

# Lesson 1 Reteach

## Using the Percent Proportion

~~Homework due tomorrow Friday 4/27~~  
Show work on all pages.

In a **percent proportion**, one ratio compares *part* of a quantity to the *whole* quantity. The other ratio is the equivalent percent, written as a fraction, with a denominator of 100.

### Example 1: Find each percent.

a. Twelve is what percent of 16?

$$\frac{a}{b} = \frac{p}{100} \rightarrow \frac{12}{16} = \frac{p}{100}$$

$$12 \cdot 100 = p \cdot 16$$

$$1200 = 16p$$

$$75 = p$$

So, twelve is 75% of 16.

Replace the variables.

Find the cross products.

Multiply.

Divide.

b. What percent of 8 is 7?

$$\frac{a}{b} = \frac{p}{100} \rightarrow \frac{7}{8} = \frac{p}{100}$$

$$p \cdot 8 = 100 \cdot 7$$

$$700 = 8p$$

$$87.5 = p$$

So, 87.5% of 8 is 7.

### Example 2: Find the part or the whole.

a. What number is 1.4% of 15?

$$\frac{a}{b} = \frac{p}{100} \rightarrow \frac{a}{15} = \frac{1.4}{100}$$

$$a \cdot 100 = 15 \cdot 1.4$$

$$100a = 21$$

$$a = 0.21$$

So, 0.21 is 1.4% of 15.

Replace the variables.

Find the cross products.

Multiply.

Divide.

b. 225 is 36% of what number?

$$\frac{a}{b} = \frac{p}{100} \rightarrow \frac{225}{b} = \frac{36}{100}$$

$$225 \cdot 100 = 36 \cdot b$$

$$22,500 = 36b$$

$$625 = b$$

So, 225 is 36% of 625.

### Exercises

Use the percent proportion to solve each problem.

1. What is 16% of 36?

$$\frac{x}{36} = \frac{16}{100}$$

$$x = 36 \cdot 16 \div 100 \\ = 5.76$$

2. 43.2 is what percent of 48?

$$\frac{43.2}{48} = \frac{p}{100}$$

$$p = 43.2 \cdot 100 \div 48 \\ = 90$$

3. 4.5 is 90% of what number?

$$\frac{4.5}{x} = \frac{90}{100}$$

$$x = 4.5 \cdot 100 \div 90 \\ = 5$$

Self-Check Quiz

Lesson 6-1  
Using the Percent Proportion

1. Find 43.8% of 75.

- A. 3285  
C. 328.5

- B. 32.85  
D. 3285

Hint

$$\frac{x}{75} = \frac{43.8}{100}$$

$$x = 75 \cdot 43.8 \div 100 = 32.85$$

2. The manager of a music store examined his CD sales by category for the past few months. The results are shown in the table. If he plans to order 250 new CDs, how many of them should be dance?

CD Sales	
Type of Music	Percent of Sales
Pop	31
Dance	11
Rock	22
Rap	24
Country	12

- A. 40  
C. 28

- B. 23  
D. 11

Hint

11% of 250

$$\frac{x}{250} = \frac{11}{100}$$

$$x = 250 \cdot 11 \div 100 = 27.5$$

3. A recent poll showed that 42% of those asked planned to vote for one particular candidate on Election Day. If 33,400 people vote, how many people vote for the particular candidate?

- A. 19,372  
C. 3042

- B. 795  
D. 14,028

Hint

42% of 33,400

$$\frac{x}{33,400} = \frac{42}{100}$$

$$x = 33,400 \cdot 42 \div 100 = 14,028$$

4. Carmen asked people at a park to name their favorite flavor of soft drink. The results are listed in the table. What percent of those asked prefer orange soda?

