

LESSON 6-6 Systems of Inequalities

EXAMPLE 1

Solve by Graphing

Solve the system of inequalities by graphing.

$$y < 2x + 2$$

$$y \geq -x - 3$$

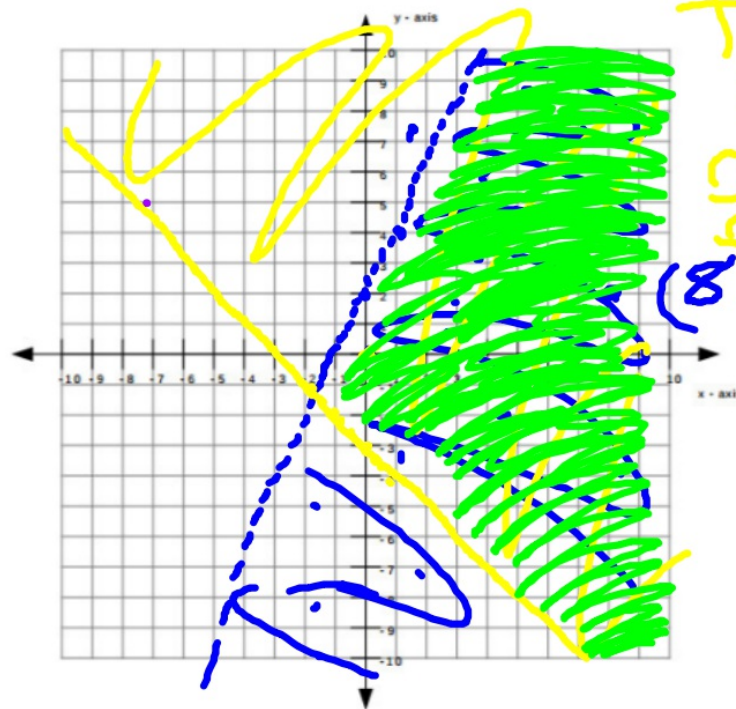
Test (0,0)

$$0 < 2(0) + 2$$

$$0 < 2 \text{ true}$$

$$2 < 2(8) + 2$$

$$2 < 18 \checkmark$$



$$y = mx + b$$

Test (0,0)

$$0 < 2(0) + 2$$

$$0 < 2 \text{ true}$$

Test (8,2)

$$2 < 2(8) + 2$$

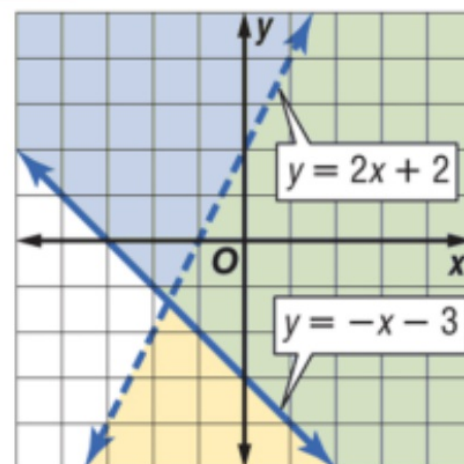
$$2 < 18 \checkmark$$

EXAMPLE 1 Solve by Graphing

Solve the system of inequalities by graphing.

$$y < 2x + 2$$

$$y \geq -x - 3$$



Answer: The solution includes the ordered pairs in the intersection of the graphs of $y < 2x + 2$ and $y \geq -x - 3$. The region is shaded in green. The graphs $y = 2x + 2$ and $y = -x - 3$ are boundaries of this region. The graph $y = 2x + 2$ is dashed and is not included in the solution. The graph of $y = -x - 3$ is solid and is included in the graph of the solution.

