

## Unit 8 Objective 3 Remediation Use Proportions to Solve Problems

**\*Remember!** When setting up a proportion to solve a problem, use a variable to represent the number you want to find. In proportions that include different units of measurement, either the units in the numerators must be the same and the units in the denominators must be the same or the units within each ratio must be the same.

### Solving Proportions

You can use cross products to write and solve equations.

➤ **Example 1**

Jenny got 3 hits in her first 8 at-bats this season. How many hits must she get in her next 200 at-bats to maintain this ratio?

$$\begin{array}{ccc}
 \boxed{\text{hits}} \rightarrow & \frac{3}{8} = \frac{x}{200} & \leftarrow \boxed{\text{hits}} \\
 \boxed{\text{at-bats}} \rightarrow & & \leftarrow \boxed{\text{at-bats}}
 \end{array}$$

**Solution**

The cross products are  $8x$  and  $3 \cdot 200$ , or 600.

$8x = 600$       Set the cross products equal to one another.

$$\frac{8x}{8} = \frac{600}{8}$$

$$x = 75$$

Therefore, Jenny must get **74 hits** in her next 200 at-bats.

➤ **Example 2**

A 24-foot-tall tree casts a 30-foot-long shadow. A 4-foot-tall child is standing nearby. How long is the child's shadow?

$$\begin{array}{ccc}
 \boxed{\text{Actual Height (ft)}} \rightarrow & \frac{24}{30} = \frac{4}{x} & \leftarrow \boxed{\text{Actual Height (ft)}} \\
 \boxed{\text{Height of Shadow (ft)}} \rightarrow & & \leftarrow \boxed{\text{Height of Shadow (ft)}}
 \end{array}$$

**Solution**

The cross products are  $24x$  and  $4 \cdot 30$ , or 120.

$24x = 120$       Set the cross products equal to one another.

$$\frac{24x}{24} = \frac{120}{24}$$

$$x = 5$$

Therefore, the child's **shadow is 5 feet long**.

**Try Some! Solve each problem.**

1. To make his special salad dressing, Wolfgang combines 7 fl. oz. of oil with 4 fl. oz. of vinegar. One day he needed a larger amount, so he used 8 fl. oz. of oil. How much vinegar did he need?
2. The ratio of height to width for a TV screen is 9 to 16. How high is a screen that is 30 in. wide?
3. Jessica checked her gas mileage and found that she had used 17.4 gal. of gas to travel 392 mi. At this rate, how many gallons will she use to travel from Los Angeles to Miami, a distance of 2,735 mi?
4. If there are 95g of fat in 16 oz of ground beef, how much fat is in 3 oz of ground beef?
5. The Screaming Equals' team color is made by mixing red paint with blue paint in a ratio of 12 to 7. How much blue paint should be mixed with 4 gal of red?
6. A marathon runner ran the first 3 mi in 17.2 min. If she continues running at this pace, how long will it take her to run the entire marathon of 26.2 mi?