

Grade 2	Grade 3	Grade 4
<p><b>Standard 1 - Number Sense</b></p> <p><i>Students understand the relationships among numbers, quantities, and place value in whole numbers* up to 100. They understand that fractions may refer to parts of a set* and parts of a whole.</i></p>	<p><b>Standard 1 – Number Sense</b></p> <p><i>Students understand the relationships among numbers, quantities, and place value in whole numbers* up to 1,000. They understand the relationship among whole numbers, simple fractions, and decimals.</i></p>	<p><b>Standard 1 - Number Sense</b></p> <p><i>Students understand the place value of whole numbers* and decimals to two decimal places and how whole numbers and decimals relate to simple fractions.</i></p>
<p>2.1.1 Count by ones, twos, fives, and tens to 100. Example: Count 74 pencils by groups of tens and twos.</p> <p>2.1.2 Identify the pattern of numbers in each group of ten, from tens through nineties. Example: Where on a hundreds chart are the numbers 12, 22, 32, etc.?</p> <p>2.1.3 Identify numbers up to 100 in various combinations of tens and ones. Example: <math>32 = 3 \text{ tens} + 2 \text{ ones} = 2 \text{ tens} + 12 \text{ ones}</math>, etc.</p> <p>2.1.4 Name the number that is ten more or ten less than any number 10 through 90. Example: Name the number ten more than 54.</p> <p>2.1.5 Compare whole numbers up to 100 and arrange them in numerical order. Example: Put the number in order of size: 95, 28, 42, 31.</p>	<p>3.1.1 Count, read, and write whole numbers* up to 1,000. Example: Write 349 for the number “three hundred forty-nine”.</p> <p>3.1.2 Identify and interpret place value in whole numbers up to 1,000. Example: Understand the 7 in <math>4\overline{7}9</math> represents 7 tens or 70.</p> <p>3.1.3 Use words, models, and expanded form to represent numbers up to 1,000. Example: Recognize that <math>492 = 400 + 90 + 2</math>.</p> <p>3.1.4 Identify any number up to 1,000 in various combinations of hundreds, tens, and ones. Example: 325 can be written as 3 hundreds, 2 tens, and 5 ones, or as 2 hundreds 12 tens, and 5 ones, etc.</p>	<p>4.1.1 Read and write whole numbers up to 1,000,000. Example: Read aloud the number 394,734.</p> <p>4.1.2 Identify and write whole numbers up to 1,000,000, given a place-value model. Example: Write the number that has 2 hundred thousands, 7 ten thousands, 4 thousands, 8 hundreds, 6 tens, and 2 ones.</p> <p>4.1.3 Round whole numbers up to 10,000 to the nearest ten, hundred, and thousand. Example: Is 7,683 closer to 7,600 or 7,700? Explain your answer.</p> <p>4.1.4 Order and compare whole numbers using symbols for “less than” (&lt;), “equal to” (=), and “greater than” (&gt;). Example: Put the correct symbol in <math>328 \underline{\quad} 142</math>.</p>

<p>2.1.6 Match the number names first, second, third, etc. with an ordered set of up to 100 items.</p> <p>Example: Identify the seventeenth letter of the alphabet.</p> <p>2.1.7 Identify odd and even numbers up to 100.</p> <p>Example: Find the odd numbers in this set: 44, 31, 100, 57, 28.</p> <p>2.1.8 Recognize fractions as parts of a whole or parts of a group (up to 12 parts).</p> <p>Example: Divide a cardboard rectangle into 8 equal pieces. Shade 5 pieces and write the fraction for the shaded part.</p> <p>2.1.9 Recognize, name, and compare the unit fractions: <math>\frac{1}{2}</math>, <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{1}{6}</math>, <math>\frac{1}{8}</math>, <math>\frac{1}{10}</math>, and <math>\frac{1}{12}</math>.</p> <p>Example: Which is larger, <math>\frac{1}{3}</math> or <math>\frac{1}{6}</math>? Explain your answer.</p>	<p>3.1.5 Compare whole numbers up to 1,000 and arrange them in numerical order.</p> <p>Example: What is the smallest whole number you can make using the digits 4, 9, and 1? Use each digit exactly once.</p> <p>3.1.6 Rounds numbers less than 1,000 to the nearest ten and the nearest hundred.</p> <p>Example: Round 548 to the nearest ten.</p> <p>3.1.7 Identify odd and even numbers up to 1,000 and describe their characteristics.</p> <p>Example: Find the even number: 47, 106, 357, 629.</p> <p>3.1.8 Show equivalent fractions* using equal parts.</p> <p>Example: Draw pictures to show that <math>\frac{3}{5}</math>, <math>\frac{6}{10}</math>, and <math>\frac{9}{15}</math> are equivalent fractions.</p> <p>3.1.9 Identify and use correct names for numerators and denominators.</p> <p>Example: in the fraction <math>\frac{3}{5}</math>, name the numerator and denominator.</p>	<p>4.1.5 Rename and rewrite whole numbers as fractions.</p> <p>Example: <math>3 = \frac{6}{2} = \frac{9}{3} = \frac{?}{4} = \frac{?}{5}</math></p> <p>4.1.6 Name and write mixed numbers, using objects or pictures.</p> <p>Example: You have 5 whole straws and half a straw. Write the number that represents these objects.</p> <p>4.1.7 Name and write mixed numbers as improper fractions, using objects or pictures.</p> <p>Example: Use a picture of 3 rectangles, each divided into 5 equal pieces, to write <math>2\frac{3}{5}</math> as an improper fraction.</p> <p>4.1.8 Write tenths and hundredths in decimal and fraction notations. Know the fraction and decimal equivalents for halves and fourths (e.g., <math>\frac{1}{2} = 0.5 = 0.50</math>, <math>\frac{7}{4} = 1\frac{3}{4} = 1.75</math>).</p> <p>Example: Write <math>\frac{26}{10}</math> and <math>2\frac{3}{4}</math> as decimals.</p> <p>4.1.9 Round two-place decimals to tenths or to the nearest whole number.</p> <p>Example: You ran the 50-yard dash in 6.73 seconds. Round your time to the nearest tenth.</p> <p>*whole numbers: 0, 1, 2, 3, etc.</p>
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2.1.10 Know that, when all fractional parts are included, the result is equal to the whole and to one.

