

NUMBER SENSE
Grade 1

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 K-4	District Expectations Grade 1
1.0 Applying problem-solving process daily using vocabulary, language, and notation to explain and support mathematical thinking through speaking, listening, and writing.	<p>Four-Step Process:</p> <ul style="list-style-type: none"> • Understands the problem • Chooses a strategy • Uses the strategy to solve the problem • Evaluate the answer • <p>Apply strategies:</p> <ul style="list-style-type: none"> • Act it out. • Draw a picture. • Use real objects. <p>Explore strategy:</p> <ul style="list-style-type: none"> • Guess and check.
1.1 Demonstrating meanings for whole number, commonly-used fractions and decimals (e.g., 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"> • Use objects and pictures to represent whole numbers from 0 to 100 in variety of ways (e.g., groups of 1, 5's, 10's). • Use objects to demonstrate and explain the meanings of equal, less than, and greater than with the whole numbers 0 to 100. • Apply equalities using the \geq symbol. • Use concrete materials to demonstrate and explain the meanings of: <ul style="list-style-type: none"> • Wholes • Halves • Thirds • Fourths • Identify and know values of penny, nickel, dime, quarter. • Count combination of coins up to 50 cents. • Count coins to 50 cents by 1, 5, 10. • Discuss the physical characteristics of pennies, nickels, dimes, and quarters. • Explore even and odd numbers. • Explore number patterns using a 100 number chart.
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 numerals from 0 to 100 in meaningful contexts. • Read the number words for zero to 20. • Group objects by ones and tens. • Demonstrate place value (e.g., given 9 ones and 2 tens, the student can write the number 29; given the number 29, the student can show 2 tens and 9 ones). • Write one- and two-digit whole numbers in expanded form (e.g., $29 = 20 + 9$).
1.3 Using numbers to count, to measure, to label, and to indicate location.	<ul style="list-style-type: none"> • Count from 1 to 20 by 2's. • Count from 1 to 100 by 1's, 5's, and 10's. • Count forward to 100 starting with any whole number less than 100. • Use ordinal positions for first through twentieth • Sequence selected whole numbers from 0 to 100.

NUMBER SENSE
Grade 1
CONTENT STANDARD 1 (CONTINUED)

State Model Content Standards Grades K-4	District Expectations Grade 1
1.4 Developing, testing, and explaining conjectures about properties of whole numbers, and commonly-used fractions and decimals (e.g., a , 0.5, 0.75).	<ul style="list-style-type: none">• Describe the commutative property of addition of whole numbers (e.g., $3 + 4 = 4 + 3$).• Describe the addition and subtraction properties of zero with whole numbers.)
1.5 Using number sense to estimate and justify the reasonableness of solutions to problems involving whole numbers and commonly-used fractions and decimals (e.g., a , 0.5, 0.75).	<ul style="list-style-type: none">• Estimate a reasonable quantity for a given number of objects from 0 to 100 and explain reasoning.

<p>Word Bank</p> <p>Commutative property of addition – The sums stay the same when the order of the addends is changed (e.g., $6 + 4 = 4 + 6$).</p>
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ALGEBRA
Grade 1

