

Extra Practice

Chapter 3

Lesson 3-1

Solve each system by graphing.

1.
$$\begin{cases} y = 2x + 1 \\ y = 4x - 5 \end{cases}$$

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

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

4.
$$\begin{cases} 3x - 4y = 13 \\ 2x + y = 5 \end{cases}$$

5.
$$\begin{cases} 2x = y - 7 \\ 4x - 2y = 14 \end{cases}$$

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

Without graphing, determine whether each system is *independent*, *dependent*, or *inconsistent*.

7.
$$\begin{cases} 2x + 3y = 8 \\ 6x + 9y = 24 \end{cases}$$

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

9.
$$\begin{cases} 3x - 4y = 12 \\ y = \frac{3}{4}x - 4 \end{cases}$$

10. Carla has \$2.40 in nickels and dimes. Deron has \$5.50 in dimes and quarters. Deron has as many dimes as Carla has nickels and as many quarters as Carla has dimes. How many of each kind of coin does Carla have?
11. Mr. Chandra bought 2 lbs of cheddar cheese and 3 lbs of chicken loaf. He paid \$26.35. Mrs. Hsing paid \$18.35 for 1.5 lbs of cheese and 2 lbs of chicken loaf. What was the price per pound of each item?

Extra Practice (continued)

Chapter 3

Lesson 3-2

Solve each system of equations.

12.
$$\begin{cases} x + y = 5 \\ x - y = -3 \end{cases}$$

13.
$$\begin{cases} y = 3x - 1 \\ 2x + y = 14 \end{cases}$$

14.
$$\begin{cases} 3x + 2y = 12 \\ x + y = 3 \end{cases}$$

15.
$$\begin{cases} x - 4y = 16 \\ x + 2y = 4 \end{cases}$$

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

17.
$$\begin{cases} y = 5x - 1 \\ y = 14 \end{cases}$$

18. A kayaker can paddle 12 mi in 2 h moving with the river current. Paddling at the same pace, the trip back against the current takes 4 h. Assume that the river current is constant. Find what the kayaker's speed would be in still water.

19. Mrs. Mitchell put a total of \$10,000 into two accounts. One account earns 6% simple annual interest. The other account earns 6.5% simple interest. After 1 year, the two accounts earned \$632.50 interest. Find how much money was invested in each account.

Lesson 3-3

Solve each system of inequalities by graphing.

20.
$$\begin{cases} y \geq x - 3 \\ y \leq 3x + 7 \end{cases}$$

21.
$$\begin{cases} 3x + 4y > 8 \\ y < 5x \end{cases}$$

22.
$$\begin{cases} -x - 2y \geq -5 \\ y < 3 \end{cases}$$

23.
$$\begin{cases} y \leq 2 \\ y > |x - 2| \end{cases}$$

24.
$$\begin{cases} y > -0.5x + 2 \\ y \geq |2x| \end{cases}$$

25.
$$\begin{cases} y > -x - 4 \\ y < -|x + 2| \end{cases}$$

Extra Practice (continued)**Chapter 3**

- 26.** Leyla wants to buy fish, chicken, or some of each for weekend meals. The fish costs \$4 per pound and the chicken costs \$3 per pound. She will spend at least \$11 but no more than \$15.

- Write a system of inequalities to model the situation.
- Graph the system to show the possible amounts Leyla could buy.

Lesson 3-4

Find the values of x and y that maximize or minimize the objective function.

$$27. \begin{cases} x \leq 4 \\ y \leq 3 \\ x \geq 0 \\ y \geq 0 \end{cases}$$

maximum for
 $P = 2x + y$

$$28. \begin{cases} x + y \leq 5 \\ y \geq x \\ x \geq 0 \end{cases}$$

minimum for
 $C = x + y$

$$29. \begin{cases} 1 \leq x \leq 6 \\ 2 \leq y \leq 4 \\ x + y \geq 4 \end{cases}$$

maximum for
 $P = 3x + 2y$

- 30.** A lunch stand makes \$.75 in profit on each chef's salad and \$1.20 in profit on each Caesar salad. On a typical weekday, it sells between 40 and 60 chef's salads and between 35 and 50 Caesar salads. The total number sold has never exceeded 100 salads. How many of each type of salad should be prepared to maximize profit?
- 31.** A caterer must make at least 50 gal of potato soup and at least 120 gal of tomato soup. One chef can make 5 gal of potato soup and 6 gal of tomato soup in 1 h. Another chef can make 4 gal of potato soup and 12 gal of tomato soup in 1 h. The first chef earns \$20/h. The second chef earns \$22/h. How many hours should the company ask each chef to work to minimize the cost?

Lesson 3-5

Solve each system of equations.

$$32. \begin{cases} x + y + z = 6 \\ x = 2y \\ z = x + 1 \end{cases}$$

$$33. \begin{cases} x - 2y + z = 8 \\ y - z = 4 \\ z = 3 \end{cases}$$

$$34. \begin{cases} 3x + y - z = 15 \\ x - y + 3z = -19 \\ 2x + 2y + z = 4 \end{cases}$$

$$35. \begin{cases} x + y + z = -4 \\ -x + 2y + 3z = 3 \\ x - 4y - 2z = -15 \end{cases}$$

$$36. \begin{cases} 2x - y + z = 15 \\ -6x - y - z = -11 \\ 4x - 3y - z = 0 \end{cases}$$

$$37. \begin{cases} 2x + 3y + z = -8 \\ x + 9y + 2z = -3 \\ -5x - 6y + 5z = 11 \end{cases}$$

Extra Practice (continued)**Chapter 3**

- 38.** Three pumps can transfer 4150 gal of water per day when working at the same time. Pumps A and B together can transfer 3200 gal per day. Pumps A and C together can transfer 2900 gal per day. How many gallons can each pump transfer working alone?
- 39.** For the school play, the Chavez family bought 2 student tickets, 1 adult ticket, and 2 senior tickets for \$43. The Martinez family bought 3 student tickets and 2 adult tickets for \$48. The Lynn family bought 4 student tickets, 2 adult tickets, and 1 senior ticket for \$62. What was the price of each kind of ticket?

Lesson 3-6**Identify the indicated element.**

$$A = \left[\begin{array}{cc|c} 1 & -2 & 10 \\ -3 & -5 & 22 \end{array} \right]$$

$$B = \left[\begin{array}{ccc|c} 2 & 6 & -2 & -8 \\ 4 & 0 & -4 & 5 \\ -1 & 3 & 9 & 15 \end{array} \right]$$

40. a_{12}

41. a_{23}

42. b_{32}

Solve each system of equations using a matrix.

43.
$$\begin{cases} 2x - 3y = -6 \\ x + 2y = 11 \end{cases}$$

44.
$$\begin{cases} 3x + y = 2 \\ -x + 2y = 11 \end{cases}$$

45.
$$\begin{cases} 3x - 10y = -8 \\ x + 5y = -1 \end{cases}$$

- 46.** The school cafeteria sells three different types of sandwiches: chicken, turkey, and roast beef. Chicken sandwiches sell for \$3, turkey sandwiches sell for \$3.50, and roast beef sandwiches sell for \$4. The cafeteria makes 400 sandwiches in total, and, if all sandwiches are sold, the cafeteria will take in \$1375. If the cafeteria makes the same number of chicken sandwiches as it does turkey sandwiches, how many of each type of sandwich does the school make?