Example: What is another way of saying six sixths? Explain your answer.

2.1.11 Collect and record numerical data in systematic ways.

Example: Measure the hand span in whole centimeters of each student in your class. Keep a record of the answers they give you.

2.1.12 Represent, compare, and interpret data using tables, tally charts, and bar graphs.

Example: Make a tally of your classmates' favorite colors and draw a bar graph. Name the color that is most popular and the color that is the favorite of the fewest people.

\*whole numbers: 0, 1, 2, 3, etc.

\*set: collection of objects, numbers, etc.

3.1.10 Given a pair of fractions, decide which is larger or smaller by using objects or pictures.

Example: Is  $\frac{3}{4}$  of a medium pizza larger or smaller than  $\frac{1}{2}$  of a medium pizza? Explain your answer.

3.1.11 Given a set\* of objects or a picture, name and write a decimal to represent tenths and hundredths.

Example: You have a pile of 100 beans and 72 of them are lima beans. Write the decimal that represents lima beans as a part of the whole pile of beans.

3.1.12 Given a decimal for tenths, show it as a fraction using a place-value model.

Example: Show the decimal 0.7 as a fraction using pennies.

3.1.13 Interpret data displayed in a circle graph and answer questions about the situation.

Example: Have the students in your class choose the pizza they like best from these choices: cheese, sausage, pepperoni. Use a spreadsheet to enter the number of students who chose each kind and make a circle graph of the data. Determine the most popular and the least popular kind of pizza, and explain what the circle and each pie slice represent.

3.1.14 Identify whether everyday events are certain, likely, unlikely, or impossible.

Example: It is raining in your neighborhood. Is it certain, likely, unlikely, or impossible that the tree in your front yard will get wet?

3.1.15 Record the possible outcomes for a simple probability experiment.

Example: Predict how many heads and tails will occur if a coin is tossed 10 times. Have a partner toss a coin while you keep a tally of the outcomes. Exchange places with your partner and repeat the experiment. Explain your results to the class.

\*whole numbers: 0, 1, 2, 3, etc.

\*equivalent fractions: fractions with the same value

(e.g.,  $\frac{1}{2}$ ,  $\frac{2}{4}$ ,  $\frac{3}{6}$ , etc.)

\*set: collection of objects, numbers, etc.

