

A photograph of a classroom with two wooden desks. Each desk has a black top and a white sheet of paper with a pencil resting on it. The background shows a whiteboard and a wooden cabinet.

**DRAFT New Louisiana  
Standards for 2016-2017  
Correlation to *Eureka Math***

Grade 3  
April 2016  
Draft

**EUREKA  
MATH™**

# Grade 3 Mathematics

The majority of the Grade 3 Louisiana Standards for Mathematics are fully covered by the Grade 3 *Eureka Math* curriculum. The primary area where the Grade 3 Louisiana Standards for Mathematics and *Eureka Math* do not align is in the domain of Measurement and Data. Standards from this domain will require use of *Eureka Math* content from other grade levels, along with supplemental materials to teach time. A detailed analysis of alignment is provided in the table below. With strategic placement of supplemental materials, *Eureka Math* can ensure students are successful in achieving the proficiencies of the Louisiana Standards for Mathematics while benefiting from the coherence and rigor of *Eureka Math*.

## Indicators

-  Green indicates that the Louisiana standard is fully addressed in *Eureka Math*.
-  Yellow indicates that the Louisiana standard may not be completely addressed in *Eureka Math*.
-  Red indicates that the Louisiana standard is not addressed in *Eureka Math*.
-  Blue indicates there is a discrepancy between the grade level at which this standard is addressed in the Louisiana standards and in *Eureka Math*.

## Standards for Mathematical Practice

## Aligned Components of *Eureka Math*

### 1. Make sense of problems and persevere in solving them.

In third grade, students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Third graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, “Does this make sense?” They listen to the strategies of others and will try different approaches. They often will use another method to check their answers.

Lessons in every module engage students in making sense of problems and persevering in solving them as required by this standard. This standard is analogous to the CCSSM Standard for Mathematical Practice 1, which is specifically addressed in the following modules:

- G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10
- G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10
- G3 M7: Geometry and Measurement Word Problems

### 2. Reason abstractly and quantitatively.

Third graders should recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities.

Lessons in every module engage students in reasoning abstractly and quantitatively as required by this standard. This standard is analogous to the CCSSM Standard for Mathematical Practice 2, which is specifically addressed in the following modules:

- G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10
- G3 M2: Place Value and Problem Solving with Units of Measure
- G3 M4: Multiplication and Area
- G3 M5: Fractions as Numbers on the Number Line
- G3 M6: Collecting and Displaying Data

## Standards for Mathematical Practice

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### 3. Construct viable arguments and critique the reasoning of others.

In third grade, students may construct arguments using concrete referents, such as objects, pictures, and drawings. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like “How did you get that?” and “Why is that true?” They explain their thinking to others and respond to others’ thinking.

Lessons in every module engage students in constructing viable arguments and critiquing the reasoning of others as required by this standard. This standard is analogous to the CCSSM Standard for Mathematical Practice 3, which is specifically addressed in the following modules:

- G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10
- G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10
- G3 M4: Multiplication and Area
- G3 M5: Fractions as Numbers on the Number Line
- G3 M7: Geometry and Measurement Word Problems

### 4. Model with mathematics.

Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Third graders should evaluate their results in the context of the situation and reflect on whether the results make sense.

Lessons in every module engage students in modeling with mathematics as required by this standard. This standard is analogous to the CCSSM Standard for Mathematical Practice 4, which is specifically addressed in the following modules:

- G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10
- G3 M2: Place Value and Problem Solving with Units of Measure
- G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10

## Standards for Mathematical Practice

## Aligned Components of *Eureka Math*

### 5. Use appropriate tools strategically.

Third graders consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper to find all the possible rectangles that have a given perimeter. They compile the possibilities into an organized list or a table, and determine whether they have all the possible rectangles.

Lessons in every module engage students in using appropriate tools strategically as required by this standard. This standard is analogous to the CCSSM Standard for Mathematical Practice 5, which is specifically addressed in the following modules:

- G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10
- G3 M6: Collecting and Displaying Data
- G3 M7: Geometry and Measurement Word Problems

### 6. Attend to precision.

As third graders develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, when figuring out the area of a rectangle they record their answers in square units.

