



CONCEPT SUMMARY Create and Solve Linear Equations

Use the following information about Kelsey's visit to the flower shop.

- Kelsey bought some roses and tulips.
- She bought twice as many tulips as roses.
- Roses cost \$5 each.
- Tulips cost \$2 each.
- Kelsey spent \$36 total.

How many of each kind of flower did Kelsey buy?

WORDS Write an equation to represent the situation.

$$\begin{array}{rcl} \text{Cost of Roses} & + & \text{Cost of Tulips} & = & \text{Total Cost} \\ (\text{Cost of One Rose})(\text{Number of Roses}) & + & (\text{Cost of One Tulip})(\text{Number of Tulips}) & = & \text{Total Cost} \end{array}$$

ALGEBRA $\$5 \cdot x + \$2 \cdot 2x = \$36$

$$5x + 4x = 36$$

$$9x = 36$$

$$x = 4$$

Kelsey bought 4 roses and 8 tulips.

Do You UNDERSTAND?

- ESSENTIAL QUESTION** How do you create equations and use them to solve problems?
- Reason** What is a first step to solving for x in the equation $9x - 7 = 10$? How would you check your solution? © MP.2
- Use Structure** For an equation with fractions, why is it helpful to multiply both sides of the equation by the LCD? © MP.7
- Error Analysis** Venetta knows that $1 \text{ mi} \approx 1.6 \text{ km}$. To convert 5 mi/h to km/h , she multiplies 5 mi/h by $\frac{1 \text{ mi}}{1.6 \text{ km}}$. What error does Venetta make? © MP.3

Do You KNOW HOW?

Solve each equation.

5. $4b + 14 = 22$

6. $-6k - 3 = 39$

7. $15 - 2(3 - 2x) = 46$

8. $\frac{2}{3}y - \frac{2}{5} = 5$

- Terrence walks at a pace of 2 mi/h to the theater and watches a movie for 2 h and 15 min . He rides back home, taking the same route, on the bus that travels at a rate of 40 mi/h . The entire trip takes 3.5 h . How far along this route is Terrence's house from the theater? Explain.



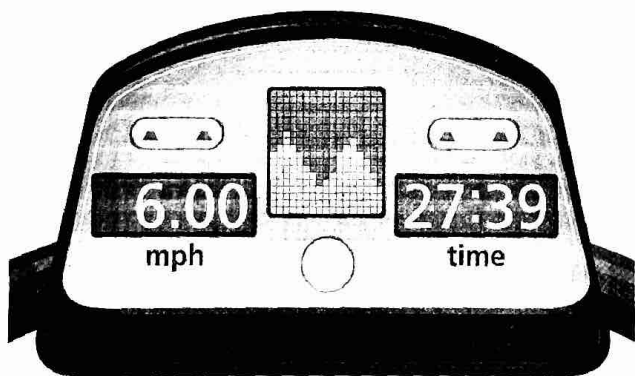
UNDERSTAND

10. Use **Structure** What could be a first step to solving the equation $3x + -0.5(x + 3) + 4 = 14$? Explain. © MP.7
11. **Make Sense and Persevere** The sum of four consecutive integers is -18 . What is the greatest of these integers? © MP.1
12. **Error Analysis** Describe and correct the error a student made when solving the equation $4 = -2(x - 3)$. What is the correct solution? © MP.3

$$\begin{aligned}
 4 &= -2(x - 3) \\
 4 &= -2x - 6 \\
 4 + 6 &= -2x - 6 + 6 \\
 10 &= -2x \\
 \frac{10}{-2} &= \frac{-2x}{-2} \\
 -5 &= x
 \end{aligned}$$



13. **Communicate Precisely** Parker ran on a treadmill at a constant speed for the length of time shown. How many miles did Parker run? Explain. © MP.6



14. **Reason** The Division Property of Equality says that for every real number a , b , and c , if $a = b$ and $c \neq 0$, then $\frac{a}{c} = \frac{b}{c}$. Why does the property state that $c \neq 0$? © MP.2
15. **Higher Order Thinking** Tonya's first step in solving the equation $\frac{1}{2}(2y + 4) = -6$ is to use the Distributive Property on the left side of the equation. Deon's first step is to multiply each side by 2. Which of these methods will result in an equivalent equation? Explain.

PRACTICE

Solve each equation. SEE EXAMPLES 1 AND 2

16. $-4x + 3x = 2$
17. $7 = 5y - 13 - y$
18. $7m - 4 - 9m - 36 = 0$
19. $-2 = -5t + 10 + 2t$

Solve each equation. SEE EXAMPLES 3 AND 4

20. $2(2x + 1) = 26$
21. $-2(2z + 1) = 26$
22. $92 = -4(2r - 5)$
23. $10(5 - n) - 1 = 29$
24. $-(7 - 2x) + 7 = -7$
25. $200 = 16(6t - 3)$

Solve each equation. SEE EXAMPLE 5

26. $\frac{1}{2}x + 2 = 1$
27. $\frac{3}{2}x - \frac{2}{3}x = 2$
28. $\frac{1}{5}(k - 3) = \frac{3}{4}$
29. $\frac{7}{60} = \frac{5}{24}w + \frac{11}{12}$
30. $\frac{3m}{4} - \frac{m}{12} = \frac{7}{8}$
31. $1,290 = \frac{h}{10} + \frac{h}{5}$

Solve each equation.

32. $0.1r - 1 = 0.65$
33. $1.2n + 0.68 = 5$
34. $0.025(q + 2) = 2.81$
35. $-0.07p - 0.6 = 5$
36. $1.037x + 0.02x + 25 = 30.285$
37. $-0.85t - 0.85t - 3.9 = -8.15$
38. A bee flies at 20 feet per second directly to a flowerbed from its hive. The bee stays at the flowerbed for 15 minutes, then flies directly back to the hive at 12 feet per second. It is away from the hive for a total of 20 minutes. SEE EXAMPLE 5
- a. What equation can you use to find the distance of the flowerbed from the hive?
- b. How far is the flowerbed from the hive?