

**Checkpoint Quiz 1****Lessons 3-1 through 3-3****Solve each system of equations.**

1.
$$\begin{cases} 3x + 2y = 6 \\ x - 2y = 10 \end{cases}$$

2.
$$\begin{cases} 4x + 7y = 28 \\ y = 2x - 14 \end{cases}$$

3.
$$\begin{cases} 4x + 5y = -12 \\ 3x - 4y = 22 \end{cases}$$

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

5. The Village Inn offers two special packages. For two nights and three meals the cost is \$158. For two nights and five meals the cost is \$181. Write and solve a system of linear equations to find the costs per night and per meal.

6. **Smart Shopping** An ordinary refrigerator costs \$489 and has an estimated annual operating cost of \$84. An energy-saving model costs \$599, with an estimated annual cost of \$61. After how many years will the costs to buy and to operate the two models be equal?

7. Each week you must do a minimum of 18 hours of homework. Participation in sports requires at least 12 hours per week. You have no more than 35 hours per week in total to devote to these activities.

- a. Write a system of inequalities to model the situation.
b. Graph and solve the system.

Solve each system of inequalities by graphing.

8.
$$\begin{cases} y \leq -2 \\ y > |x + 1| \end{cases}$$

9.
$$\begin{cases} 8x + 2y > 5 \\ x + 2y \leq -3 \end{cases}$$

10.
$$\begin{cases} 4y < 3x - 1 \\ y > 2|x| - 3 \end{cases}$$

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

1.
$$\begin{cases} 4x + 3y \geq 30 \\ x + 3y \geq 21 \\ x \geq 0, y \geq 0 \end{cases}$$

2.
$$\begin{cases} 3x + 5y \leq 35 \\ 2x + y \leq 14 \\ x \geq 0, y \geq 0 \end{cases}$$

3.
$$\begin{cases} x + y \geq 8 \\ x + 5y \geq 20 \\ x \geq 0, y \geq 2 \end{cases}$$

4.
$$\begin{cases} x + 2y \leq 24 \\ 3x + 2y \leq 34 \\ 3x + y \leq 29 \\ x \geq 0 \end{cases}$$

Minimum for
 $C = 5x + 8y$ Maximum for
 $P = 3x + 2y$ Minimum for
 $C = 3x + 4y$ Maximum for
 $P = 2x + 3y$

Solve each system by graphing.

$$6. \begin{cases} y = 2x + 1 \\ y = 4x + 5 \end{cases}$$

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

$$8. \begin{cases} y = 3x - 5 \\ 2y = 6x + 4 \end{cases}$$

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

$$10. \begin{cases} 4x - y = 6 \\ -2x + 3y = 12 \end{cases}$$


$$11. \begin{cases} 12x + 3y = -9 \\ 4x + y = 7 \end{cases}$$

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

$$12. \begin{cases} 6x + 3y = 12 \\ y = -2x + 4 \end{cases}$$

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

$$14. \begin{cases} x + 2y = 2 \\ y = -0.5x - 2 \end{cases}$$

-  **15. Banking** Suppose a bank charges a monthly rate of \$10 for your checking account. You can switch to a different account that charges \$6 plus \$.20 per check. For what number of checks is the cost of the two accounts the same?

Graph each system of constraints. Find all vertices. Then find the variable values that maximize or minimize the objective function.

$$27. \begin{cases} x \leq 8 \\ y \leq 5 \\ x \geq 0, y \geq 0 \end{cases}$$

Minimum for
 $C = x + 5y$

$$28. \begin{cases} x \geq 2 \\ y \geq 0 \\ 3x + 2y \geq 12 \end{cases}$$

Minimum for
 $C = 4x + y$

$$29. \begin{cases} 3x + 2y \leq 12 \\ x + y \leq 5 \\ x \geq 0, y \geq 0 \end{cases}$$

Maximum for
 $P = 3x + 5y$