

2.1 Multiply Decimals by 0.1, 0.01, & 0.001

You can use patterns to multiply decimals by 0.1, 0.01, & 0.001!

Study these examples. Do you see a pattern?

$$67.4 \times 0.1 = 6.74 \quad 67.4 \times 0.01 = 0.674 \quad 67.4 \times 0.001 = 0.0674$$

Use these steps to multiply a number by 0.1, 0.01, & 0.001:

1. Count the number of decimal places ⁿ ~~in~~ 0.1, 0.01, or 0.001.
2. Move the decimal point in the other factor to the left that number of places to find the product.

*factors → two or more numbers that are multiplied to give a product

**product → the result of multiplying

Example: Find the product.

$$a.) 22 \times 0.1 = 2.2$$

$$b.) 30 \times 0.1 = 3.0 \text{ or } 3$$

$$22 \times 0.01 = 0.22$$

$$30 \times 0.01 = 0.30 \text{ or } 0.3$$

$$22 \times 0.001 = 0.022$$

$$30 \times 0.001 = 0.030 \text{ or } 0.03$$

$$22 \times 0.0001 = 0.0022$$

$$30 \times 0.0001 = 0.0030 \text{ or } 0.003$$

Example: Find the product.

$$c.) 6 \times 0.1 = 0.6$$

$$d.) 225 \times 0.01 = 0.225$$

$$60 \times 0.01 = 0.60 \text{ or } 0.6$$

$$225 \times 0.001 = 0.225$$

$$600 \times 0.001 = 0.600 \text{ or } 0.6$$

Example: Find the product.

$$e.) 2.8 \times 0.1 = 0.28$$

$$f.) 356.6 \times 0.01 = 3.566$$

$$g.) 17.8 \times 0.1$$

$$= 1.78$$

$$h.) 0.9 \times 0.1 =$$

$$0.09$$

$$i.) 2.45 \times 0.001$$

$$0.00245$$

$$j.) 16 \times 0.001$$

$$0.016$$

Example: *PROBLEM SOLVING*

k.) Kenneth has \$3.50. Jeff has one tenth (or 0.1) that amount.
How much money does Jeff have?

$$3.50 \times 0.1 = 0.35$$

l.) Jen's hamster weighs one hundredth (or 0.01) the weight of her goat. What is the weight of Jen's hamster?

Let g be the weight of the goat.

$$g \times 0.01$$