KEY CONCEPT OVERVIEW

In Lessons 3 through 9, students learn to multiply multi-digit whole numbers by using the area model (as shown in the Sample Problem below).

You can expect to see homework that asks your child to do the following:
- Change an expression written in word form to one written in number form, and vice versa. For example, *the sum of 3 sixteens and 2 nines* can be written as \((3 \times 16) + (2 \times 9)\).
- Solve multi-digit multiplication problems by using mental math. For example, consider the problem \(19 \times 15\).
  
  Think: 20 fifteens – 1 fifteen
  
  \[
  = (20 \times 15) - (1 \times 15) 
  \]
  
  \[
  = 300 - 15 
  \]
  
  \[
  = 285 
  \]
- Estimate and solve problems, including word problems, that involve multi-digit whole number multiplication.

SAMPLE PROBLEM  *(From Lesson 7)*

Draw an area model. Then solve by using the standard algorithm.

\[2,431 \times 106 = 257,686\]

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- Quiz your child on the difference between a sum and a **product**. Try to do simple mental math together involving both sums and products. For example, tell your child, “Think of the product of 2 and 3.” (The answer is 6.) “Now think of the product of 3 and 4.” (The answer is 12.) “What’s the sum of those two products, 6 and 12?” (The answer is 18.)

- Practice using partial products while doing multiplication. This can be a two-person activity with you and your child. Use easier three-digit numbers. For example, try $300 \times 120$. Tell your child, “You figure out $300 \times 100$, and I’ll figure out $300 \times 20$. Then we can add those two numbers together to get the result.” ($300 \times 100 = 30,000$; $300 \times 20 = 6,000$; $30,000 + 6,000 = 36,000$)

TERMS

**Product**: The number resulting from the multiplication of two or more numbers. For example, in $4 \times 0.2 = 0.8$, the number 0.8 is the product.

**Standard algorithm**: A standard step-by-step procedure to solve a particular type of problem. For example, the process of multiplying vertically with regrouping is a standard algorithm.

MODELS

**Area Model**

\[ 2,431 \times 106 = 257,686 \]

\[
\begin{array}{cccc}
6 & 12,000 & 2,400 & 180 & 6 \\
100 & 200,000 & 40,000 & 3,000 & 100 \\
\end{array}
\]

\[ 14,586 + 243,100 = 257,686 \]