

<b>Grade Level:</b>	<b>3rd</b>
<b>Class Title:</b>	<b>Math</b>
<b>Subject:</b>	<b>Math</b>
<b>Class Description:</b>	<p>Grade 3 Math will focus on four areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.</p> <p>This class will work toward one or more CCSS. This will be a year-long class, spanning the 2017-2018 school year.</p> <p>The estimated instructional hours for this class are ____ per week.</p>
<b>Learning Materials:</b>	List all materials.
<b>Learning Goals/ Performance Objectives:</b>	<p><b>Operations and Algebraic Thinking</b>  <b>Represent and solve problems involving multiplication and division.</b></p> <ol style="list-style-type: none"> <li>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.</li> <li>Interpret whole-number quotients of whole numbers, e.g., interpret <math>56 \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.</li> <li>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 equations with a symbol for the unknown number to represent the problem.</li> <li>Determine the unknown whole number in a multiplication or division equation relating three whole numbers.</li> </ol> <p><b>Understand properties of multiplication and the relationship between multiplication and division.</b></p> <ol style="list-style-type: none"> <li>Apply properties of operations as 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></li> <li>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></li> </ol> <p><b>Multiply and divide within 100.</b></p> <ol style="list-style-type: none"> <li>Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that <math>8 \times 5 = 40</math>, one knows <math>40 \div 5 = 8</math>) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.</li> </ol> <p><b>Solve problems involving the four operations, and identify and explain patterns in arithmetic.</b></p> <ol style="list-style-type: none"> <li>Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the</li> </ol>

reasonableness of answers using mental computation and estimation strategies including rounding. (Students need not use formal terms for these properties)

2. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

### **Number and Operations in Base Ten**

**Use place value understanding and properties of operations to perform multi-digit arithmetic.**

1. Use place value understanding to round whole numbers to the nearest 10 or 100.
2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3. Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g.,  $9 \times 80$ ,  $5 \times 60$ ) using strategies based on place value and properties of operations.

### **Number and Operations—Fractions**

*(Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)*

**Develop understanding of fractions as numbers.**

1. Understand a fraction  $1/b$  as the quantity formed by 1 part when a whole is partitioned into  $b$  equal parts; understand a fraction  $a/b$  as the quantity formed by  $a$  parts of size  $1/b$ .
2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.
3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
  - a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
  - b. Recognize and generate simple equivalent fractions, e.g.,  $1/2 = 2/4$ ,  $4/6 = 2/3$ . Explain why the fractions are equivalent, e.g., by using a visual fraction model.
  - c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form  $3 = 3/1$ ; recognize that  $6/1 = 6$ ; locate  $4/4$  and 1 at the same point of a number line diagram.*
  - d. 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
  - e.  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual fraction model.

### **Measurement and Data**

**Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.**

1. 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.
2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).<sup>6</sup> 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.

**Represent and interpret data.**

1. Draw a scaled picture graph and 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.
2. 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.

**Geometric measurement: understand concepts of area and relate area to multiplication and to addition.**

1. Recognize area as an attribute of plane figures and understand concepts of area measurement.
  - a. 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.
  - b. A plane figure which can be covered without gaps or overlaps by  $n$  unit squares is said to have an area of  $n$  square units.
6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).
7. Relate area to the operations of multiplication and addition.
  - a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
  - b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
  - c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths  $a$  and  $b + c$  is the sum of  $a \times b$  and  $a \times c$ . Use area models to represent the distributive property in mathematical reasoning.
  - d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

**Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.**

8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

**Geometry****Reason with shapes and their attributes.**

1. 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). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

	<p>2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.</p> <p>A team of certificated teachers who are highly qualified in this subject matter has reviewed this WSLP.</p>
<b>Learning Activities:</b>	<p>(Student Name) will complete 4 lessons a week.</p> <p>(Student Name) will practice math facts 10 minutes each day.</p> <p>(Student Name) will complete one written assessment each week.</p>
<b>Progress Criteria/ Methods of Evaluation:</b>	<p>[Student's name] will keep a portfolio of weekly work samples and any written assessments to present to consultant at face-to-face meetings each month. Monthly assessments will be completed by the consultant/certified teacher. Monthly Progress will be marked satisfactory or unsatisfactory based on the professional judgment of the certified teacher using parent input, work samples, and monthly assessments.</p>