

Center Cass School District 66	3 <sup>rd</sup> Grade Curriculum Guide	Mathematics
<p>In Grade 3, instructional time should focus on four critical 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>		
Trimester #1	Trimester #2	Trimester #3
<p><b>Unit 1 – Place Value</b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>Use place value understanding to round whole numbers to the nearest 10 or 100.</li> <li>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.</li> <li>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.</li> </ul> <p><b>Unit 2 – Addition</b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. 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.</li> </ul> <p><b>Unit 3 – Subtraction</b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>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.</li> <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 reasonableness of answers using mental computation and estimation strategies including rounding.</li> </ul> <p><b>Unit 4 – Understanding Multiplication</b> Students will know and be able to:</p> <ul 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. For example, describe a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</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. 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>.</li> </ul>	<p><b>Unit 6 – Multiplication and Division (2’s, 5’s, and 10’s)</b> Students will know and be able to:</p> <ul 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. For example, describe a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</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. For example, determine the unknown number that makes the equation true in each of the equations <math>8 \times ? = 48</math>, <math>5 = \square \div 3</math>, <math>6 \times 6 = ?</math>.</li> <li>Apply properties of operations as strategies to multiply and divide. 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 2 \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.)</li> <li>Understand division as an unknown-factor problem. For example, find <math>32 \div 8</math> by finding the number that makes 32 when multiplied by 8.</li> <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> <li>Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. 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.</li> </ul>	<p><b>Unit 10 – Fractions –continued-</b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</li> <li>Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</li> </ul> <p><b>Unit 11 – Measurement</b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities,</li> <li>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.</li> <li>Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters</li> <li>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.</li> </ul> <p><b>Unit 12 – Represent and Interpret Data</b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>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. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</li> <li>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.</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> </ul>

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Trimester #1 –Continued-	Trimester #2 –Continued-	Trimester #3 –Continued-
<p><b><u>Unit 4 – Understanding Multiplication – continued-</u></b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>Apply properties of operations as strategies to multiply and divide. 2 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.)</li> <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 reasonableness of answers using mental computation and estimation strategies including rounding.</li> </ul> <p><b><u>Unit 5 – Understanding Division (7 days)</u></b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>Interpret whole-number quotients of whole numbers</li> <li>Determine the unknown whole number in a multiplication or division equation relating three whole numbers. Understand division as an unknown-factor problem. For example, find <math>32 \div 8</math> by finding the number that makes 32 when multiplied by 8.</li> <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> <li>Understand a fraction as a number on the number line; represent fractions on a number line diagram.</li> <li>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.</li> <li>Represent a fraction <math>a/b</math> on a number line diagram by marking off <math>a</math> 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.</li> <li>Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</li> <li>Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</li> <li>Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. 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 line diagram</li> </ul>	<p><b><u>Unit 7 – Multiplication and Division (3’s, 4’s, 0’s, and 1’s)</u></b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>Interpret products of whole numbers</li> <li>Interpret whole-number quotients of whole numbers</li> <li>Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities,</li> <li>Determine the unknown whole number in a multiplication or division equation relating three whole numbers.</li> <li>Apply properties of operations as strategies to multiply and divide.</li> </ul> <p><b><u>Unit 8 – Apply Multiplication and Division (6’s, 7’s, 8’s, 9’s, 11’s, and 12’s)</u></b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>Interpret products of whole numbers</li> <li>Interpret whole-number quotients of whole numbers</li> <li>Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities,</li> <li>Determine the unknown whole number in a multiplication or division equation relating three whole numbers.</li> <li>Apply properties of operations as strategies to multiply and divide.</li> <li>Understand division as an unknown-factor problem. For example, find <math>32 \div 8</math> by finding the number that makes 32 when multiplied by 8.</li> </ul> <p><b><u>Unit 9 – Properties and Equations Instruction</u></b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>Apply properties of operations as strategies to multiply and divide.</li> <li>Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division</li> <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 reasonableness of answers using mental computation and estimation strategies including rounding</li> </ul> <p><b><u>Unit 10 – Fractions</u></b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>Understand a fraction <math>1/b</math> as the quantity formed by 1 part when a 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>.</li> <li>Understand a fraction as a number on the number line; represent fractions on a number line diagram. 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.</li> </ul>	<p><b><u>Unit 13 – Perimeter and Area</u></b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>Recognize area as an attribute of plane figures and understand concepts of area measurement.</li> <li>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.</li> <li>b. 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.</li> <li>Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).</li> <li>Relate area to the operations of multiplication and addition.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> </ul> <p><b><u>Unit 14 – Geometry</u></b> Students will know and be able to:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into parts with equal area, and describe the area of each part as <math>1/4</math> of the area of the shape.</li> </ul>

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