<p><b>Standard 2 – Computation</b>  <i>Students solve simple problems involving addition and subtraction of numbers up to 100.</i></p>	<p><b>Standard 2 – Computation</b>  <i>Students solve problems involving addition and subtraction of whole numbers. They model and solve simple problems involving multiplication and division.</i></p>	<p><b>Standard 2 – Computation</b>  <i>Students solve problems involving addition, subtraction, multiplication, and division of whole numbers and understand the relationships among these operations. They extend their use and understanding of whole numbers to the addition and subtraction of simple fractions and decimals.</i></p>
<p>2.2.1 Model addition of numbers less than 100 with objects and pictures.  Example: Use blocks to find the sum of 26 and 15.</p> <p>2.2.2 Add two whole numbers less than 100 with and without regrouping.  Example: <math>36 + 45 = ?</math></p> <p>2.2.3 Subtract two whole numbers less than 100 without regrouping.  Example: <math>86 - 55 = ?</math></p> <p>2.2.4 Understand and use the inverse relationship between addition and subtraction.  Example: Understand that <math>89 - 17 = 72</math> means that <math>72 + 17 = 89</math>.</p>	<p>3.2.1 Add and subtract whole numbers up to 1,000 with or without regrouping, using relevant properties of the number system.  Example: <math>854 - 427 = ?</math> Explain your method.</p> <p>3.2.2 Represent the concept of multiplication as repeated addition.  Example: Lynn made 3 baskets each week for 4 weeks. Draw a picture to show how many baskets she made.</p> <p>3.2.3 Represent the concept of division as repeated subtraction, equal sharing, and forming equal groups.  Example: Bob shared 10 cookies among 5 friends. Draw a picture to show how many cookies each friend got.</p> <p>3.2.4 Know and use the inverse relationship between multiplication and division facts, such as <math>6 \times 7 = 42</math>, <math>42 \div 7 = 6</math>, <math>7 \times 6 = 42</math>, <math>42 \div 6 = 7</math>.  Example: Find other facts related to <math>8 \times 3 = 24</math>.</p>	<p>4.2.1 Understand and use standard algorithms* for addition and subtraction.  Example: <math>45,329 + 6,984 = ?</math>, <math>36,296 - 12,075 = ?</math></p> <p>4.2.2 Represent as multiplication any situation involving repeated addition.  Example: Each of the 20 students in your physical education class has 3 tennis balls. Find the total number of tennis balls in the class.</p> <p>4.2.3 Represent as division any situation involving the sharing of objects or the number of groups of shared objects.  Example: Divide 12 cookies equally among 4 students. Divide 12 cookies equally so that each person gets 4 cookies. Compare your answers and methods.</p> <p>4.2.4 Demonstrate mastery of the multiplication tables for numbers between 1 and 10 and of the corresponding division facts.</p>

<p>2.2.5 Use estimation to decide whether answers are reasonable in addition problems. Example: Your friend says that <math>13 + 24 = 57</math>. Without solving, explain why you think the answer is wrong.</p> <p>2.2.6 Use mental arithmetic to add or subtract 0, 1, 2, 3, 4, 5, or 10 with numbers less than 100. Example: In a game, Mia and Noah are making addition problems. They make two two-digit numbers out of the four given numbers 1, 2, 3, and 4. Each number is used exactly once. The winner is the one who makes two numbers whose sum is the largest. Mia had 24 and 31; Noah had 21 and 43. Who won the game? How do you know? Show a way to beat both of them.</p>	<p>3.2.5 Show mastery of multiplication facts for 2, 5, and 10. Example: Know the answer to <math>6 \times 5</math>.</p> <p>3.2.6 Add and subtract simple fractions with the same denominator. Example: Add <math>\frac{3}{8}</math> and <math>\frac{1}{8}</math>. Explain your answer.</p> <p>3.2.7 Use estimation to decide whether answers are reasonable in addition and subtraction problems. Example: Your friend says that <math>79 - 22 = 27</math>. Without solving, explain why you think the answer is wrong.</p> <p>3.2.8 Use mental arithmetic to add or subtract with numbers less than 100. Example: Subtract 35 from 86 without using pencil and paper.</p>	<p>Example: Know the answers to <math>9 \times 4</math> and <math>35 \div 7</math>.</p> <p>4.2.5 Use a standard algorithm to multiply numbers up to 100 by numbers up to 10, using relevant properties of the number system. Example: <math>67 \times 3 = ?</math></p> <p>4.2.6 Use a standard algorithm to divide numbers up to 100 by numbers up to 10, without remainders, using relevant properties of the number system. Example: <math>69 \div 3 = ?</math></p> <p>4.2.7 Understand the special properties of 0 and 1 in multiplication and division. Example: Know that <math>73 \times 0 = 0</math> and that <math>42 \div 1 = 42</math>.</p> <p>4.2.8 Add and subtract simple fractions with different denominators, using objects or pictures. Example: Use a picture of a circle divided into 6 equal pieces to find <math>\frac{5}{6} - \frac{1}{3}</math>.</p> <p>4.2.9 Add and subtract decimals (to hundredths), using objects or pictures. Example: Use coins to help you find <math>\\$0.43 - \\$0.29</math>.</p>
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4.2.10 Use a standard algorithm to add and subtract decimals (to hundredths).

Example:  $0.74 + 0.800 = ?$

4.2.11 Know and use strategies for estimating results of any whole-number computations.

Example: your friend says that  $45,329 \div 6,984 = 5,213$ . Without solving, explain why you think the answer is wrong.

4.2.12 Use mental arithmetic to add or subtract numbers rounded to hundreds or thousands.

Example: Add 3,000 to 8,000 without using pencil and paper.

\*algorithm: a step-by-step procedure for solving a problem.

