

**MULTIPLYING DECIMALS AND PERCENTS**

Understanding how many places to move the decimal point in a decimal multiplication problem is connected to the multiplication of fractions and place value.

Computations involving calculating “a percent of a number” are simplified by changing the percent to a decimal.

**Example 1**

Multiply  $(0.2) \cdot (0.3)$ .

In fractions this means  $\frac{2}{10} \cdot \frac{3}{10} \Rightarrow \frac{6}{100}$ .

Knowing that the answer must be in the hundredths place tells you how many places to move the decimal point (to the left) without using the fractions.

(tenths)(tenths) = hundredths  
Therefore move two places.

$$\begin{array}{r} 0.2 \\ \times 0.3 \\ \hline 0.06 \end{array}$$

**Example 2**

Multiply  $(1.7) \cdot (0.03)$ .

In fractions this means  $\frac{17}{10} \cdot \frac{3}{100} \Rightarrow \frac{51}{1000}$ .

Knowing that the answer must be in the thousandths place tells you how many places to move the decimal point (to the left) without using the fractions.

(tenths)(hundredths) = thousandths  
Therefore move three places.

$$\begin{array}{r} 1.7 \\ \times 0.03 \\ \hline 0.051 \end{array}$$

**Example 3**

Calculate 17% of 32.5 without using a calculator.

Since  $17\% = \frac{17}{100} = 0.17$ ,

$17\% \text{ of } 32.5 \Rightarrow (0.17) \cdot (32.5)$   
 $\Rightarrow 5.525$

$$\begin{array}{r} 32.5 \\ \times 0.17 \\ \hline 2275 \\ \underline{3250} \\ 5.525 \end{array}$$

## Problems

Identify the number of places to the left to move the decimal point in the product. Do not compute the product.

- |    |                       |    |                      |    |                         |
|----|-----------------------|----|----------------------|----|-------------------------|
| 1. | $(0.3) \cdot (0.5)$   | 2. | $(1.5) \cdot (0.12)$ | 3. | $(1.23) \cdot (2.6)$    |
| 4. | $(0.126) \cdot (3.4)$ | 5. | $17 \cdot (32.016)$  | 6. | $(4.32) \cdot (3.1416)$ |

Compute without using a calculator.

- |     |                      |     |                       |     |                       |
|-----|----------------------|-----|-----------------------|-----|-----------------------|
| 7.  | $(0.8) \cdot (0.03)$ | 8.  | $(3.2) \cdot (0.3)$   | 9.  | $(1.75) \cdot (0.09)$ |
| 10. | $(4.5) \cdot (3.2)$  | 11. | $(1.8) \cdot (0.032)$ | 12. | $(7.89) \cdot (6.3)$  |
| 13. | 8% of 540            | 14. | 70% of 478            | 15. | 37% of 4.7            |
| 16. | 17% of 96            | 17. | 15% of 4.75           | 18. | 130% of 42            |

## Answers

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|-----|-------|-----|--------|-----|--------|
| 1.  | 2     | 2.  | 3      | 3.  | 3      |
| 4.  | 4     | 5.  | 3      | 6.  | 6      |
| 7.  | 0.024 | 8.  | 0.96   | 9.  | 0.1575 |
| 10. | 14.4  | 11. | 0.0576 | 12. | 49.707 |
| 13. | 43.2  | 14. | 334.6  | 15. | 1.739  |
| 16. | 16.32 | 17. | 0.7125 | 18. | 54.6   |