

3-1 Practice

Solving Systems Using Tables and Graphs

Form G

Solve each system by graphing or using a table. Check your answers.

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

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

$$3. \begin{cases} x - 2y = 10 \\ y = x - 11 \end{cases}$$

$$4. \begin{cases} 5x + y = 11 \\ x - y = 1 \end{cases}$$

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

$$6. \begin{cases} x - y = -1 \\ 2x + 2y = 10 \end{cases}$$

$$7. \begin{cases} 4x + 3y = -16 \\ -x + y = 4 \end{cases}$$

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

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

$$10. \begin{cases} y = \frac{1}{2}x + 3 \\ y = -\frac{1}{4}x - 3 \end{cases}$$

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

$$12. \begin{cases} x + y = 6 \\ x - y = 4 \end{cases}$$

Write and solve a system of equations for each situation. Check your answers.

13. Your school sells tickets for its winter concert. Student tickets are \$5 and adult tickets are \$10. If your school sells 85 tickets and makes \$600, how many of each ticket did they sell?
14. A grocery store has small bags of apples for \$5 and large bags of apples for \$8. If you buy 6 bags and spend \$45, how many of each size bag did you buy?
15. The spreadsheet below shows the monthly income and expenses for a new business.
- Use your graphing calculator to find linear models for income and expenses as functions of the number of the month.
 - In what month will income equal expenses?

	A	B	C
	Month	Income	Expenses
1	May	\$1500	\$21,400
2	June	\$3500	\$18,800
3	July	\$5500	\$16,200
4	August	\$7500	\$13,600

3-1

Practice (continued)

Form G

Solving Systems Using Tables and Graphs

Without graphing, classify each system as *independent*, *dependent*, or *inconsistent*

16.
$$\begin{cases} x + y = 3 \\ y = 2x - 3 \end{cases}$$

17.
$$\begin{cases} 2x + y = 3 \\ y = -2x - 1 \end{cases}$$

18.
$$\begin{cases} x + 3y = 9 \\ -2x - 6y = -18 \end{cases}$$

19.
$$\begin{cases} x + y = 4 \\ y = 2x + 1 \end{cases}$$

20.
$$\begin{cases} x + 3y = 9 \\ 9y + 3x = 27 \end{cases}$$

21.
$$\begin{cases} x + 2y = 5 \\ 2x + 3y = 9 \end{cases}$$

22.
$$\begin{cases} 3x + 2y = 7 \\ 3x - 15 = -6y \end{cases}$$

23.
$$\begin{cases} x + y = 6 \\ 3x + 3y = 3 \end{cases}$$

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

25.
$$\begin{cases} x + 2y = 13 \\ 2y = 7 - x \end{cases}$$

26.
$$\begin{cases} y = 12 - 5x \\ x - 4y = -6 \end{cases}$$

27.
$$\begin{cases} 25x - 10y = 0 \\ 2y = 5x \end{cases}$$

28. You and your business partner are mailing advertising flyers to your customers. You address 6 flyers each minute and have already done 80. Your partner addresses 4 flyers each minute and has already done 100. Graph and solve a system of equations to find when the two of you will have addressed equal numbers of flyers.
29. You are going on vacation and leaving your dog in a kennel. Kennel A charges \$25 per day which includes a one-time grooming treatment. Kennel B charges \$20 per day and a one-time fee of \$30 for grooming.
- Write a system of equations to represent the cost c for d days that your dog will stay at the kennel.
 - If your vacation is 7 days long, which kennel should you choose? Explain.

Open-Ended Write a second equation for each system so that the system will have the indicated number of solutions.

30. one

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

31. none

$$\begin{cases} y = -x + 3 \\ ? \end{cases}$$

32. an infinite number

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

33. **Multiple Choice** Which ordered pair of numbers is the solution of the system?

$$\begin{cases} x + y = -3 \\ x - 2y = 0 \end{cases}$$

Ⓐ (-6, -3)

Ⓑ (-2, -1)

Ⓒ (6, -3)

Ⓓ (2, 1)

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.

- a. 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 .
- b. 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 ?