<p><b>Standard 3 – Algebra and Functions</b></p> <p><i>Students model, represent, and interpret number relationships to create and solve problems involving addition and subtraction.</i></p>	<p><b>Standard 3 – Algebra and Functions</b></p> <p><i>Students select appropriate symbols, operations, and properties to represent, describe, simplify, and solve simple number and functional relationships.</i></p>	<p><b>Standard 3 – Algebra and Functions</b></p> <p><i>Students use and interpret variables, mathematical symbols, and properties to write and simplify numerical expressions and sentences. They understand relationships among the operations of addition, subtraction, multiplication, and division.</i></p>
<p>2.3.1 Relate problem situations to number sentences involving addition and subtraction.</p> <p>Example: You have 13 pencils and your friend has 12 pencils. You want to know how many pencils you have altogether. Write a number sentence for this problem and use it to find the total number of pencils.</p> <p>2.3.2 Use the commutative* and associative* rules for addition to simplify mental calculations and to check results.</p> <p>Example: Add the numbers 5, 17, and 13 in this order. Now add them in the order of 17, 13, and 5. Which was easier? Why?</p> <p>2.3.3 Recognize and extend a linear pattern by its rules.</p> <p>Example: One horse has 4 legs, two horses have 8 legs, and so on. Continue the pattern to find how many legs five horses have.</p>	<p>3.3.1 Represent relationships of quantities in the form of a numeric expression or equation.</p> <p>Example: Bill’s mother gave him money to buy three drinks that cost 45 cents each at the concession stand. When he returned to the bleachers, he gave 25 cents change to his mother. Write an equation to find the amount of money Bill’s mother originally gave him.</p> <p>3.3.2 Solve problems involving numeric equations.</p> <p>Example: Use your equation from the last example to find the amount of money that Bill’s mother gave him, and justify your answer.</p> <p>3.3.3 Choose appropriate symbols for operations and relations to make a number sentence true.</p> <p>Example: What symbol is needed to make the number sentence <math>4 \_ 3 = 12</math> true?</p>	<p>4.3.1 Use letters, boxes, or other symbols to represent any number in simple expressions, equations, or inequalities (i.e., demonstrate an understanding and the use of the concept of a variable).</p> <p>Example: In the expression <math>3x + 5</math>, what does <math>x</math> represent?</p> <p>4.3.2 Use and interpret formulas to answer questions about quantities and their relationships.</p> <p>Example: Write the formula for the area of a rectangle in words. Now let <math>l</math> stand for the length, <math>w</math> for the width, and <math>A</math> for the area. Write the formula using these symbols.</p> <p>4.3.3 Understand that multiplication and division are performed before addition and subtraction in expressions without parentheses.</p> <p>Example: You go to a store with 90¢ and buy 3 pencils that cost 20¢ each. Write an expression for the amount of money you have left and find its value.</p>