Lessons in every module engage students in attending to precision as required by this standard. This standard is analogous to the CCSSM Standard for Mathematical Practice 6, which is specifically addressed in the following modules:

- G3 M2: Place Value and Problem Solving with Units of Measure
- G3 M4: Multiplication and Area
- G3 M5: Fractions as Numbers on the Number Line
- G3 M6: Collecting and Displaying Data
- G3 M7: Geometry and Measurement Word Problems

## Standards for Mathematical Practice

## Aligned Components of *Eureka Math*

### 7. Look for and make use of structure.

In third grade, students look closely to discover a pattern or structure. For instance, students use properties of operations as strategies to multiply and divide (commutative and distributive properties).

Lessons in every module engage students in looking for and making use of structure as required by this standard. This standard is analogous to the CCSSM Standard for Mathematical Practice 7, which is specifically addressed in the following modules:

- G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10
- G3 M2: Place Value and Problem Solving with Units of Measure
- G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10
- G3 M4: Multiplication and Area
- G3 M5: Fractions as Numbers on the Number Line
- G3 M6: Collecting and Displaying Data

### 8. Look for and express regularity in repeated reasoning.

Students in third grade should notice repetitive actions in computation and look for more shortcut methods. For example, students may use the distributive property as a strategy for using products they know to solve products that they don't know. For example, if students are asked to find the product of  $7 \times 8$ , they might decompose 7 into 5 and 2 and then multiply  $5 \times 8$  and  $2 \times 8$  to arrive at  $40 + 16$  or 56. In addition, third graders continually evaluate their work by asking themselves, "Does this make sense?"

Lessons in every module engage students in looking for and expressing regularity in repeated reasoning as required by this standard. This standard is analogous to the CCSSM Standard for Mathematical Practice 8, which is specifically addressed in the following modules:

- G3 M4: Multiplication and Area

**Domain**

**Standards**

**Aligned Components of *Eureka Math***

Domain	Standards	Aligned Components of <i>Eureka Math</i>
<p><b>Operations and Algebraic Thinking</b></p>	<p><b>Cluster A: Represent and solve problems involving multiplication and division.</b></p>	
	<p><b>3.OA.A.1</b>                      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>G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10</p> <p>G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10</p>
	<p><b>3.OA.A.2</b>                      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. <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>G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10</p> <p>G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10</p>
<p><b>3.OA.A.3</b>                      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.</p>	<p>G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10</p> <p>G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10</p> <p>G3 M4: Multiplication and Area</p> <p>G3 M7 Topic A: Solving Word Problems</p>	

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	<p><b>3.OA.A.4</b> 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 \square = 48</math>, <math>5 = \square \div 3</math>, <math>6 \times 6 = \square</math>.</i></p>	<p>G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10</p> <p>G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10</p>
<p><b>Cluster B: Understand properties of multiplication and the relationship between multiplication and division.</b></p>		
	<p><b>3.OA.B.5</b> 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></p>	<p>G3 M1 Topic C: Multiplication Using Units of 2 and 3</p> <p>G3 M1 Topic E: Multiplication and Division Using Units of 4</p> <p>G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10</p> <p>G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10</p>
	<p><b>3.OA.B.6</b> 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>G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10</p> <p>G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10</p>
<p><b>Cluster C: Multiply and divide within 100.</b></p>		

**Domain****Standards****Aligned Components of *Eureka Math*****3.OA.C.7**

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that  $8 \times 5 = 40$ , one knows  $40 \div 5 = 8$ ) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10

G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10

Note: These modules explicitly lay the foundation for multiplication and division. This standard is a major fluency goal for Grade 3. Therefore, significant practice is embedded within all modules.

