

3rd Grade Mathematics						
Mathematical Practices	Number and Operations Fractions	Numbers and Operations in Base Ten	Operations and Algebraic Thinking	Measurement and Data	Geometry	Additional Skills Through Interdisciplinary Units of Study
<p>Make sense of problems and persevere in solving them.</p> <p>Reason abstractly and quantitatively.</p> <p>Construct viable arguments and critique the reasoning of others.</p> <p>Model with mathematics.</p> <p>Use appropriate tools strategically.</p> <p>Attend to precision.</p> <p>Look for and make use of structure.</p> <p>Look for and express regularity in repeated reasoning.</p>	<p><b>Develop understanding of fractions as numbers:</b></p> <p>Understand a fraction <math>1/b</math> as the quantity formed by 1 part when <math>a</math> whole is partitioned into <math>b</math> equal parts; understand a fraction <math>a/b</math> as the quantity formed by <math>a</math> parts of size <math>1/b</math>.</p> <p>Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p>	<p><b>Use place value understanding and properties of operations to perform multi-digit arithmetic:</b></p> <p>Use place value understanding to round whole numbers to the nearest 10 or 100.</p> <p>Fluently add and subtract within 1000 (to 10,000) using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</p>	<p><b>Represent and solve problems involving multiplication and division:</b></p> <p>Interpret products of whole numbers, e.g., interpret <math>5 \times 7</math> as the total number of objects in 5 groups of 7 objects each. <i>For example, describe a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</i></p> <p>Interpret whole-number quotients of whole numbers, e.g., interpret 56</p>	<p><b>Solve problems involving measurement and estimation:</b></p> <p>Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.</p> <p>Measure and estimate liquid volumes and masses of objects using standard</p>	<p><b>Reason with shapes and their attributes:</b></p> <p>Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals).</p> <p>Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw</p>	<p>Electric Car Unit</p> <ul style="list-style-type: none"> <li>- Mean, mode, median, range</li> </ul> <p>Haupt Dollars and Big Banking</p> <ul style="list-style-type: none"> <li>- Money management</li> <li>- Savings</li> <li>- Interest</li> <li>- Stock</li> <li>- Classroom management</li> </ul>

