

**Do you know HOW?**

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

$$1. \begin{cases} y = x - 1 \\ y = -3x - 5 \end{cases}$$

$$2. \begin{cases} y = \frac{4}{3}x - 2 \\ 3y - 4x = -6 \end{cases}$$

$$3. \begin{cases} y = 3x - 4 \\ y - 3x = 1 \end{cases}$$

$$4. \begin{cases} y = 3x - 14 \\ y - x = 10 \end{cases}$$

Solve each system using substitution.

$$5. \begin{cases} y = 2x + 5 \\ y = 6x + 1 \end{cases}$$

$$6. \begin{cases} x = y + 7 \\ y - 8 = 2x \end{cases}$$

$$7. \begin{cases} 4x + y = 2 \\ 3y + 2x = -1 \end{cases}$$

$$8. \begin{cases} 4x + 9y = 24 \\ y = -\frac{1}{3}x + 2 \end{cases}$$

Solve each system using elimination.

$$9. \begin{cases} 2x + 5y = 2 \\ 3x - 5y = 53 \end{cases}$$

$$10. \begin{cases} 4x + 2y = 34 \\ 10x - 4y = -5 \end{cases}$$

$$11. \begin{cases} 11x - 13y = 89 \\ -11x + 13y = 107 \end{cases}$$

$$12. \begin{cases} 3x + 6y = 42 \\ -7x + 8y = -109 \end{cases}$$

Write and solve a system of equations to solve each problem. Explain why you chose the method you used.

13. **Geometry** The length of a rectangle is 3 times the width. The perimeter is 44 cm. What are the dimensions of the rectangle?

14. **Farming** A farmer grows only pumpkins and corn on her 420-acre farm. This year she wants to plant 250 more acres of corn than pumpkins. How many acres of each crop should the farmer plant?

15. **Coins** You have a total of 21 coins, all nickels and dimes. The total value is \$1.70. How many nickels and how many dimes do you have?

16. **Business** Suppose you start an ice cream business. You buy a freezer for \$200. It costs you \$.45 to make each single-scoop ice cream cone. You sell each cone for \$1.25. How many cones do you need to sell to break even?

Do you UNDERSTAND?

© Reasoning Without solving, tell which method you would choose to solve each system: *graphing*, *substitution*, or *elimination*. Explain your answer.

$$17. \begin{cases} y = 2x - 5 \\ 4y + 8x = 15 \end{cases}$$

$$18. \begin{cases} 2y + 7x = 3 \\ y - 7x = 9 \end{cases}$$

© 19. **Reasoning** If a system of linear equations has infinitely many solutions, what do you know about the slopes and y -intercepts of the graphs of the equations?

© 20. **Open-Ended** Write a system of equations that you would solve using substitution.

© 21. **Reasoning** Suppose you write a system of equations to find a break-even point for a business. You solve the system and find that it has no solution. What would that mean in terms of the business?