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**Standards**

**Aligned Components of *Eureka Math***

Domain	Standards	Aligned Components of <i>Eureka Math</i>
	<p><b>Cluster D: Solve problems involving the four operations, and identify and explain patterns in arithmetic.</b></p> <p><b>3.OA.D.8</b> 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.</p> <p><b>3.OA.D.9</b> 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>G3 M1 Lesson 21: Solve two-step word problems involving all four operations, and assess the reasonableness of answers.</p> <p>G3 M3 Lesson 18: Solve two-step word problems involving all four operations and assess the reasonableness of solutions.</p> <p>G3 M3 Lesson 21: Solve two-step word problems involving multiplying single-digit factors and multiples of 10.</p> <p>G3 M7 Topic A: Solving Word Problems</p> <p>G3 M7 Lesson 17: Use all four operations to solve problems involving perimeter and unknown measurements.</p> <p>G3 M7 Lessons 28–29: Solve a variety of word problems involving area and perimeter using all four operations.</p> <p>G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10</p>

Domain	Standards	Aligned Components of <i>Eureka Math</i>
<b>Number and Operations in Base Ten</b>	<b>Cluster A: Use place value understanding and properties of operations to perform multi-digit arithmetic.</b>	
	<b>3.NBT.A.1</b> Use place value understanding to round whole numbers to the nearest 10 or 100.	G3 M2 Topic C: Rounding to the Nearest Ten and Hundred
	<b>3.NBT.A.2</b> 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.	G3 M2: Place Value and Problem Solving with Units of Measure
	<b>3.NBT.A.3</b> 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.	G3 M3 Topic F: Multiplication of Single-Digit Factors and Multiples of 10
<b>Number and Operations—Fractions</b>	<b>Cluster A: Develop understanding of fractions as numbers.</b>	
	<b>3.NF.A.1</b> Understand a fraction $1/b$ , with denominators 2, 3, 4, 6, and 8, 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 $1/b$ .	G3 M5 Topic B: Unit Fractions and Their Relation to the Whole

Domain	Standards	Aligned Components of <i>Eureka Math</i>
	<p><b>3.NF.A.2</b> Understand a fraction with denominators 2, 3, 4, 6, and 8 as a number on a number line diagram.</p>	
	<p>a. 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>	G3 M5 Topic D: Fractions on the Number Line
	<p>b. 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.</p>	G3 M5 Topic D: Fractions on the Number Line
	<p><b>3.NF.A.3</b> Explain equivalence of fractions with denominators 2, 3, 4, 6 and 8 in special cases, and compare fractions by reasoning about their size.</p>	
	<p>a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</p>	G3 M5 Topic D: Fractions on the Number Line G3 M5 Topic E: Equivalent Fractions
	<p>b. 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>	G3 M5 Topic D: Fractions on the Number Line G3 M5 Topic E: Equivalent Fractions

Domain	Standards	Aligned Components of <i>Eureka Math</i>
	<p>c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form <math>3 = \frac{3}{1}</math>; recognize that <math>\frac{6}{1} = 6</math>; locate <math>\frac{4}{4}</math> and 1 at the same point of a number line diagram.</p>	<p>G3 M5 Topic D: Fractions on the Number Line G3 M5 Topic E: Equivalent Fractions</p>
	<p>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 <math>&gt;</math>, <math>=</math>, or <math>&lt;</math>, and justify the conclusions, e.g., by using a visual fraction model.</p>	<p>G3 M5 Topic C: Comparing Unit Fractions and Specifying the Whole G3 M5 Topic D: Fractions on the Number Line G3 M5 Topic F: Comparison, Order, and Size of Fractions</p>
<p><b>Measurement and Data</b></p>	<p><b>Cluster A: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.</b></p>	
	<p><b>3.MD.A.1</b> Understand time to the nearest minute.</p>	
	<p>a. Tell and write time to the nearest minute and measure time intervals in minutes, within 60 minutes, on an analog and digital clock.</p>	<p>G3 M2 Topic A: Time Measurement and Problem Solving</p>

