7.2 Percents *and* Proportions

Students will be able to use proportions to solve percent problems.

Solving Percent Problems

You can represent "*a* is *p* percent of *b*" using the proportion

$$\frac{\text{part}}{\text{base}} \quad \frac{a}{b} = \frac{p}{100}$$

where *a* is a part of the base *b* and *p%*, or $\frac{p}{100}$, is the percent.

$$* \quad \frac{\text{part}}{\text{base}} = \frac{\%}{100}$$

Finding a Percent

What percent of 72 is 54?

$$\frac{part}{base} = \frac{\%}{100} \qquad \frac{54}{72} = \frac{x}{100} \qquad \frac{5400}{72} = x$$

$$75\%$$

What percent of 60 is 25?

$$\frac{P}{b} = \frac{\%}{100} \qquad \frac{25}{60} = \frac{x}{100} \qquad \frac{2500}{60} = 41.7\%$$

What percent of 35 is 7?

What percent of 12 is 48?

$$\frac{P}{b} = \frac{\%}{100} \qquad \frac{48}{12} = \frac{x}{100} \qquad \frac{4800}{12} = x$$

$$400\%$$

When looking at word problems:

1. Identify what you are looking for (part, base, or percent)

2. Fill in the other numbers

3. Solve

4. Label

On Friday, the golf course served 125 customers. Of these, 105 people ordered soup. What percent of the customers ordered soup?

$$\frac{P}{b} = \frac{P}{100} \qquad \frac{105}{125} = \frac{x}{100} \qquad \frac{10500}{125} = 84\%$$

You are performing in a talent show. To decide who performs first, the names of all 15 participants are written on slips of paper and put in a hat. One name is drawn from the hat. What is the probability that you go first? Write your answer as a percent.

$$\frac{\text{part}}{\text{base}} = \frac{\%}{100}$$

Finding a Part of a Base

What number is 24% of 200?

$\frac{4800}{100} = 48 \quad \frac{x}{200} = \frac{24}{100}$

What number is 36% of 54?

What number is 82% of 12?

$* \quad \frac{P}{b} = \frac{\%}{100} \qquad \frac{x}{12} = \frac{82}{100} \quad 9.8$

What number is 13% of 113?

$14.7 \quad \frac{x}{113} = \frac{13}{100}$

Callie is buying a house. She can spend no more than 31% of her income on monthly house payments. If she earns $4,600 per month, what is the largest monthly house payment she can make?

$55,000

$\frac{x}{4600} = \frac{31}{100}$

$1426.00

Of the 338 teams in the NCAA Division 1 Women's Basketball, 3% are in the Southern Conference. How many teams are in the Southern Conference?

$$\frac{\text{part}}{\text{base}} = \frac{\%}{100}$$

Finding a Base

12 is 50% of what number?

$\frac{12}{x} \quad \frac{P}{b} = \frac{\%}{100} \quad 50$

11 is 22% of what number?

$\frac{x}{11} = \frac{22}{100} \qquad \frac{1100}{22} = 50$

4 is 25% of what number?

In Riley's class, 60% of the students walk to school. If 24 students in Riley's class walk to school, how many students are in the class?

$\frac{24}{x} = \frac{60}{100}$

$\frac{2400}{60} = 40 \text{ students}$

An artist's collection of paintings includes 22 portraits. The portraits make up 40% of the collection. How many paintings are in the collect?

$\frac{22}{x} = \frac{40}{100}$

$\frac{2200}{40} = 55 \text{ paintings}$

Percent Problem	Example	Proportion
Find a percent	What percent of 48 is 12?	$\dfrac{12}{48} = \dfrac{p}{100}$
Find a part of a base	What number is 15% of 80?	$\dfrac{x}{80} = \dfrac{15}{100}$
Find a base	20 is 30% of what number?	$\dfrac{20}{x} = \dfrac{30}{100}$

Homework

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#3-8, 10-24 even,

28, 30, 41, 42