

Unit 5 Lesson 6: Methods for Multiplying Decimals

1 Equivalent Expressions (Warm up)

Student Task Statement

Write as many expressions as you can think of that are equal to 0.6. Do not use addition or subtraction.

2 Using Properties of Numbers to Reason about Multiplication

Student Task Statement

Elena and Noah used different methods to compute $(0.23) \cdot (1.5)$. Both calculations were correct.

$$(0.23) \cdot 100 = 23$$

$$(1.5) \cdot 10 = 15$$

$$23 \cdot 15 = 345$$

$$345 \div 1,000 = 0.345$$

Elena's Method

$$0.23 = \frac{23}{100}$$

$$1.5 = \frac{15}{10}$$

$$\frac{23}{100} \cdot \frac{15}{10} = \frac{345}{1,000}$$

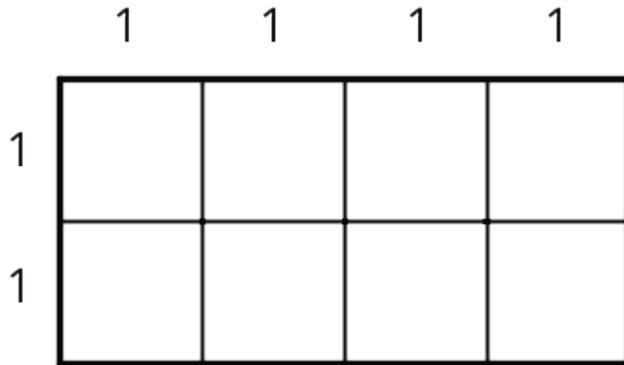
$$\frac{345}{1,000} = 0.345$$

Noah's Method

1. Analyze the two methods, then discuss these questions with your partner.
 - Which method makes more sense to you? Why?
 - What might Elena do to compute $(0.16) \cdot (0.03)$? What might Noah do to compute $(0.16) \cdot (0.03)$? Will the two methods result in the same value?
2. Compute each product using the equation $21 \cdot 47 = 987$ and what you know about fractions, decimals, and place value. Explain or show your reasoning.
 - a. $(2.1) \cdot (4.7)$
 - b. $21 \cdot (0.047)$
 - c. $(0.021) \cdot (4.7)$

3 Using Area Diagrams to Reason about Multiplication (Optional)

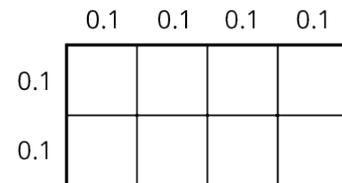
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Student Task Statement

1. In the diagram, the side length of each square is 0.1 unit.

a. Explain why the area of each square is *not* 0.1 square unit.



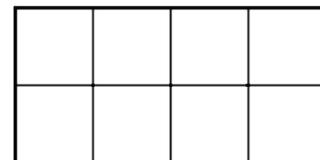
b. How can you use the area of each square to find the area of the rectangle? Explain or show your reasoning.

c. Explain how the diagram shows that the equation $(0.4) \cdot (0.2) = 0.08$ is true.

2. Label the squares with their side lengths so the area of this rectangle represents $40 \cdot 20$.

a. What is the area of each square?

b. Use the squares to help you find $40 \cdot 20$. Explain or show your reasoning.



3. Label the squares with their side lengths so the area of this rectangle represents $(0.04) \cdot (0.02)$.

Next, use the diagram to help you find $(0.04) \cdot (0.02)$. Explain or show your reasoning.

