

Lesson 3-6

Example 1 Determine Whether Ratios Form a Proportion

Determine whether the ratios $\frac{3}{4}$ and $\frac{15}{20}$ form a proportion.

$$\begin{array}{ccc} \div 1 & & \div 5 \\ \frac{3}{4} = \frac{3}{4} & & \frac{15}{20} = \frac{3}{4} \end{array}$$

$$\div 1 \qquad \div 5$$

The ratios are equal. Therefore, they form a proportion.

Example 2 Use Cross Products

Use cross products to determine whether each pair of ratios form a proportion.

a. $\frac{2.8}{0.7}$, $\frac{3.0}{0.8}$

$$\frac{2.8}{0.7} = \frac{3.0}{0.8}$$

Write the equation.

$$2.8(0.8) = 0.7(3.0)$$

Find the cross products.

$$2.24 \neq 2.1$$

Simplify.

The cross products are not equal, so $\frac{2.8}{0.7} \neq \frac{3.0}{0.8}$. The ratios do not form a proportion.

b. $\frac{18}{12}$, $\frac{9}{6}$

$$\frac{18}{12} = \frac{9}{6}$$

Write the equation.

$$18(6) = 12(9)$$

Find the cross products.

$$108 = 108$$

Simplify.

The cross products are equal, so $\frac{18}{12} = \frac{9}{6}$. Since the ratios are equal, they form a proportion.

Example 3 Solve a Proportion

Solve the proportion $\frac{12}{5} = \frac{6}{k+1}$.

$$\frac{12}{5} = \frac{6}{k+1}$$

Original equation

$$12(k+1) = 5(6)$$

Find the cross products.

$$12k + 12 = 30$$

Simplify.

$$12k + 12 - 12 = 30 - 12$$

Subtract 12 from each side.

$$12k = 18$$

Simplify.

$$\frac{12k}{12} = \frac{18}{12}$$

Divide each side by 12.

$$k = \frac{3}{2} \text{ or } 1.5$$

Simplify.