<p>2.3.4 Create, describe, and extend number patterns using addition and subtraction. Example: What is the next number: 23, 21, 19, 17, ...? How did you find your answer?</p> <p>*communicative rule: the order when adding numbers makes no difference (e.g., <math>5 + 3 = 3 + 5</math>)</p> <p>*associative rule: the grouping when adding numbers makes no difference (e.g., <math>5 + 3 + 2</math>, adding 5 and 3 and then adding 2 is the same as 5 added to <math>3 + 2</math>). Note that this rule is not true for subtraction.</p>	<p>3.3.4 Understand and use the commutative* and associative* rules of multiplication. Example: Multiply the numbers 7, 2, and 5 in this order. Now multiply them in the order 2, 5, and 7. Which was easier? Why?</p> <p>3.3.5 Create, describe, and extend number patterns using multiplication. Example: What is the next number: 3, 6, 12, 24, ...? How did you find your answer?</p> <p>3.3.6 Solve simple problems involving a functional relationship between two quantities. Example: Ice cream sandwiches cost 20 cents each. Find the cost of 1, 2, 3, 4, ... ice cream sandwiches. What pattern do you notice? Continue the pattern to find the cost of enough ice cream sandwiches for the class.</p> <p>3.3.7 Plot and label whole numbers on a number line up to 10. Example: Mark the position of 7 on a number line up to 10.</p> <p>*commutative rule: the order when multiplying numbers make no difference (e.g., <math>5 \times 3 = 3 \times 5</math>), but note that his rule is not true for division</p> <p>*associative rule: the grouping when multiplying numbers makes no difference (e.g., in <math>5 \times 3 \times 2</math>, multiplying 5 and 3 and then multiplying by 2 is the same as 5 multiplied by <math>3 \times 2</math>), but note that this rule is not true for division.</p>	<p>4.3.4 Understand that an equation such as <math>y = 3x + 5</math> is a rule for find a second number when a first number is given. Example: Use the formula <math>y = 3x + 5</math> to find the value of <math>y</math> when <math>x = 6</math>.</p> <p>4.3.5 Continue number patterns using multiplication and division. Example: What is the next number: 160, 80, 40, 20, ...? Explain your answer.</p> <p>4.3.6 Recognize and apply the relationships between addition and multiplication, between subtraction and division, and the inverse relationship between multiplication and division to solve problems. Example: Find another way of writing <math>13 + 13 + 13 + 13 + 13</math>.</p> <p>4.3.7 Relate problem situations to number sentences involving multiplication and division. Example: you have 150 jelly beans to share among the 30 members of your class. Write a number sentence for this problem and use it to find the number of jelly beans each person will get.</p> <p>4.3.8 Plot and label whole numbers on a line up to 100. Estimate positions on the number line. Example: Draw a number line and label it with 0, 10, 20, 30, ..., 90, 100. Estimate the position of 77 on this number line.</p>
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<p><b>Standard 4 – Geometry</b></p> <p><i>Students identify and describe the attributes of common shapes in the plane and of common objects in space.</i></p>	<p><b>Standard 4 – Geometry</b></p> <p><i>Students describe and compare the attributes of plane and solid geometric shapes and use their understanding to show relationships and solve problems.</i></p>	<p><b>Standard 4 – Geometry</b></p> <p><i>Students show an understanding of plane and solid geometric objects and use this knowledge to show relationships and solve problems.</i></p>
<p>2.4.1 Construct squares, rectangles, triangles, cubes and rectangular prisms* with appropriate materials. Example: Use blocks to make a rectangular prism.</p> <p>2.4.2 Describe, classify, and sort plane and solid geometric shapes (triangle, square, rectangle, cube, rectangular prism) according to the number and shape of faces*, and the number of edges and vertices*. Example: How many corners does a cube have?</p> <p>2.4.3 Investigate and predict the result of putting together and taking apart two- and three-dimensional shapes. Example: Use objects or a drawing program to find other shapes that can be made from a rectangle and a triangle. Use sketches or a drawing program to show several ways that a rectangle can be divided into three triangles.</p> <p>2.4.4 Identify congruent* two-dimensional shapes in any position. Example: In a collection of rectangles, pick out those that are the same shape and size.</p>	<p>3.4.1 Identify quadrilaterals* as four-sided shapes. Example: Which of these are quadrilaterals: square, triangle, and rectangle?</p> <p>3.4.2 Identify right angles in shapes and objects and decide whether other angles are greater or less than a right angle. Example: Identify right angles in your classroom. Open the classroom door until it makes a right angle with one wall and explain what you are doing.</p> <p>3.4.3 Identify, describe, and classify: cube, sphere*, prism*, pyramid, cone, cylinder. Example: Describe the faces of a pyramid and identify its characteristics.</p> <p>3.4.4 Identify common solid objects that are the parts needed to make a more complex solid object. Example: Describe and draw a house made from a prism and a pyramid.</p>	<p>4.4.1 Identify, describe, and draw rays, right angles, acute angles, obtuse angles and straight angles using appropriate mathematical tools and technology. Example: Draw two rays that meet in an obtuse angle.</p> <p>4.4.2 Identify, describe and draw parallel, perpendicular, and oblique lines using appropriate mathematical tools and technology. Example: Use the markings on the gymnasium floor to identify two lines that are parallel. Place a jump rope across the parallel lines and identify any obtuse angles created by the jump rope and the lines.</p> <p>4.4.3 Identify, describe and draw parallelograms*, rhombuses*, and trapezoids*, using appropriate mathematical tools and technology. Example: Use a geoboard to make a parallelogram. How do you know it is a parallelogram?</p> <p>4.4.4 Identify congruent* quadrilaterals* and give reasons for congruence using sides, angles, parallels and perpendiculars.</p>

