Lesson 7-1

Example 1

Find x: $\frac{x}{15} = \frac{9}{5}$

Solution

Use cross products to write another equation. Solve that equation for x.

$$\frac{x}{15} = \frac{9}{5}$$
$$5x = 15(9)$$
$$5x = 135$$
$$x = 27$$

Check your answer by substituting it in the original proportion.

$$\frac{27}{15} \stackrel{?}{=} \frac{9}{5}$$
$$\frac{27}{15} = \frac{27 \div 3}{15 \div 3} = \frac{9}{5}$$

Because the ratios are equivalent when $x = 27$, the proportion is solved.

Example 2

PHOTO PROCESSING Fine Photo charges \$5 for 2 poster size enlargements. How much does the company charge for 7 poster size enlargements?

Solution

Write a proportion. Let x = the cost of 7 enlargements.

$$\frac{2}{5} = \frac{7}{x} \qquad \begin{matrix}\text{enlargements} \\ \text{cost}\end{matrix}$$
$$2x = 35$$
$$x = 17.5$$

So, the company charges \$17.50 for 7 poster size enlargements.

Example 3

RECREATION The ratio of counselors to campers is 3 : 10. There are 117 people at a camp. How many are counselors?

Solution

Let $3x$ represent the number of counselors. Let $10x$ represent the number of campers.

The ratio of counselors to campers is $3x : 10x$, which is the same as 3 : 10. Write an equation for the total number of people at camp.

$$\begin{aligned} 3x + 10x &= 117 \\ 13x &= 117 \\ x &= 9 \end{aligned}$$

Because $3x$ represents the number of counselors, the answer is 27.