The Percent Proportion

A **percent** is a ratio that compares a number to 100. To write a percent as a fraction, express the ratio as a fraction with a denominator of 100. Fractions should be stated in simplest form.

EXAMPLE

1 **Express each percent as a fraction.**

a. 25%

$25\% = \frac{25}{100}$ or $\frac{1}{4}$ — Definition of percent

b. 107%

$107\% = \frac{107}{100}$ or $1\ \frac{7}{100}$ — Definition of percent

c. 0.5%

$0.5\% = \frac{0.5}{100}$ — Definition of percent

$= \frac{5}{1000}$ or $\frac{1}{200}$ — Simplify.

In the **percent proportion**, the ratio of a part of something (part) to the whole (base) is equal to the percent written as a fraction.

part → base → $\frac{a}{b} = \frac{p}{100}$ ← percent

Example: 10 is 25% of 40. (part, percent, base)

EXAMPLE

2 **40% of 30 is what number?**

$\frac{a}{b} = \frac{p}{100}$ — The percent is 40, and the base is 30. Let a represent the part.

$\frac{a}{30} = \frac{40}{100}$ — Replace b with 30 and p with 40.

$100a = 30(40)$ — Find the cross products.

$100a = 1200$ — Simplify.

$\frac{100a}{100} = \frac{1200}{100}$ — Divide each side by 100.

$a = 12$ — The part is 12. So, 40% of 30 is 12.

EXAMPLE

3 **Kelsey took a survey of some of the students in her lunch period. 42 out of the 70 students Kelsey surveyed said their family had a pet. What percent of the students had pets?**

$\frac{a}{b} = \frac{p}{100}$ — The part is 42, and the base is 70. Let p represent the percent.

$\frac{42}{70} = \frac{p}{100}$ — Replace a with 42 and b with 70.

$4200 = 70p$ — Find the cross products.

$\frac{4200}{70} = \frac{70p}{70}$ — Divide each side by 70.

$60 = p$ — The percent is 60, so $\frac{60}{100}$ or 60% of the students had pets.

EXAMPLE

Personal Tutor

4 **67.5 is 75% of what number?**

$\frac{a}{b} = \frac{p}{100}$ The percent is 75, and the part is 67.5. Let b represent the base.

$\frac{67.5}{b} = \frac{75}{100}$ $75\% = \frac{75}{100}$, so $p = 75$. Replace a with 67.5 and p with 75.

$6750 = 75b$ Find the cross products.

$\frac{6750}{75} = \frac{75b}{75}$ Divide each side by 75.

$90 = b$ The base is 90, so 67.5 is 75% of 90.