

## Unit 2: Factors and Multiples and Problem Solving

<b>Unit #:</b>	APSDO-00017468	<b>Duration:</b>	19.0 Day(s)	<b>Date(s)</b>	
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**Grade(s)**

4

**Subject(s)**

Mathematics

### Unit Focus

In this unit, students will develop algebraic thinking and problem solving skills. Student will find the value of "n" in an equation, using order of operations. They will find factor pairs and multiples of a number and identify numbers as either prime or composite. Students will solve word problems using factors, divisibility, multiples, and patterns. Primary instructional materials for this unit include On Core and Everyday Mathematics.

### Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
<p><b>Common Core</b>  <i>Mathematics: 4</i></p> <ul style="list-style-type: none"> <li>• Interpret a multiplication equation as a comparison, e.g., interpret <math>35 = 5 \times 7</math> as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.  <i>CCSS.MATH.CONTENT.4.OA.A.1</i></li> <li>• Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to</li> </ul>	<p><b>T1</b> (T50) Based on an understanding of any problem, initiate a plan, execute it and evaluate the reasonableness of the solution.</p> <p><b>T2</b> (T53) Articulate how mathematical concepts relate to one another in the context of a problem or in the theoretical sense.</p> <p><b>T3</b> (T51) Examine alternate methods to accurately and efficiently solve problems.</p> <p><b>T4</b> (T52) Use appropriate tools strategically to deepen understanding of mathematical concepts.</p> <p><b>T5</b> (T20) Compose and decompose numbers to establish relationships, perform operations, and solve problems.</p> <p><b>T6</b> (T23) Use functions or equations to model relationships among quantities.</p> <p><b>T7</b> (T24) Classify, interpret, and compare functions or equations.</p>	
	<b>Meaning</b>	
	<b>Understanding(s)</b>	<b>Essential Question(s)</b>

<p>represent the problem, distinguishing multiplicative comparison from additive comparison.1 <i>CCSS.MATH.CONTENT.4.OA.A.2</i></p> <ul style="list-style-type: none"> <li>• Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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. <i>CCSS.MATH.CONTENT.4.OA.A.3</i></li> <li>• Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite. <i>CCSS.MATH.CONTENT.4.OA.B.4</i></li> <li>• Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule Add 3 and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. <i>CCSS.MATH.CONTENT.4.OA.C.5</i></li> </ul>	<p><b>U1</b> (U200) Numbers, objects, or elements may repeat in predictable ways (patterns). <b>U2</b> (U205) Expressions, equations, inequalities, and functions use symbols to represent quantities, operations, and their relationships. <b>U3</b> (U530) Every problem belongs to a category of problems that has a similar structure and set of characteristics; which means it can be solved using a similar model. <b>U4</b> (U562) Mastery of basic facts and rules maximizes conceptual and procedural fluency. <b>U5</b> (U561) Recognition of patterns and structures fosters efficiency in solving problems.</p>	<p><b>Q1</b> (Q200) What rule or pattern can help me simplify the expression or solve this problem? <b>Q2</b> (Q202) What value(s) can I use/substitute to make this relationship true? <b>Q3</b> (Q203) What is the relationship between/among these values? <b>Q4</b> (Q532) Which model best represents this problem? <b>Q5</b> (Q563) How does being fluent with basic facts and rules help me solve a complex problem? <b>Q6</b> (Q572) How does understanding the pattern/structure help me solve the problem?</p>
<b>Acquisition of Knowledge and Skill</b>		
<b>Knowledge</b>	<b>Skill(s)</b>	
	<p><b>S1</b> Write multiplication comparisons and equations</p> <p><b>S2</b> Find factor pairs for a number</p> <p><b>S3</b> Recognize that whole numbers are multiples of each of its factors</p> <p><b>S4</b> Identify whole numbers as either prime or composite</p> <p><b>S5</b> Solve number and shape patterns that follow</p>	

		<p>a given rule</p> <p><b>S6</b></p> <p>Solve word problems using factors and divisibility, common factors, multiples, and number patterns</p> <p><b>S7</b></p> <p>Use model drawings to write an equation and then solve a multiplication comparison problem</p> <p><b>S8</b></p> <p>Solve multistep word problems (all operations) including those where remainders must be interpreted</p> <p><b>S9</b></p> <p>Using the order of operations, will find the value of "n" (unknown quantity) in an equation</p>
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