Domain	Standards	Aligned Components of <i>Eureka Math</i>
	<p>b. Calculate elapsed time greater than 60 minutes to the nearest quarter and half hour on a number line diagram.</p>	<p>G3 M2 Lesson 4: Solve word problems involving time intervals within 1 hour by counting backward and forward using the number line and clock.</p> <p>G3 M2 Lesson 5: Solve word problems involving time intervals within 1 hour by adding and subtracting on the number line</p> <p>Note: In Lessons 4 and 5, students calculate elapsed time within 1 hour. Supplemental materials will be needed in order to fulfill this standard completely.</p>
	<p>c. 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>G3 M2 Lesson 4: Solve word problems involving time intervals within 1 hour by counting backward and forward using the number line and clock.</p> <p>G3 M2 Lesson 5: Solve word problems involving time intervals within 1 hour by adding and subtracting on the number line</p>
	<p><b>3.MD.A.2</b> Measure and estimate liquid volumes and masses of objects using standard 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>G3 M2: Place Value and Problem Solving with Units of Measure</p>

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Domain	Standards	Aligned Components of <i>Eureka Math</i>
<b>Cluster B: Represent and interpret data.</b>		
	<p><b>3.MD.B.3</b>            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. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i></p>	<p>G3 M6 Topic A: Generate and Analyze Categorical Data</p>
	<p><b>3.MD.B.4</b>            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>G3 M6 Topic B: Generate and Analyze Measurement Data            G3 M7 Topic D: Recording Perimeter and Area Data on Line Plots</p>
<b>Cluster C: Geometric measurement: Understand concepts of area and relate area to multiplication and to addition.</b>		
	<p><b>3.MD.C.5</b>            Recognize area as an attribute of plane figures and understand concepts of area measurement.</p>	
	<p>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</p>	<p>G3 M4 Topic A: Foundations for Understanding Area</p>
	<p>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.</p>	<p>G3 M4 Topic A: Foundations for Understanding Area</p>

Domain	Standards	Aligned Components of <i>Eureka Math</i>
	<p><b>3.MD.C.6</b> Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).</p>	G3 M4 Topic A: Foundations for Understanding Area
	<p><b>3.MD.C.7</b> Relate area to the operations of multiplication and addition.</p>	
	<p>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.</p>	G3 M4 Topic B: Concepts of Area Measurement
	<p>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.</p>	<p>G3 M4 Topic B: Concepts of Area Measurement G3 M4 Topic C: Arithmetic Properties Using Area Models G3 M4 Topic D: Applications of Area Using Side Lengths of Figures</p>
	<p>c. 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>G3 M4 Topic C: Arithmetic Properties Using Area Models G3 M4 Topic D: Applications of Area Using Side Lengths of Figures</p>

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	<p><b>Cluster D: Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.</b></p>	
	<p><b>3.MD.D.8</b> 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.</p>	<p>G3 M7 Topic C: Problem Solving with Perimeter G3 M7 Topic D: Recording Perimeter and Area Data on Line Plots G3 M7 Topic E: Problem Solving with Perimeter and Area</p>
	<p><b>Cluster E: Work with Money</b></p>	
	<p><b>3.MD.E.9</b> Solve word problems involving pennies, nickels, dimes, quarters, and bills greater than one dollar, using the dollar and cent symbols appropriately.</p>	<p>G2 M7 Topic B: Problem Solving with Coins and Bills</p>
<p><b>Geometry</b></p>	<p><b>Cluster A: Reason with shapes and their attributes.</b></p>	
	<p><b>3.G.A.1</b> 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>	<p>G3 M7 Topic B: Attributes of Two-Dimensional Figures</p>

**Domain****Standards****Aligned Components of *Eureka Math*****3.G.A.2**

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 4 parts with equal area, and describe the area of each part as  $\frac{1}{4}$  of the area of the shape.*

G3 M5 Topic A: Partitioning a Whole into Equal Parts

G3 M5 Topic B: Unit Fractions and Their Relation to the Whole

G3 M5 Topic C: Comparing Unit Fractions and Specifying the Whole