CONTENT STANDARD 2 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 K-4	District Expectations Grade 1
2.0 Applying problem-solving process daily using vocabulary, language, and notation to explain and support mathematical thinking through speaking, listening, and writing.	<p>Four-Step Process:</p> <ul style="list-style-type: none"> • Understands the problem • Chooses a strategy • Uses the strategy to solve the problem • Evaluate the answer • <p>Apply strategies:</p> <ul style="list-style-type: none"> • Act it out. • Draw a picture. • Use real objects. <p>Explore strategy:</p> <ul style="list-style-type: none"> • Guess and check.
2.1 Reproducing, extending, creating, and describing patterns and sequences using a variety of materials (e.g., beans, toothpicks, pattern blocks, calculators, unifix cubes, and colored tiles)	<ul style="list-style-type: none"> • Create, extend and describe patterns using concrete materials (uses pattern blocks to create a three-element pattern and has another student extend the pattern. • Demonstrate and explain the concept of equal and not equal sets with real objects.
2.2 Describing patterns and other relationships using tables, graphs, and open sentences.	<ul style="list-style-type: none"> • Sort, classify, describe, and order collections of objects by their attributes (e.g., color, size, shape, thickness, use, etc.) • Continue the pattern given in a table of data using numbers and/or concrete materials. • Use a balance scale to demonstrate equality in algebraic equations (e.g., 2 red bears and 3 green bears equal 7 yellow bears.)
2.3 Recognizing when a pattern exists and using that information to solve a problem.	<ul style="list-style-type: none"> • continue a pattern from a table and verbally describe and name the pattern (e.g., charting eyes on a T chart.) • People # of eyes <ul style="list-style-type: none"> 1 2 2 4 3 6 • identify a hidden quantity of objects from a known quantity of objects (e.g., I have 7 objects. Five are in this hand, How many are hidden in the other hand?)
2.4 Observing and explaining how a change in one quantity can produce a change in another (e.g., the relationship between the number of bicycles and the numbers of wheels).	<ul style="list-style-type: none"> • Use concrete or pictorial patterns to explain how the change in one variable affects the change in another (e.g., how changing the number of bicycles changes the number of wheels.)

STATISTICS AND PROBABILITY
Grade 1

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 K-4	District Expectations Grade 1
3.0 Applying problem-solving process daily using vocabulary, language, and notation to explain and support mathematical thinking through speaking, listening, and writing.	<p>Four-Step Process:</p> <ul style="list-style-type: none"> • Understands the problem • Chooses a strategy • Uses the strategy to solve the problem • Evaluate the answer • <p>Apply strategies:</p> <ul style="list-style-type: none"> • Act it out. • Draw a picture. • Use real objects. <p>Explore strategy:</p> <ul style="list-style-type: none"> • Guess and check.
3.1 Constructing, reading, and interpreting displays of data including tables, charts, pictographs, and bar graphs.	<ul style="list-style-type: none"> • Gather data about recurring and quantifiable events (e.g., daily temperature and/or attendance). • Display and explain data from a bar graph or tallies. • Answer simple questions orally and in writing about data displayed on a graph. • Create mathematical questions about data displayed on a graph.
3.2 Interpreting data using the concepts of largest, smallest, most often, and middle.	<ul style="list-style-type: none"> • Use a bar graph to interpret data for less than, equal to, and more than.
3.2 Generating, analyzing, and making predictions based on data obtained from surveys and chance devices.	<ul style="list-style-type: none"> • Use survey data to make a prediction that will be displayed on a bar graph. • Spin a spinner to generate, record, and report results. • Analyze and write about the results of flipping a two-color counter or coin. • Communicate in an oral and written form about results gained from surveys, spinners, and chance games.
3.3 Solving problems using various strategies for making combinations (e.g., determining the number of different outfits that can be made using two shirts and three pairs of shorts.	<ul style="list-style-type: none"> • Determine the number of outcomes when flipping a coin. • Use manipulatives or pictures to determine the possible combinations of matching a set containing one element with a set containing two elements and discuss the strategies used.

