

Lesson 5

Audio Tutor 1/19 Listen and Understand

Divide Decimals by Decimals

Objective Divide one decimal by another decimal.

Learn About It

Sometimes you need to divide a decimal by another decimal.

Towards the end of a coin-collectors' fair, a coin dealer was closing his stand and selling bags of coins for \$0.75. Marta has \$6.30. How many bags of coins can she buy?

Find $6.30 \div 0.75$.

STEP 1 Estimate first.

$$6.30 \div 0.75 \xrightarrow{\text{rounds to}} 6 \div 1 = 6$$

The quotient is about 6.

STEP 2 Change the divisor to a whole number. Multiply both the divisor and the dividend by a power of 10.

$$0.75 \overline{)6.30}$$

Multiply both numbers by 10^2 , or 100.

STEP 3 Place the decimal point in the quotient. Divide as you would with whole numbers.

$$\begin{array}{r} 8. \\ 75 \overline{)630} \\ \underline{-600} \\ 30 \end{array} \quad \leftarrow \text{decimal point}$$

STEP 4 Place a zero next to the dividend and continue to divide.

$$\begin{array}{r} 8.4 \\ 75 \overline{)630.0} \\ \underline{-600} \\ 300 \\ \underline{-300} \\ 0 \end{array}$$

Solution: Since Marta cannot buy 0.4 of a bag, disregard the decimal part of the quotient. Marta can buy 8 bags.

Check.

$$0.75 \times 8.4 = 6.30$$

Another Example

Place Two or More Zeros in the Dividend

Find $34.2 \div 2.4$.

Estimate first.

$$34 \div 2 = 17$$

The quotient of $34.2 \div 2.4$ is about 17.

Then divide.

$$\begin{array}{r} 14.25 \\ 24 \overline{)342.00} \\ \underline{-24} \\ 102 \\ \underline{-96} \\ 60 \\ \underline{-48} \\ 120 \\ \underline{-120} \\ 0 \end{array}$$

Check.

$$2.4 \times 14.25 = 34.2$$

Guided Practice

Divide. Then check your work.

- $0.44 \overline{)4.62}$
- $0.03 \overline{)0.24}$
- $3.4 \overline{)8.84}$
- $1.6 \overline{)8.92}$
- $6.5 \div 3.2$
- $61.32 \div 1.4$
- $1.222 \div 0.52$

Explain Your Thinking ▶ When multiplying to change the divisor to a whole number, how do you know which power of 10 to use?

Practice and Problem Solving

Divide. Then check your work.

- $4.4 \overline{)46.2}$
- $0.05 \overline{)4.0}$
- $0.7 \overline{)21.28}$
- $0.03 \overline{)1.215}$
- $9.5 \overline{)2.299}$
- $4.2 \overline{)8.19}$
- $3.5 \overline{)4.508}$
- $0.0369 \div 0.9$
- $22.68 \div 6.3$
- $7.221 \div 0.08$
- $59.04 \div 4.5$
- $6.7204 \div 0.16$

Algebra • **Expressions** Evaluate each expression, given $a = 2.7$, $b = 11.34$, and $c = 0.03$.

- $a \div c$
- $b \div c$
- $b \div a$
- $b \div (a \div c)$

Solve.

- Inez keeps quarters, dimes, and nickels in a jar. The value of the nickels is \$4.65. How many nickels does she have?
- Analyze** A coin dealer sells coin albums at 4 for \$10.00 or 10 for \$18.00. How much will Liam save per album if he chooses the better deal?
- What's Wrong?** Sammy claims that $63.41 \div 3.4 = 1.865$. Is he correct? Use estimation to explain your answer.
- Is the quotient of $3.52 \div 0.25$ the same as the quotient of $35.2 \div 2.5$? Explain.



Mixed Review and Test Prep

Open Response

Write each decimal as a fraction or mixed number in simplest form. (Ch. 4, Lesson 2)

- 0.4
- 0.55
- 0.125
- 0.17
- 0.101
- 2.02

Multiple Choice

- Freda has a piece of wire that is 4.5 meters long. She wants to cut it into pieces that are 0.25 meters long. How many pieces can she cut? (Ch. 7, Lesson 5)
A 1.8
B 8
C 16
D 18

Extra Practice See page 171, Set D.

Ask Yourself

- Should I write zeros in the dividend? If so, how many?
- Did I multiply by the correct power of 10?

Divide Decimals by Decimals

Divide. Show your work. Then check your work.

1. $1.2 \overline{)4.32}$

2. $0.06 \overline{)2.754}$

3. $8.3 \overline{)55.942}$

4. $6.2 \overline{)496.93}$

5. $0.7 \overline{)39.333}$

6. $0.05 \overline{)1.04}$

7. $16.327 \div 2.9$

8. $67.032 \div 8.4$

9. $3.645 \div 0.09$

10. $42.56 \div 1.4$

Algebra • Expressions Evaluate each expression, given $a = 3.6$, $b = 0.405$, and $c = 0.09$.

11. $a \div c$

12. $b \div c$

13. $(a - b) \div c$

Test Prep

14. What is the quotient of $0.9 \overline{)1.854}$?

A 2.06

C 206

B 20.6

D 2,060

15. Tonya has 12.8 pounds of sunflower seeds. How many bags weighing 0.8 pound can she package? Explain how you got your answer.

Divide Decimals by Decimals

Find $19.071 \div 2.34$.

Step 1: Multiply the divisor and dividend by same power of 10 so that the divisor is a whole number.

$$\begin{array}{r} 2.34 \overline{)19.071} \\ \underline{468} \\ 1227 \\ \underline{1224} \\ 30 \\ \underline{30} \\ 0 \end{array}$$

Step 2: Divide. Place a decimal point in the quotient directly above the decimal point in the dividend.

$$\begin{array}{r} 8.15 \\ 234 \overline{)1907.10} \\ \underline{1872} \\ 351 \\ \underline{234} \\ 1170 \\ \underline{1170} \\ 0 \end{array}$$

Divide. Show your work. Then check your work.

1. $2.5 \overline{)6.31}$

2. $4.3 \overline{)12.9}$

3. $5.6 \overline{)25.9}$

4. $3.6 \overline{)9.63}$

5. $0.02 \overline{)2.88}$

6. $2.5 \overline{)4.965}$

7. $0.12 \overline{)1.008}$

8. $3.7 \overline{)23.828}$

9. $18.2 \div 5.6$

Problem Solving

Show Your Work

10. Marva paid \$28.52 for 18.4 gallons of gasoline. What was the cost of the gas per gallon?
- _____