Flavor of Soft Drink	Number of People
Cola	54
Orange	21
Lemon-Lime	37
Root Beer	41
Cherry	16
Grape	15

- A. 20%  
C. 29.3%

- B. 11.4%  
D. 22.3%

Hint

$$\frac{21}{184} = \frac{x}{100}$$

$$x = 21 \cdot 100 \div 184 \approx 11.4$$

5. North High School has 2764 students enrolled. Use the table to determine how many students study for 2 or more hours.

Study Time	
Less than 1 hour	1.5%
1 hour	11%
1 1/2 hours	32%
2 hours	34%
2 1/2 hours	19%
3 hours	2%
More than 3 hours	0.5%

- A. 594  
C. 1534

- B. 2419  
D. 69

Hint

$$2 \text{ or more hours} = 34 + 19 + 2 + 0.5 = 55.5\%$$

55.5% of 2764

$$\frac{x}{2764} = \frac{55.5}{100}$$

$$x = 2764 \cdot 55.5 \div 100 = 1534.02$$

Check it

## Lesson 2 Reteach

### Find Percent of a Number Mentally

When working with common percents like 10%, 25%, 40%, and 50%, it may be helpful to use the fraction form of the percent.

Percent-Fraction Equivalents			
$25\% = \frac{1}{4}$	$10\% = \frac{1}{10}$	$20\% = \frac{1}{5}$	$12\frac{1}{2}\% = \frac{1}{8}$
$50\% = \frac{1}{2}$	$30\% = \frac{3}{10}$	$40\% = \frac{2}{5}$	$37\frac{1}{2}\% = \frac{3}{8}$
$75\% = \frac{3}{4}$	$70\% = \frac{7}{10}$	$60\% = \frac{3}{5}$	$62\frac{1}{2}\% = \frac{5}{8}$
$100\% = 1$	$90\% = \frac{9}{10}$	$80\% = \frac{4}{5}$	$87\frac{1}{2}\% = \frac{7}{8}$
			$16\frac{2}{3}\% = \frac{1}{6}$
			$33\frac{1}{3}\% = \frac{1}{3}$
			$66\frac{2}{3}\% = \frac{2}{3}$
			$83\frac{1}{3}\% = \frac{5}{6}$

#### Example 1: Find 20% of 35 mentally.

20% of 35 =  $\frac{1}{5}$  of 35    Think:  $20\% = \frac{1}{5}$

= 7

Think:  $\frac{1}{5}$  of 35 is 7. So, 20% of 35 is 7.

When an exact answer is not needed, estimate by rounding and using mental math to compute the answer.

#### Example 2: Estimate.

a. 23% of 84

b.  $\frac{1}{2}$  % of 490

23% is about 25% or  $\frac{1}{4}$

$\frac{1}{2}$  % =  $\frac{1}{2}$  · 1%

$\frac{1}{4}$  of 84 is 21.

490 is almost 500.

So, 23% of 84 is about 21.

So,  $\frac{1}{2}$  % of 490 is about  $\frac{1}{2}$  × 5 or 2.5.

#### Exercises

Find the percent of each number mentally.

1. 60% of 25     $10\% = 2.5 \times 6 = 15$

2. 125% of 4     $100\% = 4$   
 $25\% = \frac{1}{4} \times 4 = 1$   
 $4 + 1 = 5$

3. 15% of 110  
 $10\% = 11$   
 $5\% = 5.5$   
 $15\% = 16.5$

Estimate.

4. 10% of 20     $10\% = 2$   
 20% of 20     $\times 2 = 4$   
 20% = 4

5. 150% of 200  
 $100\% = 200$   
 $50\% = \frac{1}{2} \times 200 = 100$   
 $150\% = 300$   
 6. 52% of 129  
 $50\% \text{ of } 129 = 64.5$   
 $\frac{1}{2} \text{ of } 130 = 65$

