

## Section 4.R.3 Multiplication and Division with Decimal Numbers

Go to Section 4.R.3 Learn mode in Hawkes to follow along!

### Multiplication with Decimal Numbers

To Multiply Decimal Numbers

1. Multiply the two numbers as if \_\_\_\_\_
2. Count the total number of \_\_\_\_\_
3. Place the decimal point in the product so that the \_\_\_\_\_  
\_\_\_\_\_

#### ▣ Example 2 Multiplying Decimal Numbers

Multiply:  $-4.35(-12.6)$

Solution

### Exercises

Multiply.

1.  $-6(0.125)$

4.  $(-5.48)(-0.002)$

2.  $(1.4)(0.3)$

5. 
$$\begin{array}{r} 5.392 \\ \times 6.5 \\ \hline \end{array}$$

3.  $(4.8)(-0.06)$

6. 
$$\begin{array}{r} 0.08 \\ \times 0.542 \\ \hline \end{array}$$

## Multiplying by Powers of 10

To Multiply by Powers of 10 (10, 100, 1000, and so on)

1. Count the number of \_\_\_\_\_

2. Move the decimal point to the \_\_\_\_\_

Multiplication by **10** moves the decimal point \_\_\_\_\_

Multiplication by **100** moves the decimal point \_\_\_\_\_

Multiplication by **1000** moves the decimal point \_\_\_\_\_

And so on.

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### ▣ Example 6 Multiplying by Powers of 10

The following products illustrate multiplying by powers of 10.

- a.  $10(1.59)$
- b.  $100(2.68)$
- c.  $1000(0.9653)$
- d.  $10,000(7.2)$

### Exercises

Multiply mentally by using your knowledge of multiplication by powers of 10.

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7.  $10(-5.25)$

9.  $1000(-0.7635)$

8.  $-100(2.75)$

10.  $10,000(0.01756)$

## Division with Decimal Numbers

### To Divide Decimal Numbers

1. Move the decimal point in the divisor to the \_\_\_\_\_
2. Move the decimal point in the dividend the \_\_\_\_\_
3. Place the decimal point in the quotient directly \_\_\_\_\_
4. Divide just as with \_\_\_\_\_

### When the Remainder is Not 0

1. Decide how many \_\_\_\_\_
2. Divide until the quotient has been calculated to \_\_\_\_\_
3. Using this last digit, \_\_\_\_\_

### Terminating and Nonterminating Decimal Numbers

If the remainder is eventually 0, the decimal number is said \_\_\_\_\_

For example, \_\_\_\_\_

If the remainder is not eventually 0, the decimal number is said \_\_\_\_\_

For example, \_\_\_\_\_

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**▣ Example 7** Dividing Decimal NumbersDivide:  $64.17 \div 6.2$ **Solution****Exercises**

Divide.

11.  $-4.95 \div 5$

12.  $-16.35 \div (-2.5)$

Divide and round to the nearest tenth.

13.  $8 \overline{)455}$

15.  $4.6 \div 5$

14.  $\frac{3.927}{5.3}$

16.  $-43.721 \div 0.06$

Divide and round to the nearest hundredth.

17.  $\frac{0.1463}{24}$

19.  $-0.2433 \div (-0.065)$

18.  $\frac{0.2249}{23}$

20.  $9 \overline{)5}$

## Average Amount per Unit

The **average** of a set of numbers can be found by adding the numbers and then dividing the \_\_\_\_\_  
\_\_\_\_\_.

If the total amount of a quantity and a number of units are known, then we can find the **average amount per unit** by \_\_\_\_\_.

If an average amount per unit is known, then a corresponding total amount can be found by \_\_\_\_\_  
\_\_\_\_\_.

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### ▣ Example 12 Application: Calculating Total Distance Traveled

If you ride your bicycle at an average speed of 15.2 miles per hour, how far will you ride in 3.5 hours?

**Solution**

## Exercises

Solve.

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21. Walter Payton played football for the Chicago Bears for 13 years. In those years he carried the ball 3838 times for a total of 16,726 yards. What was his average yardage per carry (to the nearest tenth)?
22. If a car travels 330 miles on 15 gallons of gas, how many miles per gallon does it average?
23. If a car averages 24 miles per gallon, how far can the car travel on 5 gallons of gas?

## Dividing by Powers of 10

To Divide a Decimal Number by a Power of 10 (10, 100, 1000, and so on)

1. Count the number of \_\_\_\_\_

2. Move the decimal point to the \_\_\_\_\_

Division by **10** moves the decimal point \_\_\_\_\_

Division by **100** moves the decimal point \_\_\_\_\_

Division by **1000** moves the decimal point \_\_\_\_\_

And so on.

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### Example 13 Dividing by Powers of 10

The following quotients illustrate dividing by powers of 10.

a.  $5.23 \div 100$

b.  $817 \div 10$

c.  $5.933 \div 1000$

### Exercises

Divide mentally by using your knowledge of division by powers of 10.

24.  $\frac{-6.82}{10}$

26.  $45.621 \div (-1000)$

25.  $-87.96 \div 100$

27.  $\frac{1.54}{10,000}$