<p>2.4.5 Recognize geometric shapes and structures in the environment and specify their locations.  Example: Look for combinations of shapes in the buildings around you.</p> <p>*rectangular prism: box with 6 rectangles for sides, like a cereal box  *face: flat side, like the front of the cereal box  *vertices: corners (vertex: corner)  *congruent: same shape and size, like the front and back of a cereal box.</p>	<p>3.4.5 Draw a shape this is congruent* to another shape.  Example: Draw a triangle that is congruent to a given triangle. You may use a ruler and pencil or the drawing program on a computer.</p> <p>3.4.6 Use the terms point, line, and line segment in describing two-dimensional shapes.  Example: Describe the way a triangle is made of points and line segments and how you know it is a triangle.</p> <p>3.4.7 Draw line segments and lines.  Example: Draw a line segment three inches long.</p> <p>3.4.8 Identify and draw lines of symmetry in geometric shapes (by hand or using technology).  Example: Use pencil and paper or a drawing program to draw lines of symmetry in a square. Discuss your findings.</p> <p>3.4.9 Sketch the mirror image reflections of shapes.  Example: Hold up a cardboard letter F to a mirror. Draw the letter and the shape you see in the mirror.</p>	<p>Example: In a collection of parallelograms, rhombuses, and trapezoids, pick out those that are the same shape and size and explain your decisions.</p> <p>4.4.5 Identify and draw lines of symmetry in polygons.  Example: Draw a rectangle and then draw all its lines of symmetry.</p> <p>4.4.6 Construct cubes and prisms* and describe their attributes.  Example: Make a 6-sided prism from construction paper.</p> <p>*parallelogram: a four-sided figure with both pairs of opposite sides parallel  *rhombus: a parallelogram with all sides equal  *trapezoid: a four-sided figure with one pair of opposite sides parallel  *congruent: two figures that are the same shape and size  *quadrilateral: a two-dimensional figure with four sides  *prism: solid shape with fixed cross-section (right prism is a solid shape with two Parallel faces that are congruent polygons and other faces that are rectangles.</p>
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3.4.10 Recognize geometric shapes and their properties in the environment and specify their locations.

Example: Write the letters of the alphabet and draw all the lines of symmetry that you see.

\*quadrilateral: a two-dimensional figure with four sides

\*sphere: round ball like a baseball

\*prism: solid shape with fixed cross-section (a right prism is a solid shape with two parallel faces that are congruent polygons and other faces that are rectangles.

\*congruent: two figures that are the same shape and size

<p><b>Standard 5 – Measurement</b>  <i>Students understand how to measure length, temperature, capacity, weight, and time in standard units.</i></p>	<p><b>Standard 5 – Measurement</b>  <i>Students choose and use appropriate units and measurement tools for length, capacity, weight, temperature, time and money.</i></p>	<p><b>Standard 5 – Measurement</b>  <i>Students understand perimeter and area, as well as measuring volume, capacity, time and money.</i></p>
<p>2.5.1 Measure and estimate length to the nearest inch, foot, yard, centimeter, and meter.  Example: Measure the length of your classroom to the nearest foot.</p> <p>2.5.2 Describe the relationships among inch, foot, and yard. Describe the relationship between centimeter and meter.  Example: How many inches are in a yard?</p> <p>2.5.3 Decide which unit of length is most appropriate in a given situation.  Example: Would you use yards or inches to measure the length of your school books? Explain your answer.</p> <p>2.5.4 Estimate area and use a given object to measure the area of other objects.  Example: Make a class estimate the number of sheets of notebook paper that would be needed to cover the classroom door. Then use measurements to compute the area of the door.</p>	<p>3.5.1 Measure line segments to the nearest half-inch.  Example: Measure the length of a side of a triangle.</p> <p>3.5.2 Add units of length that may require regrouping of inches to feet or centimeters to meters.  Example: Add the lengths of three sheets of paper. Give your answer in feet and inches.</p> <p>3.5.3 Find the perimeter of a polygon*.  Example: Find the perimeter of a table in centimeters. Explain your method.</p> <p>3.5.4 Estimate or find the area of shapes by covering them with squares.  Example: How many square tiles do we need to cover this desk?</p>	<p>4.5.1 Measure length to the nearest quarter-inch, eighth-inch, and millimeter.  Example: Measure the width of a sheet of paper to the nearest millimeter.</p> <p>4.5.2 Subtract units of length that may require renaming of feet to inches or meters to centimeters.  Example: The shelf was 2 feet long. Jane shortened it by 8 inches. How long is the shelf now?</p> <p>4.5.3 Know and use formulas for finding the perimeters of rectangles and squares.  Example: The length of a rectangle is 4 cm and its perimeter is 20 cm. What is the width of the rectangle?</p> <p>4.5.4 Know and use formulas for finding the areas of rectangles and squares.  Example: Draw a rectangle 5 inches by 3 inches. Divide it into one-inch squares and count the squares to find its area. Can you see another way to find the area? Do this with other rectangles.</p>