GEOMETRY
Grade 1

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

State Model Content Standards Grades K-4	District Expectations Grade 1
4.0 Applying problem-solving process daily using vocabulary, language, and notation to explain and support mathematical thinking through speaking, listening, and writing.	<p>Four-Step Process:</p> <ul style="list-style-type: none"> • Understands the problem • Chooses a strategy • Uses the strategy to solve the problem • Evaluate the answer • <p>Apply strategies:</p> <ul style="list-style-type: none"> • Act it out. • Draw a picture. • Use real objects. <p>Explore strategy:</p> <ul style="list-style-type: none"> • Guess and check.
4.1 Recognizing shapes and their relationships (e.g., symmetry and congruence) using a variety of materials (e.g., pasta, boxes, pattern blocks).	<ul style="list-style-type: none"> • Recognize two-dimensional congruent figures in different positions. • Create simple designs using concrete materials such as tangrams and pattern blocks. • Explore the concept of symmetry by identifying and creating symmetrical shapes and designs.
4.2 Identifying, describing, drawing, comparing, classifying, and building physical models of geometric figures.	<ul style="list-style-type: none"> • Explore and use vocabulary that describes geometric solids; face, edge, side, corner in oral and written situations. • Describe the number of sides in triangles and in quadrilaterals such as squares and rectangles. • Draw, describe, and compare the characteristics of triangles, squares, rectangles, and circles, ellipses (ovals), and rhombuses (diamonds), trapezoids. • Sort geometric shapes and solids in various ways (e.g., number of sides, corners, flat sides/curved sides, rolls, stacks, etc.) and explain the sorting rule. • Find solids in their environment (e.g., cones, spheres, cylinders, cubes, rectangular prisms) with teacher using the correct vocabulary. • Build structures with a variety of geometric materials and describe the characteristics of the structures.
4.3 Relating and communicating geometric ideas to measurement and number sense.	<ul style="list-style-type: none"> • Practice measuring objects using standard and non-standard measurement. • Measure the lengths of the sides of triangles, squares, and rectangles to the nearest inch.
4.4 Solving problems using geometric relationships and spatial reasoning (e.g. using rectangular coordinates to locate objects, constructing models of three-dimensional objects).	<ul style="list-style-type: none"> • Draw a picture or diagram to solve a problem; (e.g., use a circle to create a clock face; fold a rectangle to show one half). • Manipulate pattern blocks to form a variety of geometric shapes. • Practice assembling puzzles

Word Bank

Polygon – A closed figure formed from line segments that meet only at the end points. {e.g., three sided triangle (polygon), six-sided polygon (hexagon).}

Congruent- two figures are said to be congruent if they are the same size and shape.

Line of Symmetry- a line that divides a figure into two congruent halves that mirror images of each other.

Rolls-a solid that has the ability to turn over and over in a straight line.

MEASUREMENT
Grade 1

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 K-4	District Expectations Grade 1
5.0 Applying problem-solving process daily using vocabulary, language, and notation to explain and support mathematical thinking through speaking, listening, and writing.	<p>Four-Step Process:</p> <ul style="list-style-type: none"> • Understands the problem • Chooses a strategy • Uses the strategy to solve the problem • Evaluate the answer • <p>Apply strategies:</p> <ul style="list-style-type: none"> • Act it out. • Draw a picture. • Use real objects. <p>Explore strategy:</p> <ul style="list-style-type: none"> • Guess and check.
5.1 Knowing, using, describing, and estimating measures of length, perimeter, capacity, weight, time, and temperature; and	<ul style="list-style-type: none"> • Describe the units for measuring time (hour, half-hour), length (inch, foot), capacity (cup), and temperature.. • Tell time to the nearest hour and half-hour daily, using an analog or digital clock. • Name the days of the week in order. • Estimate and measure the length of objects to the nearest inch, foot. • Estimate and measure the capacity of a container I cups. • Estimate and weigh an object on a balance with a non-standard unit. • Measure temperature with a thermometer (inside or out) to the nearest 10°F. • Tell the number of minutes in an hour, days in a week. • Explore duration of time through the use of clocks, calendars, and timers • Connect temperature vocabulary to weather thermometer readings (e.g., cold=30° F hot = 90°F.
5.3 Demonstrating the process of measuring and explaining the concepts related to units of measurement.	
5.2 Comparing and ordering objects according to measurable attributes; <i>e.g., longest to shortest, lightest to heaviest.</i>	<ul style="list-style-type: none"> • Compare objects according to the measurable attributes of length, capacity, weight, and temperature; explain the similarities and differences. • Order objects according to the measurable attributes of length, capacity, weight, and temperature, • Compare and order various times through discussion; e.g., days, months, year (January-December), seasons, sequence of events.
5.4 Using the approximate measures of familiar objects: <i>e.g., width of your finger, temperature of a room, weight of a gallon of milk;</i> to develop a sense of measurement.	<ul style="list-style-type: none"> • Use familiar objects as referents for measurement; <i>e.g., the length of the student's index finger is about two paper clips.</i>
5.5 Selecting and using appropriate standard and non-standard units of measurement in problem solving situations.	<ul style="list-style-type: none"> • Select the appropriate unit to measure time, length, capacity, and temperature; explain reasons for selection.