Check Your Understanding

 = Step-by-Step Solutions begin on page R13

Examples 1–2 Solve each system of inequalities by graphing. **1–8. See Ch. 6 Answer Appendix.**

1. $x \geq 4$
 $y \leq x - 3$

3. $y < 3x + 8$
 $y \geq 4x$

5. $y \leq 2x - 7$
 $y \geq 2x + 7$

7. $2x + y \leq 5$
 $2x + y \leq 7$

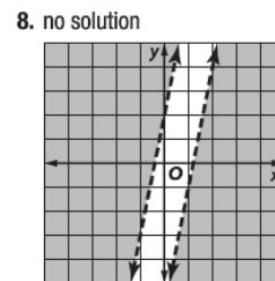
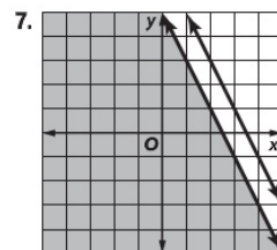
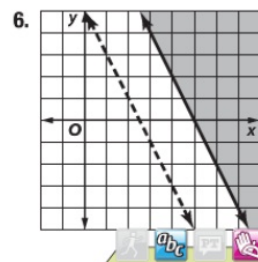
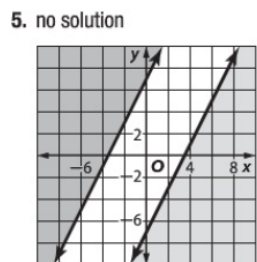
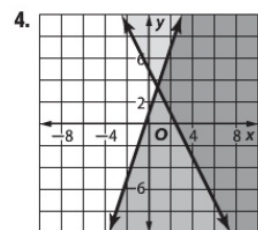
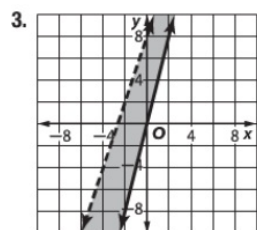
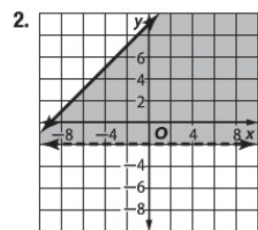
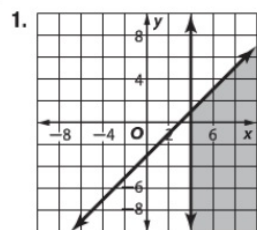
2. $y > -2$
 $y \leq x + 9$

4. $3x - y \geq -1$
 $2x + y \geq 5$

6. $y > -2x + 5$
 $y \geq -2x + 10$

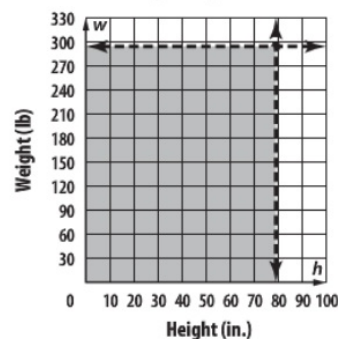
8. $5x - y < -2$
 $5x - y > 6$

Lesson 6-6



9a. Let h = the height of the driver in inches and w = the weight of the driver in pounds; $h < 79$ and $w < 295$.

Driving Requirements



Examples 1–2 Solve each system of inequalities by graphing. **10–24. See Ch. 6 Answer Appendix.**

10. $y < 6$
 $y > x + 3$

13. $y < 5x - 2$
 $y > -6x + 2$

16. $y \geq x + 10$
 $y \leq x - 3$

19. $4x + y > -1$
 $y < -4x + 1$

22. $5x - y < -6$
 $3x - y \geq 4$

11. $y \geq 0$
 $y \leq x - 5$

14. $2x - y \leq 6$
 $x - y \geq -1$

17. $y < 5x - 5$
 $y > 5x + 9$

20. $3x - y \geq -2$
 $y < 3x + 4$

23. $x - y \leq 8$
 $y < 3x$

12. $y \leq x + 10$
 $y > 6x + 2$

15. $3x - y > -5$
 $5x - y < 9$

18. $y \geq 3x - 5$
 $3x - y > -4$

21. $y > 2x - 3$
 $2x - y \geq 1$

24. $4x + y < -2$
 $y > -4x$

