

## 2.5 Multiplying Decimals

1

### ESSENTIAL QUESTION

How can you multiply decimals?

2

### COMMON CORE STATE STANDARDS

6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

3

### How to Multiply Decimals

- 1) Multiply as you would with whole numbers.
- 2) Count up how many numbers are after the decimal point in the number(s) you are multiplying.
- 3) Your answer should have that many numbers after its decimal point.

4

#### EXAMPLE 9 Multiplying Decimals and Whole Numbers

Multiply  $6 \times 3.91$

$$\begin{array}{r} 3.91 \\ \times 6 \\ \hline 23.46 \end{array}$$

5

#### EXAMPLE 9 Multiplying Decimals and Whole Numbers

Multiply  $3 \times 0.016$

$$\begin{array}{r} 0.016 \\ \times 3 \\ \hline 0.048 \end{array}$$

6

**On Your Own**

Multiply  $12.3 \times 8$

$$\begin{array}{r} 12.3 \\ \times 8 \\ \hline 98.4 \end{array}$$

7

**On Your Own**

Multiply  $5 \times 14.51$

$$\begin{array}{r} 14.51 \\ \times 5 \\ \hline 72.55 \end{array}$$

8

**On Your Own**

Multiply  $0.88 \times 9$

$$\begin{array}{r} 0.88 \\ \times 9 \\ \hline 7.92 \end{array}$$

9

**On Your Own**

Multiply  $0.003 \times 10$

$$\begin{array}{r} 0.003 \\ \times 10 \\ \hline 0000 \\ + 00030 \\ \hline 00.030 \end{array}$$

10

**EXAMPLE 2 Use Mental Math**

How high is a stack of 100 dimes?



$$\begin{array}{r} 1.35 \\ \times 100 \\ \hline 000 \\ 13500 \\ \hline 13500 \\ \hline 135.00 \end{array}$$

11

A stack of 100 dimes is 135 millimeters high.

**EXAMPLE 3 Multiplying Decimals**

Multiply  $4.8 \times 7.2$

$$\begin{array}{r} 4.8 \\ \times 7.2 \\ \hline 196 \\ + 3360 \\ \hline 34.56 \end{array}$$

12

**EXAMPLE 3** Multiplying DecimalsMultiply  $3.1 \times 0.05$ 

$$\begin{array}{r} 1 \\ 0.05 \\ \times 3.1 \\ \hline 005 \\ +0150 \\ \hline \end{array}$$

13

$$\underline{0.155}$$

**On Your Own**Multiply  $8.1 \times 5.6$ 

$$\begin{array}{r} 8.1 \\ \times 5.6 \\ \hline 486 \\ 4050 \\ \hline 45.36 \end{array}$$

14

**On Your Own**Multiply  $2.7 \times 9.04$ 

$$\begin{array}{r} 2 \\ 9.04 \\ \times 2.7 \\ \hline 16328 \\ 18080 \\ \hline \end{array}$$

15

$$\underline{24.408}$$

**On Your Own**Multiply  $6.32 \times 0.09$ 

$$\begin{array}{r} 21 \\ 6.32 \\ \times 0.09 \\ \hline 5688 \\ 0000 \\ +00000 \\ \hline 0.5688 \end{array}$$

16

**On Your Own**Multiply  $1.785 \times 0.2$ 

$$\begin{array}{r} 111 \\ 1.785 \\ \times 0.2 \\ \hline 3570 \\ +00000 \\ \hline \end{array}$$

17

$$\underline{0.3570}$$

**EXAMPLE 4** Evaluating an Expression

Evaluate the expression.

$$2.44(4.5 - 3.175)$$

$$2.44(1.325)$$

$$3.23300$$

$$\text{Step 1 } \begin{array}{r} 4.500 \\ -3.175 \\ \hline 1.325 \end{array}$$

$$\begin{array}{r} 1.325 \\ \times 2.44 \\ \hline 5300 \\ 53000 \\ +265000 \\ \hline 3.23300 \end{array}$$

$$\text{Step 2 } \begin{array}{r} 1.325 \\ \times 2.44 \\ \hline 5300 \\ 53000 \\ +265000 \\ \hline 3.23300 \end{array}$$

18

$$\begin{array}{r} 1.325 \\ \times 2.44 \\ \hline 5300 \\ 53000 \\ +265000 \\ \hline 3.23300 \end{array}$$

**On Your Own**

Evaluate the expression.  
 $12.67 + 8.2 \cdot 1.9$

Step 1

$$\begin{array}{r} 8.2 \\ \times 1.9 \\ \hline 738 \\ 820 \\ \hline 15.58 \end{array}$$

Step 2

$$\begin{array}{r} 12.67 \\ + 15.58 \\ \hline 28.25 \end{array}$$

19

**On Your Own**

Evaluate the expression.  
 $6.4(1.8 \cdot 7.5)$

Step 1

$$\begin{array}{r} 1.8 \\ \times 7.5 \\ \hline 190 \\ + 1260 \\ \hline 13.50 \end{array}$$


Step 2

$$\begin{array}{r} 13.50 \\ \times 6.4 \\ \hline 5400 \\ + 81000 \\ \hline 86.400 \end{array}$$

20

**EXAMPLE 5 Real-Life Application**

You buy 2.75 pounds of tomatoes. You hand the cashier a \$10 bill. How much change will you receive?



Step 1 Cost of tomatoes

$$\begin{array}{r} 2.75 \\ \times 1.89 \\ \hline 2475 \\ 22000 \\ + 21500 \\ \hline 5.1975 \end{array}$$

21

Step 2

Subtract Cost of tomatoes from \$10.00

$$\begin{array}{r} 10.00 \\ - 5.1975 \\ \hline 4.8025 \end{array}$$

You will receive \$4.80 in change

**On Your Own**

12. **WHAT IF?** You buy 2.25 pounds of grapes. You hand the cashier a \$5 bill. How much change will you receive?

$$\begin{array}{r} 2.25 \\ \times 1.99 \\ \hline 2025 \\ + 22500 \\ \hline 4.4775 \end{array}$$

$$\begin{array}{r} 5.00 \\ - 4.4775 \\ \hline 0.5225 \end{array}$$

22

4.4775  
↓  
4.48