

3-2

Practice

Form G

Solving Systems Algebraically

Solve each system by substitution. Check your answers.

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

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

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

4.
$$\begin{cases} 6x - 3y = -33 \\ 2x + y = -1 \end{cases}$$

5.
$$\begin{cases} 2x - y = 7 \\ 3x - 2y = 10 \end{cases}$$

6.
$$\begin{cases} 4x = 8y \\ 2x + 5y = 27 \end{cases}$$

7.
$$\begin{cases} x + 3y = -4 \\ y + x = 0 \end{cases}$$

8.
$$\begin{cases} 3x + 2y = 9 \\ x + y = 3 \end{cases}$$

9.
$$\begin{cases} 2y - 3x = 4 \\ x = -4 \end{cases}$$

10. Suppose you bought eight oranges and one grapefruit for a total of \$4.60. Later that day, you bought six oranges and three grapefruits for a total of \$4.80. What is the price of each type of fruit?

Solve each system by elimination.

11.
$$\begin{cases} x + y = 10 \\ x - y = 2 \end{cases}$$

12.
$$\begin{cases} -x + 3y = -1 \\ x - 2y = 2 \end{cases}$$

13.
$$\begin{cases} x + y = 7 \\ x + 3y = 11 \end{cases}$$

14.
$$\begin{cases} 4x - 3y = -2 \\ 4x + 5y = 14 \end{cases}$$

15.
$$\begin{cases} x + 2y = 10 \\ 3x - y = 9 \end{cases}$$

16.
$$\begin{cases} 2x - 5y = 11 \\ 4x + 10y = 18 \end{cases}$$

17.
$$\begin{cases} x - y = 0 \\ x + y = 2 \end{cases}$$

18.
$$\begin{cases} x + 3y = -4 \\ x + y = 0 \end{cases}$$

19.
$$\begin{cases} 3x - y = 17 \\ 2x + y = 8 \end{cases}$$

20. There are a total of 15 apartments in two buildings. The difference of two times the number of apartments in the first building and three times the number of apartments in the second building is 5.
- Write a system of equations to model the relationship between the number of apartments in the first building f and the number of apartments in the second building s .
 - How many apartments are in each building?

Solve each system by elimination.

21.
$$\begin{cases} -x + y = 3 \\ 5x + y = 9 \end{cases}$$

22.
$$\begin{cases} 5x + 4y = 2 \\ -5x - 2y = 4 \end{cases}$$

23.
$$\begin{cases} -2x + y = 3 \\ 5x - y = -3 \end{cases}$$

24.
$$\begin{cases} 14x + 2y = 10 \\ x - 5y = 11 \end{cases}$$

25.
$$\begin{cases} x + 5y = 1 \\ 2x + 10y = 2 \end{cases}$$

26.
$$\begin{cases} 0.3x + 0.4y = 0.8 \\ 0.7x - 0.8y = -6.8 \end{cases}$$

27.
$$\begin{cases} 4x + 3y = -6 \\ 5x - 6y = -27 \end{cases}$$

28.
$$\begin{cases} 2x + y = 0 \\ 4x + 2y = -11 \end{cases}$$

29.
$$\begin{cases} 1.2x + 1.4y = 2.7 \\ 0.4x - 0.3y = 0.9 \end{cases}$$

3-2 Practice (continued)

Form G

Solving Systems Algebraically

- 30. Writing** Explain what it means when elimination results in an equation that is always true.

For each system, choose the solution method that seems easier to use. Explain why you made each choice. Solve each system.

31.
$$\begin{cases} b = 2a - 5 \\ b = 3 + a \end{cases}$$

32.
$$\begin{cases} 4x - 2y = 11 \\ 4x + 3y = 6 \end{cases}$$

33.
$$\begin{cases} 5p + 2q = 10 \\ 4p + q = 4 \end{cases}$$

34.
$$\begin{cases} j - 3k = 3 \\ j = -k + 15 \end{cases}$$

- 35. Error Analysis** You and your friend are solving the system $4x - y = 5$ and $4x + y = 3$. Your friend says there is no solution, and you say the solution is $(1, -1)$. Who is correct? Explain.

- 36.** You can buy DVDs at a local store for \$15.49 each. You can buy them at an online store for \$13.99 each plus \$6 for shipping. How many DVDs can you buy for the same amount at the two stores?

- 37.** Last year, a baseball team paid \$20 per bat and \$12 per glove, spending a total of \$1040. This year, the prices went up to \$25 per bat and \$16 per glove. The team spent \$1350 to purchase the same amount of equipment as last year. How many bats and gloves did the team purchase each year?

- 38.** If the perimeter of the square at the right is 72 units, what are the values of x and y ?