Self-Check Quiz

Lesson 6-2  
Find Percent of a Number Mentally

1. If a jacket is on sale for 15% off the regular price of \$38.59, about how much is the discount?

- A. \$6.00  
B. \$15.00  
C. \$4.00  
D. \$3.50

Hint

\$40  
↑ estimate

$$\begin{aligned} 10\% &= 4 \\ 5\% &= 2 \\ 15\% &= 6 \end{aligned}$$

2. Find 60% of 30 mentally.

- A. 24  
B. 18  
C. 50  
D. 12

Hint

$$\begin{aligned} 10\% &= 3 \\ \times 6 & \quad \times 6 \\ 60\% &= 18 \end{aligned}$$

3. Estimate 60% of 92

- A. 54  
B. 60  
C. 48  
D. 42

Hint

90

$$\begin{aligned} 10\% \text{ of } 90 &= 9 \\ \times 6 & \quad \times 6 \\ 60\% &= 54 \end{aligned}$$

4. Find 75% of 24 mentally.

- A. 18  
B. 32  
C. 12  
D. 22

Hint

$$\begin{aligned} 75\% &= \frac{3}{4} \\ \frac{3}{4} \times 24 &= 18 \end{aligned}$$

5. Estimate 10% of 60

- A. 6  
B. 3

$$10\% \text{ of } 60 = 6$$

C. 10

D. 60

Hint

Check it

## Lesson 3 Reteach

### Using the Percent Equation

A percent equation is an equivalent form of the percent proportion. In a percent equation, the percent is written as a decimal.

**Example:** Solve each problem using a percent equation.

- a. Find 22% of 95.

$$n = 0.22(95)$$

$$n = 20.9$$

So, 22% of 95 is 20.9.

- b. 15 is what percent of 75?

$$15 = n(75)$$

$$0.2 = n$$

So, 15 is 20% of 75.

- c. 90 is 20% of what number?

$$90 = 0.2n$$

$$450 = n$$

So, 90 is 20% of 450.

### Exercises

Solve each problem using a percent equation.

1. Find 76% of 25.

$$\begin{array}{c} \downarrow \quad \downarrow \quad \downarrow \\ 0.76 \cdot 25 = \end{array} \quad \textcircled{19}$$

2. 15.4 is what percent of 55?

$$\begin{array}{c} \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\ \frac{15.4}{55} = x \cdot \frac{55}{55} \end{array}$$

$$0.28 = x$$

$$\textcircled{28\%} = x$$

3. 36 is 9% of what number?

$$\begin{array}{c} \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\ \frac{36}{0.09} = 0.09 \cdot x \end{array}$$

$$\textcircled{400} = x$$

Self-Check Quiz

Lesson 6-3  
Using the Percent Equation

$$0.27 \cdot 42 = 11.34$$

C. 83%

D. 85%

Hint

Check it

1. Find 27% of 42.

A. 0.1134

B. 11.34

C. 113.4

D. 1.134

Hint

2. If a stereo is sold for \$59.99, and Karen pays \$64.19 for it when she checks out, what is the sales tax in the area?

A. 7.25%

B. 7%

C. 6.50%

D. 6.75%

Hint

$$\begin{array}{r} 13 \\ 64.19 \\ - 59.99 \\ \hline 4.20 \end{array}$$

4.20 ← This is the tax.

\$4.20 is what percent of \$59.99?

$$\frac{4.20}{59.99} = \frac{x \cdot 59.99}{59.99}$$

$$0.07 = x$$

$$\text{7\%} = x$$

tax

3. 16 is what percent of 192?

A. 12%

B. 1200%

C. 8 1/3%

D. 0.083%

Hint

$$\frac{16}{192} = \frac{x \cdot 192}{192}$$

$$0.083 = x$$

$$8.3\% = x$$

4. Find 16% of 230.

A. 36.8

B. 3680

C. 368

D. 3.68

Hint

$$0.16 \cdot 230 = 36.8$$

5. 34 is what percent of 40?

A. 87%

B. 80%

$$\frac{34}{40} = \frac{x \cdot 40}{40}$$

$$0.85 = x$$

$$85\% = x$$