Understand Decimal Multiplication Patterns

Florida's B.E.S.T.
- **Number Sense & Operations** 5.NSO.2.4
- **Mathematical Thinking & Reasoning** MTR.1.1, MTR.3.1, MTR.4.1, MTR.5.1, MTR.6.1, MTR.7.1

(**I Can**) use patterns to help place the decimal point in a product.

▦ UNLOCK the Problem

Cindy is combining equal-sized rectangles from different fabric patterns to make a postage-stamp quilt. Each rectangle has an area of 0.75 of a square inch. If she uses 1,000 rectangles to make the quilt, what will be the area of the quilt?
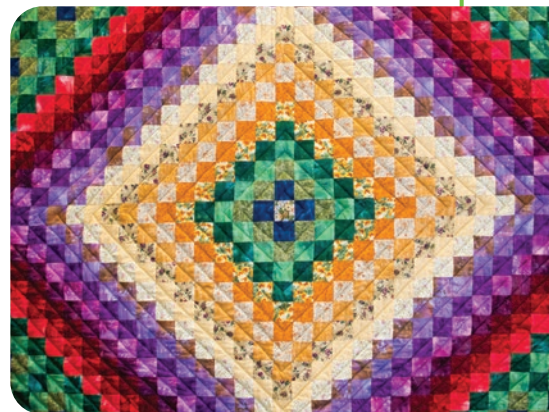
Use the pattern to find the product.

$1 \times 0.75 = 0.75$

$10 \times 0.75 = 7.5$

$100 \times 0.75 = 75.$

$1,000 \times 0.75 = 750.$

The quilt will have an area of _____ square inches.

1. When you multiply by 10, 100, and 1,000, how does the position of the decimal point change in the product? _____

_____

Place value patterns can be used to find the product of a number and the decimals 0.1 and 0.01.

Example 1

Jorge is making a scale model of the Willis Tower in Chicago, Illinois for a theater set. The height of the tower is 1,353 feet. If the model is $\frac{1}{100}$ of the actual size of the building, how tall is the model?

$1 \times 1,353 = 1,353$

$0.1 \times 1,353 = 135.3$

$0.01 \times 1,353 = $ [____] ← $\frac{1}{100}$ of 1,353

Jorge's model of the Willis Tower is _____ feet tall.

- What fraction of the actual size of the building is the model?

_____

- Write the fraction as a decimal.

_____

2. When you multiply by 0.1, how does the position of the decimal point change in the product?

_____

(**Go Online** ⟩ For more help)

Example 2

Three friends are selling items at an arts and crafts fair.
Josey makes $45.75 selling jewelry. Mark makes 100 times
as much as Josey makes by selling his custom furniture.
Carlos makes one tenth of the money Mark makes by selling
paintings. How much money does each friend make?

Josey: $45.75

Mark: _____ × $45.75

Think: 1 × $45.75 = _____

  10 × $45.75 = _____

  100 × $45.75 = _____

Carlos: _____ × _____

Think: 1 × _____ = _____

  _____ × _____ = _____

So, Josey makes $45.75, Mark makes _____,

and Carlos makes _____ .

Try This! Complete the pattern.

A 1 × 4.78 = _____

  10 × 4.78 = _____

  100 × 4.78 = _____

  1,000 × 4.78 = _____

B 38 × 1 = _____

  38 × 0.1 = _____

  38 × 0.01 = _____

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Complete the pattern.

1. 1 × 17.04 = 17.04

  10 × 17.04 = 170.4

  100 × 17.04 = 1,704

  1,000 × 17.04 = _____

Think: The decimal point moves the same number
of places to the _____ in the product as
the number of zeros in 10, 100, and 1,000.