6-6 **Exercises**

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GUIDED PRACTICE

1. **Vocabulary** A solution of a system of inequalities is a solution of _____?_____ of the inequalities in the system. (*at least one* or *all*)

SEE EXAMPLE 1
p. 421

Tell whether the ordered pair is a solution of the given system.

2. $(0, 0); \begin{cases} y < -x + 3 \\ y < x + 2 \end{cases}$
3. $(0, 0); \begin{cases} y < 3 \\ y > x - 2 \end{cases}$
4. $(1, 0); \begin{cases} y > 3x \\ y \le x + 1 \end{cases}$

SEE EXAMPLE 2
p. 422

Graph each system of linear inequalities. Give two ordered pairs that are solutions and two that are not solutions.

5. $\begin{cases} y < 2x - 1 \\ y > 2 \end{cases}$
6. $\begin{cases} x < 3 \\ y > x - 2 \end{cases}$
7. $\begin{cases} y \ge 3x \\ 3x + y \ge 3 \end{cases}$
8. $\begin{cases} 2x - 4y \le 8 \\ y > x - 2 \end{cases}$

SEE EXAMPLE 3
p. 422

Graph each system of linear inequalities.

9. $\begin{cases} y > 2x + 3 \\ y < 2x \end{cases}$
10. $\begin{cases} y \le -3x - 1 \\ y \ge -3x + 1 \end{cases}$
11. $\begin{cases} y > 4x - 1 \\ y \le 4x + 1 \end{cases}$

12. $\begin{cases} y < -x + 3 \\ y > -x + 2 \end{cases}$
13. $\begin{cases} y > 2x - 1 \\ y > 2x - 4 \end{cases}$
14. $\begin{cases} y \le -3x + 4 \\ y \le -3x - 3 \end{cases}$

SEE EXAMPLE 4
p. 423

15. **Business** Sandy makes $2 profit on every cup of lemonade that she sells and $1 on every cupcake that she sells. Sandy wants to sell at least 5 cups of lemonade and at least 5 cupcakes per day. She wants to earn at least $25 per day. Show and describe all the possible combinations of lemonade and cupcakes that Sandy needs to sell to meet her goals. List two possible combinations.

PRACTICE AND PROBLEM SOLVING

Independent Practice	
For Exercises	See Example
16–18	1
19–22	2
23–28	3
29	4

Extra Practice
Skills Practice p. S15
Application Practice p. S33

Tell whether the ordered pair is a solution of the given system.

16. $(0, 0); \begin{cases} y > -x - 1 \\ y < 2x + 4 \end{cases}$
17. $(0, 0); \begin{cases} x + y < 3 \\ y > 3x - 4 \end{cases}$
18. $(1, 0); \begin{cases} y > 3x \\ y > 3x + 1 \end{cases}$

Graph each system of linear inequalities. Give two ordered pairs that are solutions and two that are not solutions.

19. $\begin{cases} y < -3x - 3 \\ y \ge 0 \end{cases}$
20. $\begin{cases} y < -1 \\ y > 2x - 1 \end{cases}$
21. $\begin{cases} y > 2x + 4 \\ 6x + 2y \ge -2 \end{cases}$
22. $\begin{cases} 9x + 3y \le 6 \\ y > x \end{cases}$

Graph each system of linear inequalities.

23. $\begin{cases} y < 3 \\ y > 5 \end{cases}$
24. $\begin{cases} y < x - 1 \\ y > x - 2 \end{cases}$
25. $\begin{cases} x \ge 2 \\ x \le 2 \end{cases}$

26. $\begin{cases} y > -4x - 3 \\ y < -4x + 2 \end{cases}$
27. $\begin{cases} y > -1 \\ y > 2 \end{cases}$
28. $\begin{cases} y \le 2x + 1 \\ y \le 2x - 4 \end{cases}$

29. Multi-Step Linda works at a pharmacy for $15 an hour. She also baby-sits for $10 an hour. Linda needs to earn at least $90 per week, but she does not want to work more than 20 hours per week. Show and describe the number of hours Linda could work at each job to meet her goals. List two possible solutions.

30. Farming Tony wants to plant at least 40 acres of corn and at least 50 acres of soybeans. He wants no more than 200 acres of corn and soybeans. Show and describe all the possible combinations of the number of acres of corn and of soybeans Tony could plant. List two possible combinations.

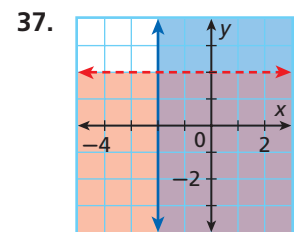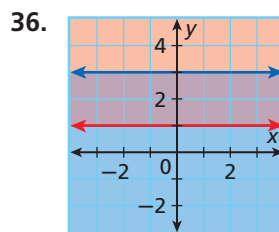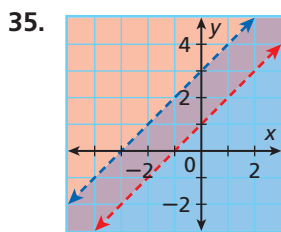**Graph each system of linear inequalities.**

31. $\begin{cases} y \geq -3 \\ y \geq 2 \end{cases}$
   32. $\begin{cases} y > -2x - 1 \\ y > -2x - 3 \end{cases}$
   **33.** $\begin{cases} x \leq -3 \\ x \geq 1 \end{cases}$
   34. $\begin{cases} y < 4 \\ y > 0 \end{cases}$

Write a system of linear inequalities to represent each graph.

35.

36.

37.

38. Military For males to enter the United States Air Force Academy, located in Colorado Springs, CO, they must be at least 17 but less than 23 years of age. Their standing height must be not less than 60 inches and not greater than 80 inches. Graph all possible heights and ages for eligible male candidates. Give three possible combinations.

39. **/// ERROR ANALYSIS ///** Two students wrote a system of linear inequalities to describe the graph. Which student is incorrect? Explain the error.
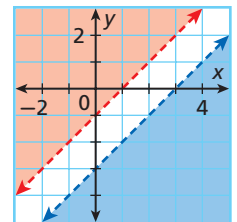
A
$\begin{cases} y < x - 3 \\ y > x - 1 \end{cases}$

B
$\begin{cases} y > x - 3 \\ y < x - 1 \end{cases}$

40. Recreation Vance wants to fence in a rectangular area for his dog. He wants the length of the rectangle to be at least 30 feet and the perimeter to be no more than 150 feet. Graph all possible dimensions of the rectangle.

41. Critical Thinking Can the solutions of a system of linear inequalities be the points on a line? Explain.

MULTI-STEP TEST PREP

42. This problem will prepare you for the Multi-Step Test Prep on page 428.

Gloria is starting her own company making teddy bears. She has enough bear bodies to create 40 bears. She will make girl bears and boy bears.

   a. Write an inequality to show this situation.
   b. Gloria will charge $15 for girl bears and $12 for boy bears. She wants to earn at least $540 a week. Write an inequality to describe this situation.
   c. Graph this situation and locate the solution region.