

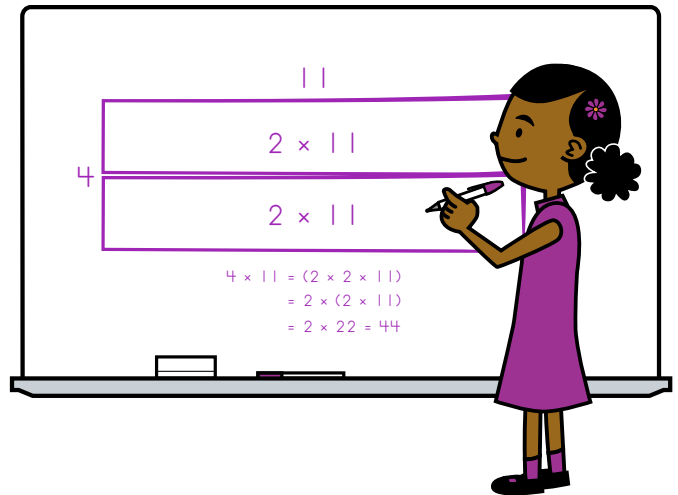
# Bridges in Mathematics

## Grade 4 Unit 1

# Multiplicative Thinking

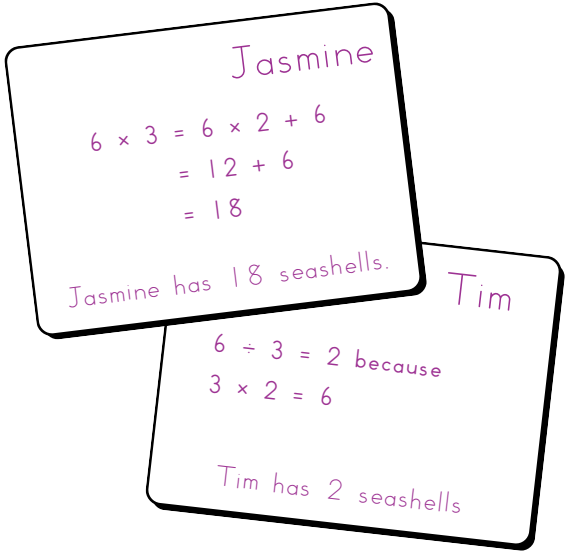
In this unit your child will:

- Fluently multiply and divide within 100
- Apply properties of operations as strategies to multiply and divide
- Use multiplication and division within 100 to solve story problems in situations involving equal groups, arrays, and measurement quantities
- Find the area of a rectangle



Your child will learn and practice these skills by solving problems like those shown below. Keep this sheet for reference when you're helping with homework. Use the free Math Vocabulary Cards app for additional support: [mathlearningcenter.org/apps](http://mathlearningcenter.org/apps)

PROBLEM	COMMENTS
$4 \times 2$ $4 + 4 = 8$ $4 \times 2 = 8$	<p>Students use the number line to model multiplication. In this example, they see that <math>8 \times 2</math> is twice as much as <math>4 \times 2</math>. The number line shows multiplication as repeated addition or jumps of equal sizes. It helps students see the relationships among multiplication facts, and understanding those relationships builds computational fluency.</p>
$8 \times 2$ $8 + 8 = 16$ $8 \times 2 = 16$	
<div style="border: 1px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;"><math>4 \times 11 = 44</math></div> <p>Closed Array</p> <p>Linear Pieces and Base Ten Area Pieces</p> <p>Open Array</p>	<p>Another important model for multiplication is the array. In this model, the sides are the numbers being multiplied and the area (the number of squares) is the product. In this example, we are multiplying 4 and 11, and the product is 44. The array shows the relationships among these numbers. It can also be used to show a variety of strategies for multiplying. For example, students can also show how to solve <math>4 \times 11</math> in this way:</p> <div style="text-align: center;"> </div> $4 \times 11 = (2 \times 2 \times 11) = 2 \times (2 \times 11) = 2 \times 22 = 44$

PROBLEM	COMMENTS
<p>Alexa has 6 seashells. Her sister Jasmine has 3 times as many seashells as Alexa, and her brother Tim has a third as many seashells as Alexa. How many seashells does Jasmine have? How many seashells does Tim have?</p>  <p>The image shows two pieces of handwritten student work. The top piece is titled 'Jasmine' and shows the calculation: <math>6 \times 3 = 6 \times 2 + 6 = 12 + 6 = 18</math>. Below the calculation, it says 'Jasmine has 18 seashells.' The bottom piece is titled 'Tim' and shows the calculation: <math>6 \div 3 = 2</math> because <math>3 \times 2 = 6</math>. Below the calculation, it says 'Tim has 2 seashells.'</p>	<p>Many story problems invite students to think about multiplication as equal groups. For example, if three siblings each ate 2 cookies, they ate 6 cookies in all. Students also use multiplication and division to solve problems involving comparisons, for example, "3 times as many" or "a third as many." We want students to appreciate that a variety of situations (equal groups, area, equal jumps on a number line, comparisons, rates) call for multiplication and division.</p>

## FREQUENTLY ASKED QUESTIONS ABOUT UNIT 1

### Q: Why do some of these activities look like what my child did in third grade?

**A:** This unit reviews mathematical concepts while introducing and establishing routines that will be used in fourth grade. Teachers assess students' skill level and plan future lessons based on this review. Students also deepen their experiences with multiplication and division by investigating multiplicative comparisons, writing expressions to represent multiplication situations, and solving contextual problems. Another element that is new to fourth grade is an investigation of factors, multiples, and prime and composite numbers.

### Q: How can I help my child and make homework a successful experience?

**A:** Homework assignments are sent home two or three times a week during the school year. Teachers may also send home Daily Practice pages for additional work with concepts and skills. Although your child is doing similar activities in class, she may need your help at home. Take time to ask her to explain the assignment to you. If she can describe the task clearly and confidently, she can probably complete the assignment independently. Your child has used several models and strategies to solve problems. Encourage her to use ways that make sense to her. Review the completed assignment, and ask your child to explain her thinking about some of the problems.