Scan the lesson. Predict two things you will learn about dividing decimals by decimals.

Sample answers:

- how to change the divisor to a whole number by moving the decimal point

- how to annex zeros in the quotient and dividend when necessary

$$\frac{7.5 \quad \times 100}{.24 \quad \times 100}$$

$$\frac{750}{24}$$

Open your books to page 239!

Real-World Link

Art An art studio has 36 gallons of acrylic paint. They separate it into 9 containers. How many gallons are in each container?

Division Problem	Quotient
36 ÷ 9	4

Use the division problem to find patterns and complete the tables below. Then use these patterns to describe the dividends, divisors, and quotients in each set.

1.

Division Problem	Quotient
36 ÷ 0.9	40
36 ÷ 0.09	400
36 ÷ 0.009	4,000
36 ÷ 0.0009	40,000

The dividends are the same. Each time, the decimal point of the divisor moves one place to the left and the decimal point of the quotient moves one place to the right.
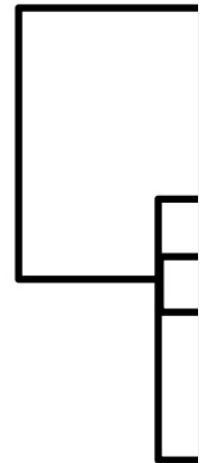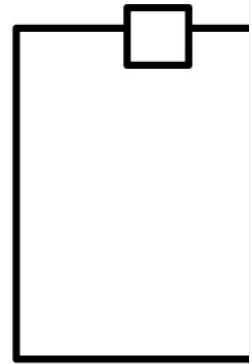
2.

Division Problem	Quotient
3.6 ÷ 9	0.4
0.36 ÷ 9	0.04
0.036 ÷ 9	0.004
0.0036 ÷ 9	0.0004

The decimal point of the dividend and the quotient move one place to the left each time. The divisors are the same.

3.

Division Problem	Quotient
3.6 ÷ 0.9	4
0.36 ÷ 0.09	4
0.036 ÷ 0.009	4
0.0036 ÷ 0.0009	4

The decimal point of the dividend and the divisor move one place to the left each time. The quotients are the same.

Estimate 2 ÷ 1 = 2

Multiply by 10 to make a
whole number.

$$0.9 \overline{)1.71}$$

→

Place the decimal point.

$$\begin{array}{r} 1.9 \\ 9\overline{)17.1} \\ -9 \\ \hline 81 \\ -81 \\ \hline 0 \end{array}$$

Divide as with whole number

Multiply by the same
number, 10.

1.71 divided by 0.9 is 1.9. Compared to the estimate, the quotient is rea

Check 1.9 × 0.9 = 1.71 ✓

2. Find $2.64 \div 0.6$.

Estimate $\boxed{3} \div \boxed{1} = \boxed{3}$

$0.6\overline{)2.64}$

Multiply 0.6 by $\boxed{}$ to make a whole number.

Multiply the dividend, $\boxed{}$ by the same power of 10.

$\boxed{}$

$0.6\overline{)2.64}$ Place the decimal point in the quotient.

$\boxed{}$ Divide as with whole numbers.

2.64 divided by 0.6 is $\boxed{}$

Compared to the estimate, is the quotient reasonable? $\boxed{}$

a. ☐

b. ☐

c. ☐

Got It? Do these problems to find out.

a. $54.4 \div 1.7$

b. $8.424 \div 0.36$

c. $0.0063 \div 0.007$

Examples

3. Find $52 \div 0.4$.

$$0.4\overline{)52.0}$$

Multiply each by 10.

So, $52 \div 0.4 = 130$.

$$
\begin{array}{r}
130. \\
4\overline{)520.} \\
-4 \\
\hline
12 \\
-12 \\
\hline
00
\end{array}
$$

Place the decimal point.

Write a zero in the ones place of the quotient because $0 \div 4 = 0$.

- -

4. Find $0.009 \div 0.18$.

$$0.18\overline{)0.009}$$

Multiply each by 100.

$$
\begin{array}{r}
0.05 \\
18\overline{)0.90} \\
-0 \\
\hline
09 \\
-00 \\
\hline
90 \\
-90 \\
\hline
0
\end{array}
$$

Place the decimal point.

9 tenths divided by 18 is 0, so write a 0 in the tenths place.

Annex a 0 in the dividend and continue to divide.

So, $0.009 \div 0.18$ is 0.05.

- -

5. Find $11.2 \div 0.07$.

Multiply 0.07 and 11.2 by $\boxed{}$

$\boxed{}$

$0.07\overline{)11.20}$ Place the decimal point in the quotient.
Divide as with whole numbers.

$\boxed{}$

Got It? Do these problems to find out.

d. $5.6 \div 0.014$ **e.** $6.24 \div 200$ **f.** $0.4 \div 25$

d. $\boxed{}$ _____

e. $\boxed{}$ _____

f. $\boxed{}$ _____

Guided Practice

Divide. (Examples 1–5)

1. $3.69 \div 0.3 =$ __12.3__

Show your work.

$$3\overline{)3.69} = 12.3$$

2. $0.0338 \div 1.3 =$ __0.026__

$$1.3\overline{).0338} = 0.026$$
$$26$$
$$\overline{78}$$

3. $2.943 \div 2.7 =$ __1.09__

$$2.7\overline{)2.943}$$

4. Alicia bought 5.75 yards of fleece fabric to make blankets for a charity. She needs 1.85 yards of fabric for each blanket. How many blankets can Alicia make with the fabric she bought? (Example 6)

3 blankets

$$5.75 \div 1.85$$

5. **ⓔ Building on the Essential Question** When is it helpful to round the quotient to the nearest hundredth?

