

Get out your textbook and turn to p. 103. Warm Up on the Real-World Link #1.

Classwork - Finding the Percent of a Number



## Real-World Link

**Pets** Some students are collecting money for a local pet shelter. The model shows that they have raised 60% of their \$2,000 goal or \$1,200.



1. Fill in the decimal and fractional equivalents for each of the percents shown in the model.
2. Use the model to write two multiplication sentences that are equivalent to  $60\% \text{ of } 2,000 = 1,200$ .

80%

$$\frac{80}{100} \div 2 = \frac{4}{5}$$

## Find the Percent of a Number

To find the percent of a number such as 60% of 2,000, you can use either of the following methods.

- Write the percent as a fraction and then multiply.
- Write the percent as a decimal and then multiply.

### Examples

$$5\% = 0.05$$



- 1.** Find 5% of 300 by writing the percent as a fraction.

Write 5% as  $\frac{5}{100}$  or  $\frac{1}{20}$ . Then find  $\frac{1}{20}$  of 300.

$$\frac{1}{20} \text{ of } 300 = \frac{1}{20} \times 300$$

Write a multiplication expression.

$$= \frac{1}{20} \times \frac{300}{1}$$

Write 300 as  $\frac{300}{1}$ . Divide out common factors.

$$= \frac{1 \times 15}{1 \times 1}$$

Multiply numerators and denominators.

$$= \frac{15}{1} \text{ or } 15$$

Simplify.

So, 5% of 300 is 15.

$$25\%$$

- 2.** Find 25% of 180 by writing the percent as a decimal.

Write 25% as 0.25. Then multiply 0.25 and 180.

$$\begin{array}{r} 180 \\ \times 0.25 \quad \leftarrow \text{two decimal places} \\ \hline 900 \\ + 360 \\ \hline 45.00 \quad \leftarrow \text{two decimal places} \end{array}$$

So, 25% of 180 is 45.

**Got it?** Do these problems to find out.

Find the percent of each number.

a. 40% of 70

$$40\%$$

b. 15% of 100

c. 55% of 160

d. 75% of 280

$$A) 0.4 \cdot 70 = 28$$

$$B) 0.15 (100) = 15$$

$$C) 0.55 \cdot 160 = 88$$

$$D) \frac{75}{100} \cdot 280 = 210$$

## Use Percents Greater Than 100%

Percents that are greater than 100% can be written as improper fractions, mixed numbers, or decimals greater than 1.

$$150\% = \frac{150}{100} = \frac{3}{2} = 1\frac{1}{2} = 1.5$$

$$150\% = 1.5$$

### Examples



- 3.** Find 120% of 75 by writing the percent as a fraction.

Write 120% as  $\frac{120}{100}$  or  $\frac{6}{5}$ . Then find  $\frac{6}{5}$  of 75.

$$\frac{6}{5} \text{ of } 75 = \frac{6}{5} \times 75 \quad \text{Write a multiplication expression.}$$

$$= \frac{6}{\cancel{5}^1} \times \frac{\overset{15}{75}}{1} \quad \text{Write 75 as } \frac{75}{1}. \text{ Divide out common factors.}$$

$$= \frac{6 \times 15}{1 \times 1} \quad \text{Multiply numerators and denominators.}$$

$$= \frac{90}{1} \text{ or } 90 \quad \text{Simplify.}$$

So, 120% of 75 is 90.

- 4.** Find 150% of 28 by writing the percent as a decimal.

Write 150% as 1.5. Then find 1.5 of 28.

$$\begin{array}{r} 28 \\ \times 1.5 \quad \leftarrow \text{one decimal place} \\ \hline 140 \\ + 28 \\ \hline 42.0 \quad \leftarrow \text{one decimal place} \end{array}$$

So, 150% of 28 is 42.

**Got it?** Do these problems to find out.

Find each number.

e. 150% of 20

$$1.5(20) = \textcircled{30}$$

f. 160% of 35

$$\frac{160}{100} \cdot 35 = \textcircled{56}$$

$$160\% = 1.6$$



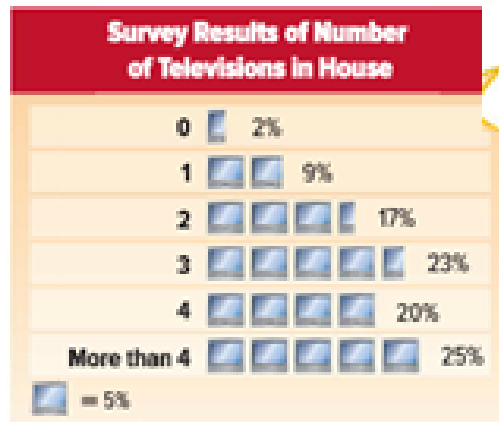
### Example

5. Refer to the graph. If 275 students took the survey, how many can be expected to have 3 televisions each in their houses?

Write the percent as a decimal. Then multiply.

$$\begin{aligned} 23\% \text{ of } 275 &= 23\% \times 275 \\ &= 0.23 \times 275 \\ &= 63.25 \end{aligned}$$

So, about 63 students can be expected to have 3 televisions each.



**Got it?** Do this problem to find out.

- g. Mr. Sudimack earned a 4% commission on the sale of a hot tub that cost \$3,755. How much did he earn?

$$4\% = 0.04 = \frac{4}{100} = \frac{1}{25}$$

$$0.04(3755) = \textcircled{\$150.20}$$