

**EXTRAPRACTICE 17****Applications Using Rational Equations and  
Use after Section 6.7****Proportions****Name** \_\_\_\_\_

Example: A number plus five times its reciprocal is  $-6$ . Find the number.

$$\begin{array}{ccccccc} \text{A number} & \text{plus} & \text{five times} & \text{its reciprocal} & \text{is} & -6. \\ \downarrow & & \downarrow & \downarrow & \downarrow & \\ x & + & 5 & \cdot & \frac{1}{x} & = -6 \end{array}$$

Solve:  $x + 5 \cdot \frac{1}{x} = -6$

$$x \left( x + \frac{5}{x} \right) = x(-6) \quad \text{Multiplying by the LCD, } x, \text{ on both sides.}$$

$$x^2 + 5 = -6x$$

$$x^2 + 6x + 5 = 0$$

$$(x + 5)(x + 1) = 0$$

$$x = -5 \text{ or } x = -1$$

The values  $-5$  and  $-1$  check in the original problem. The solutions are  $-5$  and  $-1$ .

Solve.

1. A number minus three times its reciprocal is 2. Find the number. \_\_\_\_\_
2. The sum of a number and twice its reciprocal is 3. Find the number. \_\_\_\_\_
3. It takes Carolyn 4 hr to type a final exam. It takes Elise 3 hr to do the same job. How long would it take them, working together, to do the typing? \_\_\_\_\_
4. A swimming pool can be filled in 15 hr by pipe A alone and in 24 hr by pipe B alone. How long would it take to fill the pool if both pipes were working? \_\_\_\_\_
5. One car travels 30 km/h faster than another. In the same time that one travels 200 km, the other goes 320 km. Find their speeds. \_\_\_\_\_

**EXTRAPRACTICE 17**

**Applications Using Rational Equations and Proportions**

**Use after Section 6.7**

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6. The speed of a freight train is 16 mph slower than the speed of a passenger train. The freight train travels 420 miles in the same time that it takes the passenger train to travel 500 miles. Find the speed of each train. \_\_\_\_\_
  
7. William walked 195 km in 12 days. At this rate, how far would he walk in 36 days?  
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8. The winner of an election for class president won by a vote of 8 to 5 with 992 votes. How many votes did the loser get? \_\_\_\_\_
  
9. Triangles  $ABC$  and  $XYZ$  are similar. Solve for  $z$  if  $x = 12$ ,  $a = 10$ , and  $c = 8$ .  
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10. Triangles  $DEF$  and  $GHI$  are similar. Solve for  $e$  if  $d = 15$ ,  $g = 9$ , and  $h = 6$ .  
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11. To determine the number of deer in a game preserve, a game warden catches 415 deer, tags them, and lets them loose. Later, 140 deer are caught; 28 of them are tagged. Estimate the number of deer in the preserve. \_\_\_\_\_