

Lauren Covell

$$\begin{aligned} 56 \text{ ppm/hr} &= \text{after} \\ 10 \text{ hr} &= 3 \text{ hr} \\ x &= \text{before device} \\ (x - 56) &= \text{after device} \end{aligned}$$

$$10(x - 56) = 3x$$

$$\begin{array}{r} 10x - 560 = 3x \\ +560 \quad +560 \end{array}$$

$$\begin{array}{r} 10x = 3x + 560 \\ -3x \quad -3x \end{array}$$

$$\frac{7x = 560}{7} \quad \frac{7}{7}$$

$$x = 80$$

The original rate of emission of the pollutant in the car's exhaust is 80 ppm.

How  
me. II



21. A pollution control device reduces the rate of emission of an air pollutant in a car's exhaust by 56 ppm (parts per million) per hour. When the device is installed, it will take the car 10 h to emit the same amount of pollutant that it formerly did in 3 h. What was the original rate of emission of the pollutant in the car's exhaust? 80 ppm/h
22. A grocer wants to mix peanuts and cashews to produce 20 lb of mixed nuts worth \$6.20/lb. How many pounds of each kind of nut should she use if peanuts cost \$4.80/lb and cashews cost \$8/lb?  
peanuts: 11.25 lb, cashews: 8.75 lb
- C 23. In a two-candidate election 1401 votes were cast. If 30 voters had switched their votes from the winner to the loser, the loser would have won by 5 votes. How many votes did each candidate actually receive?  
winner: 728 votes, loser: 673 votes

### Mixed Review Exercises

Solve.

1.  $3x + 2 = -4$  {-2}

2.  $4(2 - y) = y - 7$  {3}

3.  $1 - 5t = t + 7$  {-1}

Evaluate each expression if  $c = -4$  and  $d = 6$ .

4.  $c^2 - d^2 - 20$

5.  $(c - d)^2$  100

6.  $|2c - 3d|$  26

7.  $\frac{c+d}{-2} - 1$

8.  $\frac{cd}{8} - 3$

9.  $\frac{d-c}{5}$  2

### Quick Quiz

Solve.

1.  $4m + 6 = 14$  2

2.  $2(2x + 1) = 8x + 4$   $-\frac{1}{2}$

3. Solve for  $x$ .

$$y - b = \frac{b}{a}(x - a) \quad x = \frac{ay}{b}$$

4. Using  $c$  for the variable, translate this word phrase into an algebraic expression: Three times the difference of a number and its cube.  $3(c - c^3)$

5. Express your answer in terms of  $y$ . What is the area of a rectangle that is  $y$  cm wide and 6 cm longer than it is wide?  $y(y + 6)$

6. Two motorcycles, heading towards each other on a divided highway, are 392 mi apart. If one motorcycle travels 52 mi/h and the other 8 mi/h faster, in how many hours will they pass each other? 3.5 h

### Self-Test 3

#### Vocabulary

- open sentence (p. 37)
- solution (p. 37)
- root (p. 37)
- solve (p. 37)
- solution set (p. 37)

- equivalent equations (p. 37)
- empty set (p. 38)
- identity (p. 38)
- formula (p. 39)
- constant (p. 39)

Solve.

1.  $3x - 8 = 7$  {5}

2.  $4(1 - x) = 2(x - 4)$  {2} Obj. 1-7, p.

3. Solve the formula  $m = \frac{1}{2}(a + b)$  for  $b$ .  $b = 2m - a$

4. Using  $n$  for the variable, translate this word phrase into an algebraic expression: Twice the sum of a number and its square.  $2(n + n^2)$  Obj. 1-8, p.

5. Express your answer in terms of  $x$ : What is the perimeter of a rectangle that is  $x$  cm wide and 5 cm longer than it is wide?  $4x + 10$

6. Two cars, heading toward each other on a divided highway, are 250 mi apart. If one car travels 45 mi/h and the other 10 mi/h faster, in how many hours will the cars pass each other?  $2\frac{1}{2}$  h Obj. 1-9, p.