

GUIDED PRACTICE

Solve each system by substitution.

SEE EXAMPLE 1
p. 390

1.
$$\begin{cases} y = 5x - 10 \\ y = 3x + 8 \end{cases}$$

2.
$$\begin{cases} 3x + y = 2 \\ 4x + y = 20 \end{cases}$$

3.
$$\begin{cases} y = x + 5 \\ 4x + y = 20 \end{cases}$$

SEE EXAMPLE 2
p. 392

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

5.
$$\begin{cases} y - 4x = 3 \\ 2x - 3y = 21 \end{cases}$$

6.
$$\begin{cases} x = y - 8 \\ -x - y = 0 \end{cases}$$

SEE EXAMPLE 3
p. 393

7. **Consumer Economics** The Strauss family is deciding between two lawn-care services. Green Lawn charges a \$49 startup fee, plus \$29 per month. Grass Team charges a \$25 startup fee, plus \$37 per month.

- In how many months will both lawn-care services cost the same? What will that cost be?
- If the family will use the service for only 6 months, which is the better option? Explain.

PRACTICE AND PROBLEM SOLVING

Solve each system by substitution.

8.
$$\begin{cases} y = x + 3 \\ y = 2x + 4 \end{cases}$$

9.
$$\begin{cases} y = 2x + 10 \\ y = -2x - 6 \end{cases}$$

10.
$$\begin{cases} x + 2y = 8 \\ x + 3y = 12 \end{cases}$$

11.
$$\begin{cases} 2x + 2y = 2 \\ -4x + 4y = 12 \end{cases}$$

12.
$$\begin{cases} y = 0.5x + 2 \\ -y = -2x + 4 \end{cases}$$

13.
$$\begin{cases} -x + y = 4 \\ 3x - 2y = -7 \end{cases}$$

14.
$$\begin{cases} 3x + y = -8 \\ -2x - y = 6 \end{cases}$$

15.
$$\begin{cases} x + 2y = -1 \\ 4x - 4y = 20 \end{cases}$$

16.
$$\begin{cases} 4x = y - 1 \\ 6x - 2y = -3 \end{cases}$$

17. **Recreation** Casey wants to buy a gym membership. One gym has a \$150 joining fee and costs \$35 per month. Another gym has no joining fee and costs \$60 per month.

- In how many months will both gym memberships cost the same? What will that cost be?
- If Casey plans to cancel in 5 months, which is the better option for him? Explain.

Solve each system by substitution. Check your answer.

18.
$$\begin{cases} x = 5 \\ x + y = 8 \end{cases}$$

19.
$$\begin{cases} y = -3x + 4 \\ x = 2y + 6 \end{cases}$$

20.
$$\begin{cases} 3x - y = 11 \\ 5y - 7x = 1 \end{cases}$$

21.
$$\begin{cases} \frac{1}{2}x + \frac{1}{3}y = 6 \\ x - y = 2 \end{cases}$$

22.
$$\begin{cases} x = 7 - 2y \\ 2x + y = 5 \end{cases}$$

23.
$$\begin{cases} y = 1.2x - 4 \\ 2.2x + 5 = y \end{cases}$$

24. The sum of two numbers is 50. The first number is 43 less than twice the second number. Write and solve a system of equations to find the two numbers.

25. **Money** A jar contains n nickels and d dimes. There are 20 coins in the jar, and the total value of the coins is \$1.40. How many nickels and how many dimes are in the jar? (*Hint:* Nickels are worth \$0.05 and dimes are worth \$0.10.)

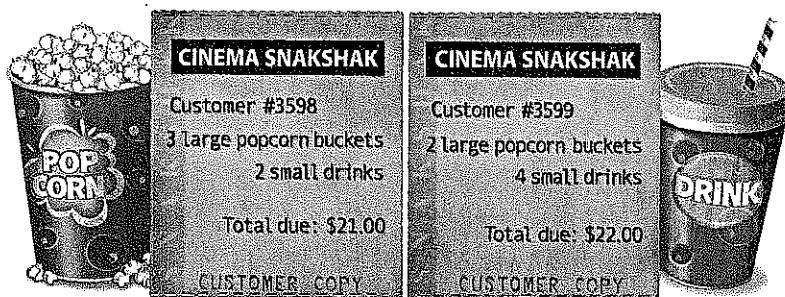
Independent Practice

For Exercises	See Example
8-10	1
11-16	2
17	3


Extra Practice

Skills Practice p. 514
 Application Practice p. 533

26. **Multi-Step** Use the receipts below to write and solve a system of equations to find the cost of a large popcorn and the cost of a small drink.



27. **Finance** Helene invested a total of \$1000 in two simple-interest bank accounts. One account paid 5% annual interest; the other paid 6% annual interest. The total amount of interest she earned after one year was \$58. Write and solve a system of equations to find the amount invested in each account. (*Hint:* Change the interest rates into decimals first.)

 **Geometry** Two angles whose measures have a sum of 90° are called **complementary angles**. For Exercises 28–30, x and y represent complementary angles. Find the measure of each angle.

28.
$$\begin{cases} x + y = 90 \\ y = 4x - 10 \end{cases}$$

29.
$$\begin{cases} x = 2y \\ x + y = 90 \end{cases}$$


30.
$$\begin{cases} y = 2(x - 15) \\ x + y = 90 \end{cases}$$

31. **Aviation** With a headwind, a small plane can fly 240 miles in 3 hours. With a tailwind, the plane can fly the same distance in 2 hours. Follow the steps below to find the rates of the plane and wind.

- a. Copy and complete the table. Let p be the rate of the plane and w be the rate of the wind.

	Rate	•	Time	=	Distance
With Headwind	$p - w$	•	<input type="text"/>	=	240
With Tailwind	<input type="text"/>	•	2	=	<input type="text"/>

- b. Use the information in each row to write a system of equations.
c. Solve the system of equations to find the rates of the plane and wind.

 32. **Write About It** Explain how to solve a system of equations by substitution.

33. **Critical Thinking** Explain the connection between the solution of a system solved by graphing and the solution to the same system solved by substitution.

34. This problem will prepare you for the Multi-Step Test Prep on page 412.

At the school store, Juanita bought 2 books and a backpack for a total of \$26 before tax. Each book cost \$8 less than the backpack.

- a. Write a system of equations that can be used to find the price of each book and the price of the backpack.
b. Solve this system by substitution.
c. Solve this system by graphing. Discuss advantages and disadvantages of solving by substitution and solving by graphing.

