**UNDERSTAND**

10. **Use Structure** How does the structure of a system of equations help you choose which solution method to use?

11. **Generalize** Consider the system of equations.

$$Ax + By = C$$
$$Px + Qy = R$$

If the system has infinitely many solutions, how are the coefficients A, B, C, P, Q, and R related? If the system has no solution, how are the coefficients related?

12. **Use Appropriate Tools** Write and solve a system of equations for the graph shown.
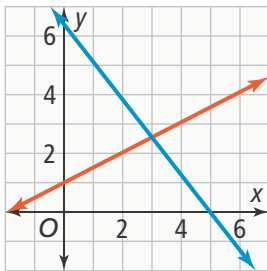
13. **Error Analysis** Describe and correct the error a student made in finding the solution to the system of equations.

$$2x - y = -1$$
$$x - y = -4$$

$$2x - y = -1$$
$$-1(x - y) = -4$$

$$2x - y = -1$$
$$-x + y = -4$$
$$x = -5$$

$$2(-5) - y = -1$$
$$-10 - y = -1$$
$$-y = 9$$

The solution is $(-5, -9)$. ✗

14. **Use Structure** Explain the advantages of using substitution to solve the system of equations instead of elimination.

$$x = 6 + y$$
$$48 = 2x + 2y$$

PRACTICE

Solve each system of equations. SEE EXAMPLES 1 AND 3

15. $x - y = 4$
    $2x + y = 5$

16. $x - 2y = -2$
    $3x + 2y = 30$

17. $3x + 2y = 8$
    $x + 4y = -4$

18. $x - 2y = 1$
    $2x + 3y = -12$

19. $7x - 4y = -12$
    $x - 2y = 4$

20. $5x + 6y = -6$
    $7x - 3y = -54$

21. $2x + 5y = -20$
    $3x - 2y = -11$

22. $4x - 3y = 17$
    $2x - 5y = 5$

Is each pair of systems of equations equivalent? Explain. SEE EXAMPLE 2

23. $3x - 9y = 5$ $6x - 9y = 10$
    $6x + 2y = 18$ $6x + 2y = 18$

24. $4y + 2x = -7$ $4y + 2x = -7$
    $2y - 6x = 8$ $4y - 12x = 16$

25. $5x + 3y = 19$ $10x + 6y = 38$
    $2x + 4y = 20$ $10x + 20y = 100$

Write and solve a system of equations to model each situation. SEE EXAMPLE 3

26. Two pizzas and four sandwiches cost $62. Four pizzas and ten sandwiches cost $140. How much does each pizza and sandwich cost?

27. At a clothing store, 3 shirts and 8 hats cost $65. The cost for 2 shirts and 2 hats is $30. How much does each shirt and hat cost?

Solve each system. Explain your choice of solution method. SEE EXAMPLE 4

28. $6x - 5y = -1$
    $6x + 4y = -10$

29. $8x - 4y = -4$
    $x = y - 4$

30. $5x - 2y = -6$
    $3x - 4y = -26$

31. $2x - 3y = 14$
    $5x + 4y = 12$

APPLY

32. Construct Arguments DeShawn and Chris are solving the following system of equations.

$$x - 4y = -8$$

$$3x + 4y = 0$$

DeShawn says that the first step should be to add the two equations to eliminate y. Chris says that the first step should be to multiply the first equation by -3 so you can eliminate the x-terms.

Who is correct? Explain.

33. Generalize Describe a system of equations where each solution method would be the most efficient to use.

a. Graphing

b. Substitution

c. Elimination

34. Model With Mathematics Two groups of friends go to a baseball game. Each group plans to share the snacks shown. What is the price of one drink and one pretzel?

3 drinks and 2 pretzels: **$16.00**

5 drinks and 5 pretzels: **$31.25**
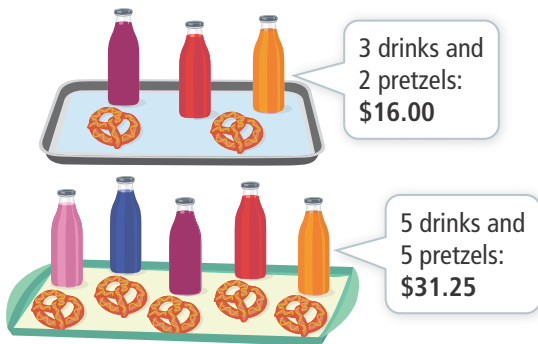
35. Higher Order Thinking Determine the value of n that makes a system of equations with a solution that has a y-value of 2.

$$5x + 6y = 32$$

$$2x + ny = 18$$

36. A group of 30 students from the senior class charters a bus to an amusement park. The total amount they spend on the bus and admission to the park for each student is $1,770.

A group of 50 students from the junior class also go to the amusement park, but they require two buses. If the group from the junior class spent $3,190 in total, how much does it cost to charter one bus?

ASSESSMENT PRACTICE

37. Solve the system of equations using elimination. Complete the solution of the system of equations.

$$4x + 3y = 6$$

$$2x - 5y = 16$$

$x = $ _____ and $y = $ _____

38. SAT/ACT A rental company can set up 3 small tents and 1 large tent in 115 min. They can set up 2 small tents and 2 large tents in 130 min. How much time is required to set up a small tent?

Ⓐ 15 min

Ⓑ 25 min

Ⓒ 35 min

Ⓓ 40 min

39. Performance Task At Concessions Unlimited, four granola bars and three drinks cost $12.50. Two granola bars and five drinks cost $15.00.

At Snacks To Go, three granola bars and three drinks cost $10.50. Four granola bars and two drinks cost $10.00.

Part A Write a system of equations for each concession stand that models the price of its items.

Part B Solve each system of equations. What do the solutions represent?

Part C You decide to open a new concessions stand and sell granola bars and drinks. Determine a price for each item that differ from the prices at Snacks To Go. Then write a system of equations to model the prices at your snack bar.