

Learning Objective: Students will be able to use a formal rule to multiply decimals.

# Warm Up

1.  $\frac{3}{4} - \frac{4}{13}$

5.  $\frac{2}{5} - \frac{1}{4}$

9.  $\frac{9}{10} - \frac{4}{9}$

2.  $\frac{5}{14} - \frac{1}{3}$

6.  $\frac{7}{10} - \frac{2}{9}$

10.  $\frac{1}{3} - \frac{1}{5}$

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## Warm Up Answers

$$1. \frac{3}{4} - \frac{4}{13} \\ = \frac{23}{52}$$

$$5. \frac{2}{5} - \frac{1}{4} \\ = \frac{3}{20}$$

$$9. \frac{9}{10} - \frac{4}{9} \\ = \frac{41}{90}$$

$$2. \frac{5}{14} - \frac{1}{3} \\ = \frac{1}{42}$$

$$6. \frac{7}{10} - \frac{2}{9} \\ = \frac{43}{90}$$

$$10. \frac{1}{3} - \frac{1}{5} \\ = \frac{2}{15}$$

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# Homework Answers

## 2.4 Record and Practice Journal

Add.

1.  $3.02 + 1.67$

**4.69**

2.  $1.4 + 8.68$

**10.08**

3.  $11.514 + 4.29$

**15.804**

4.  $15.71 + 12.643$

**28.353**

5.  $9.562 + 21.764$

**31.326**

6.  $15.602 + 2.47$

**18.072**

Subtract.

7.  $2.64 - 1.52$

**1.12**

8.  $4.023 - 3.146$

**0.877**

9.  $7.87 - 5.152$

**2.718**

10.  $16.045 - 12.63$

**3.415**

11.  $17.1 - 11.457$

**5.643**

12.  $5.18 - 2.487$

**2.693**

13. You buy a movie for \$19.99 and a set of earphones for \$12.49. How much is the bill before taxes?

**\$32.48**

Lesson 2.5

October 21, 2015

# Essential Question:

How can you multiply decimals?

## Lesson Objective:

Students will be able to:  
use a formal rule to multiply decimals.

# Self-Evaluation Scale

Score	Description
4	I can teach other students how to use a formal rule to multiply decimals.
3	I can use a formal rule to multiply decimals.
2	I recognize, but still need help to use a formal rule to multiply decimals.
1	I do not know how to use a formal rule to multiply decimals.

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## Key Idea

### Multiplying Decimals by Whole Numbers

**Words** Multiply as you would with whole numbers. Then count the number of decimal places in the decimal factor. The product has the same number of decimal places.

**Numbers**

$$\begin{array}{r} 13.91 \\ \times 7 \\ \hline 97.37 \end{array}$$

2 decimal places

$$\begin{array}{r} 6.218 \\ \times 4 \\ \hline 24.872 \end{array}$$

3 decimal places

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# 1 Multiplying Decimals and Whole Numbers

a. Find  $6 \times 3.91$ .

**Estimate**  $6 \times 4 = 24$

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

5  
3.91 ← 2 decimal places

23.46 ← Count 2 decimal places from right to left.

∴ So,  $6 \times 3.91 = 23.46$ .

**Reasonable?**  $23.46 \approx 24$  ✓

b. Find  $3 \times 0.016$ .

**Estimate**  $3 \times 0 = 0$

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

1  
0.016 ← 3 decimal places

0.048 ← To have 3 decimal places, insert zeros to the left of 48.

∴ So,  $3 \times 0.016 = 0.048$ .

**Reasonable?**  $0.048 \approx 0$  ✓



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## 2 Use Mental Math

How high is a stack of 100 dimes?

**Method 1:** Multiply 1.35 by 100.

$$\begin{array}{r} 1.35 \\ \times 100 \\ \hline 000 \\ 000 \\ \hline 135 \\ \hline 135.00 \end{array}$$

2 decimal places

**Method 2:** You are multiplying by a power of 10. Use mental math.

There are **two** zeros in 100. So, move the decimal point in 1.35 **two** places to the right.

$$1.35 \times 100 = 135. = 135$$

••• So, a stack of 100 dimes is 135 millimeters high.



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## Key Idea

### Multiplying Decimals by Decimals

**Words** Multiply as you would with whole numbers. Then add the number of decimal places in the factors. The sum is the number of decimal places in the product.

**Numbers**

$$\begin{array}{r} 4.716 \leftarrow 3 \text{ decimal places} \\ \times 0.2 \leftarrow + 1 \text{ decimal place} \\ \hline 0.9432 \leftarrow 4 \text{ decimal places} \end{array}$$

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### 3 Multiplying Decimals

a. Multiply  $4.8 \times 7.2$ .

**Estimate**  $5 \times 7 = 35$

$$\begin{array}{r}
 4.8 \leftarrow 1 \text{ decimal place} \\
 \times 7.2 \leftarrow + 1 \text{ decimal place} \\
 \hline
 96 \\
 336 \\
 \hline
 34.56 \leftarrow 2 \text{ decimal places}
 \end{array}$$

So,  $4.8 \times 7.2 = 34.56$ . **Reasonable?**  $34.56 \approx 35$  ✓

b. Multiply  $3.1 \times 0.05$ .

**Estimate**  $3 \times 0 = 0$

$$\begin{array}{r}
 3.1 \leftarrow 1 \text{ decimal place} \\
 \times 0.05 \leftarrow + 2 \text{ decimal places} \\
 \hline
 0.155 \leftarrow 3 \text{ decimal places}
 \end{array}$$

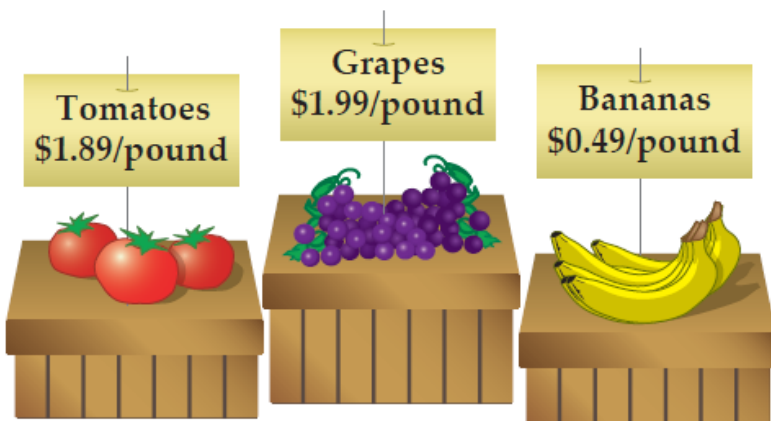
So,  $3.1 \times 0.05 = 0.155$ . **Reasonable?**  $0.155 \approx 0$  ✓



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## 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:** Find the cost of the tomatoes.  
Multiply 1.89 by 2.75.

$$\begin{array}{r}
 1.89 \leftarrow 2 \text{ decimal places} \\
 \times 2.75 \leftarrow + 2 \text{ decimal places} \\
 \hline
 945 \\
 1323 \\
 378 \\
 \hline
 5.1975 \leftarrow 4 \text{ decimal places}
 \end{array}$$

The cost of 2.75 pounds of tomatoes is \$5.20.

**Step 2:** Subtract the cost of the tomatoes from the amount of money you hand the cashier.

$$10.00 - 5.20 = \$4.80$$

So, you will receive \$4.80 in change.

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# Assignment

Complete problems:

14, 16, 32, 36, 42, 44, 48, 56, 59, & 69

on pages 89 - 91 in your Big Ideas Text Book.

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# Homework

In your Big Ideas Record and Practice Journal  
page 50.