	<p>Represent a fraction <math>1/b</math> on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into <math>b</math> equal parts. Recognize that each part has size <math>1/b</math> and that the endpoint of the part based at 0 locates the number <math>1/b</math> on the number line.</p> <p>Represent a fraction <math>a/b</math> on a number line diagram by marking off a lengths <math>1/b</math> from 0. Recognize that the resulting interval has size <math>a/b</math> and that its endpoint locates the number <math>a/b</math> on the number line.</p> <p>Explain equivalence of fractions in special cases, and</p>	<p>Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., <math>9 \times 80</math>, <math>5 \times 60</math>) using strategies based on place value and properties of operations.</p>	<p><math>\div 8</math> as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. <i>For example, describe a context in which a number of shares or a number of groups can be expressed as <math>56 \div 8</math>.</i></p> <p>Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and</p>	<p>units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.</p> <p><b>Represent and interpret data:</b></p> <p>Find a date on a calendar.</p> <p>Label a calendar with days of the week.</p> <p>Solve word problems with a calendar.</p> <p>Draw a scaled picture graph and</p>	<p>examples of quadrilaterals that do not belong to any of these subcategories.</p> <p>Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as <math>1/4</math> of the area of the shape.</i></p> <p>Define vocabulary terms.</p> <p>Identify and draw lines, angles and shapes.</p> <p>Draw and label degrees on a clock or circle.</p>	
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	<p>compare fractions by reasoning about their size.</p> <p>Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</p> <p>Recognize and generate simple equivalent fractions, e.g., <math>1/2 = 2/4</math>, <math>4/6 = 2/3</math>. Explain why the fractions are equivalent, e.g., by using a visual fraction model.</p> <p>Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. <i>Examples: Express 3 in the form <math>3 = 3/1</math>; recognize that <math>6/1 = 6</math>; locate <math>4/4</math> and 1 at the same point of a number</i></p>		<p>equations with a symbol for the unknown number to represent the problem.</p> <p>Determine the unknown whole number in a multiplication or division equation relating three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations <math>8 \times ? = 48</math>, <math>5 = \_ \div 3</math>, <math>6 \times 6 = ?</math></i></p> <p><b>Understand properties of multiplication and the relationship between multiplication and division:</b></p> <p>Apply properties of operations as</p>	<p>a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i></p> <p>Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.</p>	<p>Draw lines of symmetry.</p> <p>Recognize congruent figures.</p> <p>Define, identify, and draw solid figures.</p>	
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	<p><i>line diagram.</i></p> <p>Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, or <math>&lt;</math>, and justify the conclusions, e.g., by using a visual fraction model.</p> <p>Add and subtract fractions with like denominators.</p>		<p>strategies to multiply and divide. <i>Examples: If <math>6 \times 4 = 24</math> is known, then <math>4 \times 6 = 24</math> is also known. (Commutative property of multiplication.) <math>3 \times 5 \times 2</math> can be found by <math>3 \times 5 = 15</math>, then <math>15 \times 2 = 30</math>, or by <math>5 \times 2 = 10</math>, then <math>3 \times 10 = 30</math>. (Associative property of multiplication.) Knowing that <math>8 \times 5 = 40</math> and <math>8 \times 2 = 16</math>, one can find <math>8 \times 7</math> as <math>8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56</math>. (Distributive property.)</i></p> <p>Understand division as an unknown-factor problem. <i>For example, find <math>32 \div 8</math> by finding the number that makes 32 when multiplied by 8.</i></p>	<p><b>Geometric measurement: understand concepts of area and relate area to multiplication and to addition:</b></p> <p>Recognize area as an attribute of plane figures and understand concepts of area measurement.</p> <p>Understand a square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.</p> <p>Understand a plane figure, which can be covered without gaps or overlaps by <math>n</math> unit squares, is said to have an area of <math>n</math> square units.</p>		
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			<p>Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p> <p>Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. <i>For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.</i></p>	<p>number products as rectangular areas in mathematical reasoning.</p> <p>Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths <math>a</math> and <math>b + c</math> is the sum of <math>a \times b</math> and <math>a \times c</math>. Use area models to represent the distributive property in mathematical reasoning.</p> <p>Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, and finding an unknown side length.</p>		
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**3<sup>rd</sup> Grade Math Vocabulary:**

**Operations & Algebraic Thinking:** solution, range, inequality, domain, form, distributive, like denominator, expression, multiples, equation

**Number & Operations in Base Ten:** regroup, place value, whole numbers, minuend, rounding, division, estimation, solution, addend, number line, subtraction, digit, product multiplier, addition, plus, minus, difference, sum, times

**Number & Operations - Fractions:** divisor, numerator, factor, fraction, dividend, relative, whole number, quotient, denominator, rounding

**Length:** centimeter, area, length, height, mile, kilometer, temperature, perimeter, meter, width

**Showing Data:** tally chart, bar graph, data, input, interpret, pictograph, customary units, non-standard units, picture graph, table, symbol

**Statistics:** chance, reasonableness, median, data, input, outcome, combinations, mode, predict

**Time/Temperature:** thermometer, degrees, second, minute, clockwise, counterclockwise, temperature, elapsed time, hour, Celsius

**Weight/Volume:** gram, liter, weight, scale, metric, liquid measures, kilogram, ounce, capacity, volume

**Angles:** obtuse angle, angle, acute angle, right angle, straight angle, vertex, perpendicular, reflection, congruent, degrees

**Lines:** side, coordinates, line graph, right angle, line of symmetry, intersecting lines, closed figure, line segment, perpendicular, degrees

**Prisms:** cube, cylinder, base, cone, face, sphere, prism, solid figure, dimensions, volume

**Shapes:** polygon, octagon, symmetry, congruent, translation, pentagon, hexagon, rhombus, parallelogram, area