

## 4.2

## Solving Systems Using Substitution

Solve each system by substitution. Check your solution.

$$\begin{aligned} 1. \quad x &= y \\ x + 2y &= 3 \end{aligned}$$

$$\begin{aligned} 2. \quad y &= -x + 4 \\ y &= 3x \end{aligned}$$

$$\begin{aligned} 3. \quad y &= 2x - 10 \\ 2y &= x - 8 \end{aligned}$$

$$\begin{aligned} 4. \quad 2y &= x + 1 \\ -2x - y &= 7 \end{aligned}$$

$$\begin{aligned} 5. \quad x + 2y &= 14 \\ y &= 3x - 14 \end{aligned}$$

$$\begin{aligned} 6. \quad 2x - 3y &= 13 \\ y &= \frac{1}{2}x - \frac{7}{2} \end{aligned}$$

$$\begin{aligned} 7. \quad -3x - 2y &= 5.5 \\ x + 3y &= 7.5 \end{aligned}$$

$$\begin{aligned} 8. \quad 6x - 4y &= 54 \\ -9x + 2y &= -69 \end{aligned}$$

$$\begin{aligned} 9. \quad y &= \frac{-x}{2} - 4 \\ -2x - y &= -5 \end{aligned}$$

10. **Writing** How do you know that substitution gives the answer to a system of equations? Explain.

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16. A shopper purchased 8 T-Shirts and 5 pairs pants for \$220. The next day, he purchased 5 T-shirts and 1 pair of pants for \$112. How much does each T-shirt and each pair of pants cost?

crayons and each ream of paper?

18. Suppose you got 8 mangoes and 3 apples for \$18 and 3 mangoes and 5 apples for \$14.50. How much does each mango and each apple cost?
19. A shopper purchased 4 tables and 2 chairs for \$200 and 2 tables and 7 chairs for \$400. What is the cost of each table and each chair?
20. If the length of the rectangle is twice the width, and the perimeter of the rectangle is 30 cm, what is length and width of the rectangle?
21. The population of a city is 2,500. If the number of males is 240 more than the number of females, how many males and females are there in the city?

**Solve each system by substitution. Tell whether the system has *one solution*, *infinitely many solutions*, or *no solution*.**

22.  $7x + 2y = -13$   
 $-3x - 8y = -23$

23.  $x - 9y = -10$   
 $6x + y = -5$

24.  $x = \frac{y}{4} + 1$   
 $y = 4x - 5$

25.  $x - 2y - 1 = 0$   
 $y - 5x + 14 = 0$

26.  $y = -8x - 37$   
 $x + 3y = 4$

27.  $3x + 6y = 18$   
 $3y = -\frac{3}{2}x + 9$

28.  $5x - 9y = 29$   
 $12x + y = 47$

29.  $2x = 3y - 9$   
 $-3x + y = 10$

30.  $5y = 7x + 22$   
 $x = -6y + 17$

31.  $x = 6y + 16$   
 $9x - 2y = -12$

32.  $4x - y - 4 = 0$   
 $3x + 2y - 14 = 0$

33.  $x + 3y = -5$   
 $-2x - y = 5$