<p>2.5.5 Estimate and measure capacity using cups and pints. Example: Make a reasonable estimate of the number of pints a juice pitcher holds.</p> <p>2.5.6 Estimate weight and use a given object to measure the weight of other objects. Example: About how many jellybeans will you need to put on one side of a balance scale to balance with a box of chalk? Count out the number of jellybeans that you guessed would be needed and see whether your estimate was close. Explain the results of your estimation and weighing.</p> <p>2.5.7 Recognize the need for a fixed unit of weight. Example: Estimate the number of paperclips needed to balance a box of chalk. Will it be the same as the number of jellybeans? Explain your answer.</p> <p>2.5.8 Estimate temperature. Read a thermometer in Celsius and Fahrenheit. Example: What do you think the temperature is today? Look at the thermometer to check.</p> <p>2.5.9 Tell time to the nearest quarter hour, be able to tell five-minute intervals, and know the difference between a.m. and p.m. Example: When does your favorite TV program start?</p>	<p>3.5.5 Estimate or find the volume of objects by counting the number of cubes that would fill them. Example: How many of these cubes will fill the box?</p> <p>3.5.6 Estimate and measure capacity using quarts, gallons, and liters. Example: This bottle holds one liter. Estimate how many liters the sink holds.</p> <p>3.5.7 Estimate and measure weight using pounds and kilograms. Example: Estimate the weight of your book bag in pounds.</p> <p>3.5.8 Compare temperatures in Celsius and Fahrenheit. Example: Measure the room temperature using a thermometer that has both Celsius and Fahrenheit units. If the temperature in the room measures 70°F, will the Celsius measurement be higher or lower?</p> <p>3.5.9 Tell time to the nearest minute and find how much time has elapsed. Example: You start a project at 9:10 a.m. and finish the project at 9:42 a.m. How much time has passed?</p>	<p>4.5.5 Estimate and calculate the area of rectangular shapes by using appropriate units, such as square centimeter (cm<sup>2</sup>), square meter (m<sup>2</sup>), square inch (in<sup>2</sup>), or square yard (yd<sup>2</sup>). Example: Measure the length and width of a basketball court and find its area in suitable units.</p> <p>4.5.6 Understand that rectangles with the same area can have different perimeters and that rectangles with the same perimeter can have different areas. Example: Make a rectangle of area 12 units on a geoboard and find its perimeter. Can you make other rectangles with the same area? What are their perimeters?</p> <p>4.5.7 Find areas of shapes by dividing them into basic shapes such as rectangles and triangles. Example: Find the perimeter and area of your school building.</p> <p>4.5.8 Use volume and capacity as different ways of measuring the space inside a shape. Example: Use cubes to find the volume of a fish tank and a pint jug to find its capacity.</p> <p>4.5.9 Add time intervals involving hours and minutes. Example: During the school week, you have 5 recess periods of 15 minutes.</p>
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<p>2.5.10 Know relationships of time: seconds in a minute, minutes in an hour, hours in a day, days in a week, and days, weeks, and months in a year. Example: How many days are in a year?</p> <p>2.5.11 Find the duration of intervals of time in hours. Example: Your trip began at 9:00 a.m. and ended at 3:00 p.m. How long were you traveling?</p> <p>2.5.12 Find the value of a collection of pennies, nickels, dimes, quarters, half-dollars, and dollars? Example: You have 3 pennies, 4 nickels, and 2 dimes. How much money do you have? Explain your answer.</p>	<p>3.5.10 Find the value of any collection of coins and bills. Write the amounts less than a dollar using the ¢ symbol and write larger amounts in decimal notation using the \$ symbol. Example: You have 5 quarters and 2 dollar bills. How much money is that? Write the amount.</p> <p>3.5.11 Use play or real money to decide whether there is enough money to make a purchase. Example: You have \$5. Can you buy two books that cost \$2.15 each? What about three books that cost \$1.70 each. Explain how you know.</p> <p>3.5.12 Carry out simple unit conversions within a measurement system (e.g., centimeters to meters, hours to minutes). Example: How many minutes are in 3 hours?</p> <p>*polygon: two-dimensional shape with straight sides (e.g., triangle, rectangle, pentagon)</p>	<p>Find how long that is in hours and minutes.</p> <p>4.5.10 Determine the amount of change from a purchase. Example: You buy a chocolate bar priced at \$1.75. How much change do you get if you pay for it with a five-dollar bill?</p>
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		<p>4.6.1 Represent data on a number line and in tables, including frequency tables.</p> <p>Example: The students in your class are growing plants in various parts of the classroom. Plan a survey to measure the height of each plant in centimeters on a certain day. Record your survey results on a line plot.</p> <p>4.6.2 Interpret data graphs to answer questions about a situation.</p> <p>Example: The line plot below shows the heights of fast-growing plants reported by third-grade students. Describe any patterns that you can see in the data using the words “most,” “few,” and “none.”</p> <p>4.6.3 Summarize and display the results of probability experiments in a clear and organized way.</p> <p>Example: roll a number cube 36 times and keep a tally of the number of times that 1, 2, 3, 4, 5, and 6 appear. Draw a bar graph to show your results.</p>

