

# Algebra 1A

## Lesson 3.7 Solve Percent Problems

### Warm-Up

Solve.

(a)  $\frac{2}{3} = \frac{x}{21}$

$$\frac{3x}{3} = \frac{42}{3}$$

$$x = 14$$

(b)  $\frac{n-2}{50} = \frac{2}{10}$

$$10(n-2) = 100$$

$$10n - 20 = 100$$

$$\frac{10n}{10} = \frac{120}{10}$$

$$n = 12$$

Write each percent as a decimal.

(a) 54%  $\frac{54}{100}$

$$0.54$$

(b) 123%  $\frac{123}{100}$

$$1.23$$

(c) 5.5%

$$0.055$$

(d) 0.02%

$$0.0002$$

**The Percent Equation** \*Must use decimals for P  
The words "a is p percent of b" can be written in symbols as:

$$a = p\% \cdot b$$

$$\frac{a}{b} = \frac{p\% \cdot b}{b}$$

PROPORTIONS

$$\frac{a}{b} = \frac{P}{100}$$

### Example 1. Find a Percent Using the Percent Equation

(a) What percent of 20 is 15?

$$15 = p \cdot 20$$

$$\frac{15}{20} = \frac{20p}{20}$$

$$p = 0.75 \rightarrow 75\%$$

(b) What percent of 20 is 13?

$$\frac{13}{20} = \frac{p \cdot 20}{20} \quad \text{-OR-}$$

$$p = 0.65$$

$$65\%$$

$$\frac{13}{20} = \frac{P}{100}$$

$$\frac{20p}{20} = \frac{1300}{20}$$

$$p = 65\%$$

### Example 2. Find a Part Using the Percent Equation

(a) What number is 45% of 80?

$$a = p\% \cdot b$$

$$a = 45\% \cdot 80$$

$$a = 0.45 \cdot 80$$

$$a = 36$$

(b) What number is 140% of 14?

$$\frac{a}{14} = \frac{140}{100}$$

$$\frac{100a}{100} = \frac{1960}{100}$$

$$a = 19.6$$

**Example 3. Find a Base Using the Percent Equation**

(a) 75 is 62.5% of what number?

$$a = p\% \cdot b$$

$$75 = 62.5\% \cdot b$$

$$\frac{75}{0.625} = \frac{0.625 \cdot b}{0.625}$$

$$b = 120$$

(b) 50 is 125% of what number?

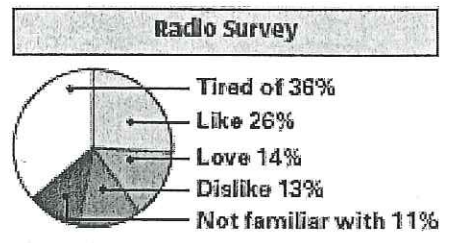
~~$$\frac{50}{b} = \frac{125}{100}$$~~

$$\frac{125b}{125} = \frac{5000}{125}$$

$$b = 40$$

**Example 4. Use a Graphic Representation to Answer a Percent Problem**

The circle graph shows the results of a radio survey where 250 listeners were asked how they felt about a particular song.



(a) How many listeners said they were "tired of" the song?

$$a = 0.36 \cdot 250$$

$$a = 90$$

90 listeners are tired of the song.

(b) How many listeners said they "love" the song?

$$a = 0.14 \cdot 250$$

$$a = 35$$

35 listeners love the song.

**Try It!**

Use the percent equation to answer each question

(a) What percent of 48 is 45?

$$\frac{45}{48} = \frac{p \cdot 48}{48}$$

$$p = 0.9375$$

93.75%

(b) 18 is 36% of what number?

~~$$\frac{18}{b} = \frac{36}{100}$$~~

$$\frac{36b}{36} = \frac{1800}{36}$$

$$b = 50$$

(c) What number is 60% of 25?

$$a = 0.60 \cdot 25$$

$$a = 15$$

(d) Working at Best Buy you earn a commission for all of your sales. You will earn 3% of whatever you sell. Last week you sold \$7500 worth of merchandise, how much did you earn?

~~$$\frac{a}{7500} = \frac{3}{100}$$~~

$$\frac{100a}{100} = \frac{22500}{100}$$

$$a = 225$$

You earned \$225 from your commission.

**Assignment:** Pages 179 - 180 (4 - 28) even

**Review:**

1. Make an input-output table for the function  $A = 8 + 2.5t$  when  $t = 2, 3, 4, 5,$  and  $6$ . Describe the domain and range of the function whose values are shown in the table.

Find the opposite of the number.

- 2. 8
- 3. -3
- 4. -4.9
- 5. 7.9