Sample answer: It is helpful to round the quotient to the nearest hundredth when the quotient represents a monetary amount.

Rate Yourself!

Are you ready to move on? Shade the section that applies.

YES   ?   NO
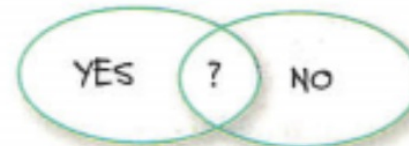
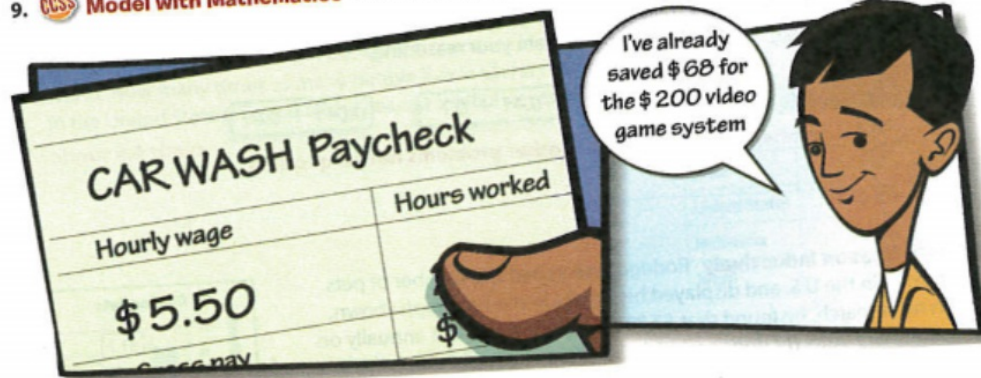For more help, go online to access a Personal Tutor. **Tutor**

FOLDABLES Time to update your Foldable!

Independent Practice

Divide. (Examples 1–5)

1. $1.44 \div 0.4 =$ **3.6**

Show your work

2. $16.24 \div 0.14 =$ **116**

3 $0.6 \div 0.0024 =$ **250**

4. $96.6 \div 0.42 =$ **230**

5. $13.5 \div 0.03 =$ **450**

6. $0.12 \div 0.15 =$ **0.8**

$$
\begin{array}{r}
250. \\
0.0024\overline{)6000} \\
48 \\
\overline{120} \\
120 \\
\overline{0}
\end{array}
$$

7. **CCSS** **Use Math Tools** The average person's *stride length*, the distance covered by one step, is approximately 2.5 feet long. How many steps would the average person take to travel 50 feet? (Example 6)

20 steps

8. **STEM** Alaska has a coastline of about 6.64 thousand miles. Florida has about 1.35 thousand miles of coastline. How many times more coastline does Alaska have than Florida? Round to the nearest tenth if necessary. Justify your procedure.

about 4.9 times; $6.64 \div 1.35 \approx 4.9$

9. **CCSS Model with Mathematics** Refer to the graphic novel frame below for Exercises a–b.

CAR WASH Paycheck

Hourly wage	Hours worked
$5.50	$

I've already saved $68 for the $200 video game system

a. How many hours does Raj need to work to earn the remainder of the money he needs to buy the video game system? **24 h**

b. Suppose Raj receives a raise for his hard work and now earns $6.25 per hour. How many hours would he need to work to earn $132?

21.12 h

10. A necklace is being made with beads that are 1.25 centimeters in diameter each. The necklace is 30 centimeters long. How many beads are needed? **24**

11. **CCSS Use Math Tools** Use the table that shows popular sports car colors in North America.

a. How many times more respondents chose silver than red? Round to the nearest tenth if necessary.

2.2 times

b. How many times more respondents chose either silver or black than red? Round to the nearest tenth if necessary.

3.8 times

Popular Sports Car Colors	
Color	Portion of Responses
Silver	0.2
Blue	0.16
Black	0.14
Red	0.09
Other	0.41

12. CCSS **Persevere with Problems** Find two positive decimals a and b that make the following statement true. Then find two positive decimals a and b that make the statement false.

If $a < 1$ and $b < 1$, then $a \div b < 1$.

Sample answer: If $a < 1$ and $b < 1$, then $a \div b < 1$. If $a = 0.08$ and $b = 0.2$,

then $a \div b = 0.4$, which is less than 1; If $a = 0.8$ and $b = 0.02$,

then $a \div b = 40$, which is *not* less than 1.

13. CCSS **Which One Doesn't Belong?** Identify the problem that does not have the same quotient as the other three. Explain your reasoning.

| $49 \div 7$ | $4.9 \div 7$ | $0.49 \div 0.7$ | $0.049 \div 0.07$ |

$49 \div 7$; the quotient is 7 and all of the other problems have a quotient

of 0.7.

14. CCSS **Reason Inductively** Rodrigo researched the number of pets owned in the U.S. and displayed his results in the bar graph shown. In his research, he found that $7,737.6 million was spent annually on veterinary visits for dogs and $5,913 million was spent annually on visits for cats. How much more was spent on average by each person for dogs than for cats?

$29

Owning Pets

Number of People (millions)

Dogs 31.2
Cats 27.0
Birds 4.6

Type of Pet