



Name \_\_\_\_\_ Date \_\_\_\_\_

## Solving Proportions (Pages 111–113)

You can use two equal ratios to write a proportion.

<b>Solving a Proportion</b>	<p>A <b>proportion</b> is an equation that shows that two ratios are equivalent.</p> $\frac{a}{b} = \frac{c}{d}, b \neq 0, \text{ and } d \neq 0$ <p>The <b>cross products</b> of a proportion are equal. If <math>\frac{a}{b} = \frac{c}{d}</math>, then <math>ad = bc</math>.</p>
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### EXAMPLES

- A** Determine whether the ratios  $\frac{2}{3}$  and  $\frac{3}{4}$  form a proportion.

Are the cross products for  $\frac{2}{3}$  and  $\frac{3}{4}$  equal?

The cross products are  $2 \times 4$  and  $3 \times 3$ .  $8 \neq 9$ .

Since the cross products are not equal,  $\frac{2}{3} \neq \frac{3}{4}$ , the ratios do not form a proportion.

- B** Solve  $\frac{4}{5} = \frac{12}{c}$ .

Find the cross products.

$$4 \times c = 5 \times 12$$

$$4c = 60$$

$$\frac{4c}{4} = \frac{60}{4}$$

$$c = 15$$

Divide each side by 4.

### Try These Together

1. Determine whether  $\frac{3}{5}$  and  $\frac{2}{4}$  form a proportion.

HINT: Find the cross products.

2. Determine whether  $\frac{6}{8}$  and  $\frac{3}{4}$  form a proportion.

HINT: See if the cross products are equal.

### PRACTICE

Determine whether each pair of ratios forms a proportion.

3.  $\frac{10}{20}, \frac{6}{12}$     4.  $\frac{3}{8}, \frac{1}{5}$     5.  $\frac{2}{6}, \frac{8}{24}$     6.  $\frac{5}{25}, \frac{1}{5}$     7.  $\frac{6}{15}, \frac{2}{5}$     8.  $\frac{9}{27}, \frac{5}{12}$

Solve each proportion.

9.  $\frac{2}{5} = \frac{x}{20}$     10.  $\frac{3}{n} = \frac{4}{8}$     11.  $\frac{3}{p} = \frac{6}{16}$     12.  $\frac{6}{10} = \frac{3}{r}$   
 13.  $\frac{a}{5} = \frac{15}{25}$     14.  $\frac{y}{7} = \frac{9}{21}$     15.  $\frac{6}{4} = \frac{t}{8}$     16.  $\frac{3}{9} = \frac{9}{k}$

17. **Manufacturing** A company manufactures two different types of school desks. One is a desk with the chair attached and the other is a small desk with a separate chair. One out of every 3 desks they manufacture has the chair separate. If they manufactured 90 desks, how many would have the chairs separate?



18. **Standardized Test Practice** If a car can travel 60 miles in 1 hour, how far can it travel in 5 hours?

**A** 300 mi

**B** 1,100 mi

**C** 600 mi

**D** 550 mi

Answers: 1. no 2. yes 3. yes 4. no 5. yes 6. yes 7. yes 8. no 9. 8 10. 6 11. 8 12. 5 13. 3 14. 3 15. 12 16. 27