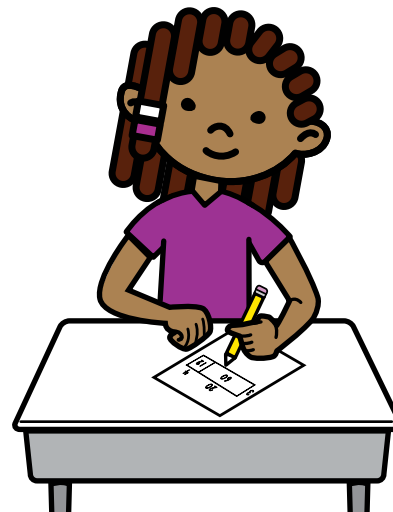


Multiplication & Division, Data & Fractions

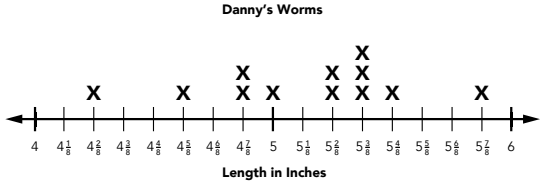
In this unit your student will:

- Multiply multidigit numbers
- Divide multidigit numbers by a 1-digit number
- Solve problems about the area and perimeter of rectangles
- Display data on a line plot and use it to solve problems



Your student will learn and practice these skills by solving problems such as these:

PROBLEM	COMMENTS												
<p>A large rectangular park has an area of 72 square miles. The width of the park is 3 miles. What is the length of the park?</p> <div style="text-align: center;"> $\begin{array}{r l} 20 & 4 \\ 3 & 60 \quad 12 \end{array}$ $72 \div 3 = 24$ </div> <p>The length of the park is 24 mi.</p> <p>What is the perimeter of the park?</p> <p>Perimeter = $2 \times (24 + 3) = 2 \times 27 = 54$</p> <p>The perimeter of the park is 54 mi.</p>	<p>Students review concepts of area and perimeter, which were addressed in the previous unit. They use reasoning and the relationship between multiplication and division to find unknown lengths. Next, they use this information to solve new problems.</p>												
<p>Solve $161 \div 7$ using a ratio table.</p> <div style="text-align: center;"> <table border="1"> <tr><td>1</td><td>7</td></tr> <tr><td>2</td><td>14</td></tr> <tr><td>10</td><td>70</td></tr> <tr><td>20</td><td>140</td></tr> <tr><td>3</td><td>21</td></tr> <tr><td>23</td><td>161</td></tr> </table> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div> $\begin{array}{l} \times 5 \left\{ \begin{array}{l} 10 \\ 20 \end{array} \right. \\ \times 2 \left\{ \begin{array}{l} 3 \\ 23 \end{array} \right. \\ 20 + 3 \end{array}$ </div> <div> $\begin{array}{l} \times 5 \left\{ \begin{array}{l} 70 \\ 140 \end{array} \right. \\ \times 2 \left\{ \begin{array}{l} 21 \\ 161 \end{array} \right. \\ 140 + 21 \end{array}$ </div> <div> $\begin{array}{l} 140 \div 7 = 20 \\ 21 \div 7 = 3 \\ 161 \div 7 = 23 \end{array}$ </div> </div>	1	7	2	14	10	70	20	140	3	21	23	161	<p>Students have used the ratio table and area model to solve multiplication problems. They can use ratio tables to also solve division problems. Students first find and list the products they know and then use them to find other products that will help them get close to the dividend (the number they are dividing). In a division situation, these products are referred to as <i>partial quotients</i>. When combined, they make up all of the dividend.</p> <p>Solving a division problem in this way gives students a great deal of flexibility, since they can use the partial quotients they are most comfortable with as they divide.</p>
1	7												
2	14												
10	70												
20	140												
3	21												
23	161												

PROBLEM	COMMENTS
<p>What is the difference in the lengths of the longest and shortest worms?</p> <p style="text-align: center;">Danny's Worms</p>  <p>Shortest worm: $4\frac{1}{8}$ inches</p> <p>Longest worm: $5\frac{7}{8}$ inches</p>	<p>Students collect data and display it on a line plot — one X for each number in the data set. Then students use this data display to solve problems.</p> <p>Mixed numbers are made up of a whole number and a fraction, so they can also be separated into two numbers. This often allows students to subtract the whole numbers first, and then subtract the fractions separately.</p> $5\frac{7}{8} - 4\frac{1}{8} =$ $(5 - 4) + (\frac{7}{8} - \frac{1}{8}) =$ $1 + \frac{6}{8} = 1\frac{3}{4} \text{ inches}$

For additional support, you can use the Math Vocabulary Cards app at apps.mathlearningcenter.org.

Frequently Asked Questions About Unit 6

Q: The graphs with the X's I see in some of my student's work aren't familiar to me. What are they and how do they work?

A: These graphs are called line plots. The line is, essentially, a number line. In the example line plot of Danny's Worms, the line is marked in eighths of an inch. Each X represents a worm with a given length. For instance, there was one worm with a length of $4\frac{2}{8}$ inches and three worms with a length of $5\frac{3}{8}$ inches each. There were no worms in this sample that measured $4\frac{3}{8}$ inches. Line plots show how data is distributed. Based on this line plot, for example, you could say that all 12 of the worms in this sample were at least $4\frac{2}{8}$ inches and no more than $5\frac{7}{8}$ inches long and that most were somewhere between $4\frac{7}{8}$ and $5\frac{4}{8}$ inches long.

Q: This unit covers a lot of skills. How can I help my student with so many skills?

A: Students will continue to use the same visual models and strategies for solving multiplication and division problems that they have used in previous units. Ask your student to show you the models and strategies they have used, and encourage them to apply them to problems with 3- and 4-digit numbers.

To further support your student in learning mathematics, you can

- Visit mathathome.mathlearningcenter.org and work together through some or all of the activities in Grade 4: Set 6. These activities complement the learning taking place in the classroom during Unit 6 and provide fun ways to engage everyone at home in mathematical thinking.
- Visit apps.mathlearningcenter.org and open the Partial Product Finder app. In this app, your student can model multiplication problems using an area model up to 50 by 50. They can break apart the area model into parts to more easily find the area.
- If your student would enjoy learning about math concepts through literature, consider looking for math-related books at your local library. Encourage your student to read to you and point out the mathematical relationships they see. Some suggestions include:
 - » *365 Penguins* by Jean-Luc Fromental, illustrated by Joëlle Jolivet
 - » *The Warlord's Kites* by Virginia Walton Pilegard, illustrated by Nicholas Debon
 - » *Counting in Dog Years and Other Sassy Math Poems* by Betsy Franco, illustrated by Priscilla Tey