<b>Standard 6 – Problem Solving</b> <i>Students make decisions about how to set up a problem.</i>	<b>Standard 6 – Problem Solving</b> <i>Students make decisions about how to set up a problem.</i>	<b>Standard 7 – Problem Solving</b> <i>Students make decisions about how to set up a problem.</i>
<p><b>Students make decisions about how to set up a problem.</b></p> <p>2.6.1 Choose the approach, materials, and strategies to use in solving problems.  Example: Solve the problem: “Count the number of squares on the surface of a cube. Put two cubes together and count the number of visible squares. Repeat this step with 3, 4, 5, ... cubes in a line. Find a rule for the number of squares.” Use blocks to set up the problem.</p> <p>2.6.2 Use tools such as objects or drawings to model problems.  Example: In the example, place blocks together. Each time you add a block, count the number of squares and record it.</p>	<p><b>Students make decisions about how to approach problems and communicate their ideas.</b></p> <p>3.6.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.  Example: Solve the problem: “Start with any number. If it is even, halve it. If it is odd, add 1. Do the same with the result and keep doing that. Find what happens by trying different numbers.” Try two or three numbers and look for patterns.</p> <p>3.6.2 Decide when and how to break a problem into simpler parts.  Example: In the first example, find what happens to all the numbers up to 10.</p>	<p><b>Students make decisions about how to approach problems and communicate their ideas.</b></p> <p>4.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.  Example: Solve the problem: “Find a relationship between the number of faces, edges, and vertices of a solid shape with flat surfaces.” Try two or three shapes and look for patterns.</p> <p>4.7.2 Decide when and how to break a problem into simpler parts.  Example: In the first example, find what happens to cubes and rectangular solids.</p>
<p><b>Students solve problems and justify their reasoning.</b></p> <p>2.6.3 Explain the reasoning used and justify the procedures selected in solving a problem.  Example: In the first example, notice that the number goes up by 4 each time a block is added. Observe that, as you add each cube, you gain 6 squares but lose 2 where the blocks are joined.</p>	<p><b>Students use strategies, skills, and concepts in finding and communicating solutions to problems.</b></p> <p>3.6.3 Apply strategies and results from simpler problems to solve more complex problems.  Example: In the first example, use your results for the numbers up to 10 to find what happens to all the number up to 10.</p>	<p><b>Students use strategies, skills, and concepts in finding and communicating solutions to problems.</b></p> <p>4.7.3 Apply strategies and results from simpler problems to solve more complex problems.  Example: In the first example, use your method for cubes and rectangular solids to find what happens to other prisms and to pyramids.</p>

<p>2.6.4 Make precise calculations and check the validity of the results in the context of the problem.  Example: In the first example, check your results by setting out 10 blocks and counting the number of squares on each long side and then the two at the ends. See how this fits with your rule of adding 4 each time.</p> <p>Understand and use connections between two problems.  Example: Use the method of the problem you have just solved to find what happens when the cubes are not all in a line.</p>	<p>3.6.4 Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.  Example: In the first example, explain what happens to all the numbers that you tried.</p> <p>3.6.5 Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.  Example: Measure the length and width of a room to the nearest meter to find how many student desks will fit in it. Would this be an accurate enough method if you were carpeting the room?</p> <p>3.6.6 Know and use strategies for estimating results of whole-number addition and subtraction.  Example: You buy 2 bags of candy for \$1.05 each. The cashier tells you that will be \$1.70. Does that surprise you? Why or why not?</p> <p>3.6.7 Make precise calculations and check the validity of the results in the context of the problem.  Example: In the first example, notice that the result of adding 1 to an odd number is always even. Use this to check your calculations.</p>	<p>4.7.4 Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, tools, and models to solve problems, justify arguments, and make conjectures.  Example: In the first example, make a table to help you explain your results to another student.</p> <p>4.7.5 Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.  Example: In the first example, explain what happens with all the shapes that you tried.</p> <p>4.7.6 Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.  Example: You are telling the time of a TV program. How accurate should you be: to the nearest day, hour, minute, or second?</p> <p>4.7.7 Know and use appropriate methods for estimating results of whole-number computations.  Example: You buy 2 CDs for \$15.95 each. The cashier tells you that will be \$49.90. Does that surprise you?</p> <p>4.7.8 Make precise calculations and check the validity of the results in the context of the problem.  Example: The buses you use for a school trip hold 55 people each. How many buses will you need to seat 180 people?</p>
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	<p><b>Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.</b></p> <p>3.6.8 Decide whether a solution is reasonable in the context of the original situation. Example: In the example about fitting desks into a room, would an answer of 1,000 surprise you?</p> <p>3.6.9 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems. Example: Change the first example so that you multiply odd numbers by 2 or 3 or 4 or 5, before adding 1. Describe the pattern you see.</p>	<p><b>Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.</b></p> <p>4.7.9 Decide whether a solution is reasonable in the context of the original situation. Example: In the last example, would an answer of 3.27 surprise you?</p> <p>4.7.10 Note the method of finding the solutions and show a conceptual understanding of the method by solving similar problems. Example: Change the first example so that you look at shapes with curved surfaces.</p>
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