COMPUTATION
Grade 1

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 used in solving these problems.

<p>6.0 Applying problem-solving process daily using vocabulary, language, and notation to explain and support mathematical thinking through speaking, listening, and writing.</p> <p>Using the four-step process independently to solve problems.</p>	<p>Four-Step Process:</p> <ul style="list-style-type: none"> • Understands the problem • Chooses a strategy • Uses the strategy to solve the problem • Evaluate the answer • <p>Apply strategies:</p> <ul style="list-style-type: none"> • Act it out. • Draw a picture. • Use real objects. <p>Explore strategy:</p> <ul style="list-style-type: none"> • Guess and check.
<p>6.1 Demonstrating conceptual meanings for the four basic arithmetic operations of addition, subtraction, multiplication, and division.</p>	<ul style="list-style-type: none"> • Demonstrate the operations of addition and subtraction of whole numbers with concrete materials • Link the operations of addition and subtraction, and equality with mathematical terms; <i>e.g., add, subtract and equal</i>; and mathematical symbols; <i>e.g., +, -, =</i>. • Explore the concepts, vocabulary, and symbols used in the operations of addition and subtraction. • Explore skip counting, counting on and counting back, and other number patterns. • Explain verbally and in writing the process of addition and subtraction.
<p>6.2 Adding and subtracting commonly used fractions and decimals using physical models; <i>e.g., 1/3, 3/4, 0.5, 0.75</i>.</p>	<ul style="list-style-type: none"> • Use concrete materials or pictures to add and subtract halves and fourths, then discuss the process; <i>e.g., four quarters of a graham cracker equals one whole graham cracker.</i>
<p>6.3 Demonstrating understanding of and proficiency with basic addition, subtraction, multiplication, and division facts without the use of a calculator.</p>	<ul style="list-style-type: none"> • Demonstrate understanding of basic addition sums to 20 and subtraction differences to 10. • Practice strategies for recalling basic addition and subtraction facts; <i>e.g., doubles, +1, -1</i>.
<p>6.4 Constructing, using, and explaining procedures to compute and estimate with whole numbers.</p>	<ul style="list-style-type: none"> • Demonstrate the operations of addition and subtraction of whole numbers with concrete materials. • Link the operations of addition and subtraction, and equality with mathematical terms; <i>e.g., add, subtract, and equal</i>; and <i>mathematical symbols</i>; <i>e.g., +, -, =</i>. • Use paper and pencil to demonstrate simple single digit addition and subtraction. • Use estimation vocabulary to describe approximate quantities; <i>e.g., about, a little, a little more than, a little less than, almost, close to, between, etc.</i> • Write simple math stories using addition or subtraction.
<p>6.5 Selecting and using appropriate methods for computing with whole numbers in problem-solving situations from among: mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods.</p>	<ul style="list-style-type: none"> • Use the correct operation in a real world problem-solving situation: <i>e.g., addition or subtraction with concrete materials</i>; and appropriate methods; <i>e.g., mental arithmetic, estimation, paper and pencil, calculator, or computer</i>; to solve the problem, and explain thinking verbally or in writing.