

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 19×15 .

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**.

$$2,431 \times 106 = 257,686$$

	2,000	+	400	+	30	+	1	
6	12,000	2,400	180	6	14,586			
+								
100	200,000	40,000	3,000	100	243,100			

$14,586 + 243,100 = 257,686$

	2, 4 3 1
×	1 0 6
	<u>2 4 3 1</u>
	1 4, 5 8 6
+	2 4 3, 1 0 0
	<u>2 5 7, 6 8 6</u>

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 regrouping while doing multiplication. This can be a two-person activity with you and your child. Use easier three-digit numbers. For example, try 300×120 . Tell your child, “You figure out 300×100 , and I’ll figure out 300×20 . 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

$$2,431 \times 106 = 257,686$$

	2,000	+	400	+	30	+	1	
6	12,000		2,400		180		6	14,586
+								
100	200,000		40,000		3,000		100	243,100

$$14,586 + 243,100 = 257,686$$