation, paper-and-pencil, calculator) to correctly solve the problem. • Given a math sentence, using any of one of the four operations with whole numbers, create and illustrate a real-world problem. • In a problem-solving situation, determine whether the results are reasonable and justify those results with correct computations.