Lesson Practice

Choose the correct answer.

1. Solve by substitution

$$3x - 2y = 14$$
$$y = 5x$$

A. $(-2, -10)$

B. $(-2, 10)$

C. $(2, -10)$

D. infinitely many solutions

2. Solve by substitution.

$$x - 2y = -2$$
$$y = 2x + 4$$

A. $(-\frac{10}{3}, -\frac{8}{3})$

B. $(-2, 0)$

C. $(-\frac{2}{3}, -\frac{4}{3})$

D. $(0, 0)$

3. Solve by elimination.

$$x + 2y = -7$$
$$x - 5y = 7$$

A. $(-7, 0)$

B. $(-3, -2)$

C. $(-2, -3)$

D. $(0, -7)$

4. Solve by elimination.

$$4x - y = 1$$
$$x + 2y = 16$$

A. $(-2, -9)$

B. $(2, 7)$

C. $(3, 11)$

D. no solution

5. Solve the system of linear equations.

$$2x + 6y = -3$$
$$2x + 6y = 0$$

A. $(0, 2)$

B. $(9, 7)$

C. no solution

D. infinitely many solutions

6. Solve the system of linear equations.

$$y = -\frac{1}{3}x + 6$$
$$x + 3y = 18$$

A. $(2, 1)$ only

B. $(3, 6)$ only

C. no solution

D. infinitely many solutions

7. Solve the system of linear equations.

$$-3x + 5y = 4$$
$$x + y = -4$$

A. $(1, -5)$

B. $(0, -4)$

C. $(-3, -1)$

D. $(-5, 1)$

8. Solve the system of linear equations.

$$y = 6x + 7$$
$$3x - y = 2$$

A. $(-3, -11)$

B. $(-2, -8)$

C. $(-1, 1)$

D. no solution

9. Consider the system of linear equations shown below.

$$8x - 6y = -96$$
$$2x + 3y = 12$$

A. Solve this system using either the substitution or elimination method. Show your work or explain your answer.

B. Briefly describe how you can prove that the solution you found in Part A is correct. Show your work.

NAME _____ DATE _____

8-9 Practice
Graphing Inequalities

Student Edition
Pages 418–422

Determine which ordered pair(s) is a solution to the inequality.

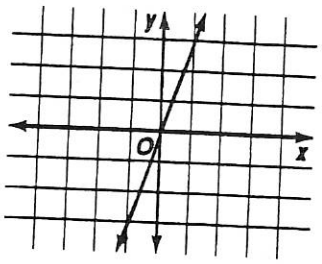
1. $y < x - 1$ A. (2, -3) B. (-1, -2) C. (4, -1) D. (0, -2)

2. $2y \geq -2 - x$ A. (0, -3) B. (2, -2) C. (3, -1) D. (-2, -1)

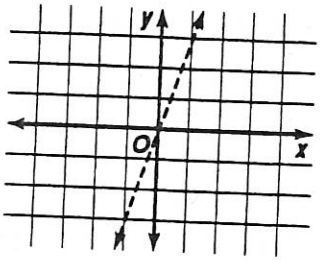
3. $3x + 5 \geq 1y$ A. (0, 0) B. (-3, 1) C. (-1, -1) D. (0, 1)

Determine which region is the graph of each inequality.

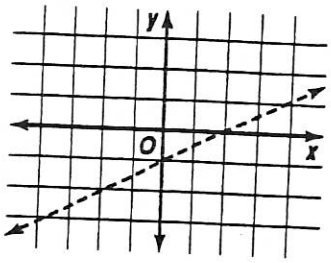
4. $y \leq 3x$



5. $y > 2x + 1$

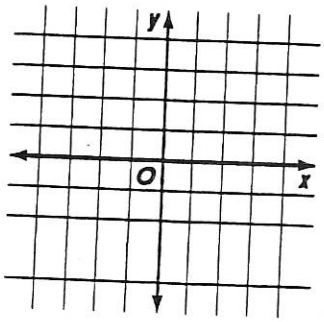


6. $y < \frac{1}{2}x - 1$

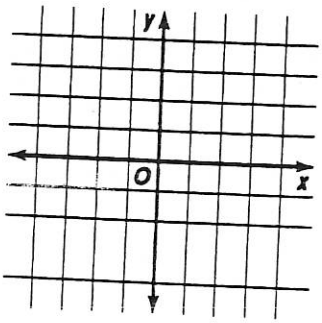


Graph each inequality.

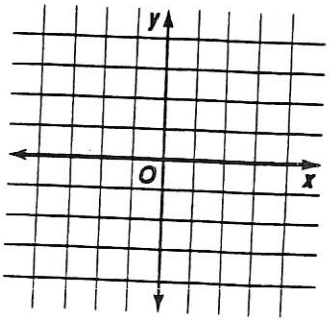
7. $y \geq -3$



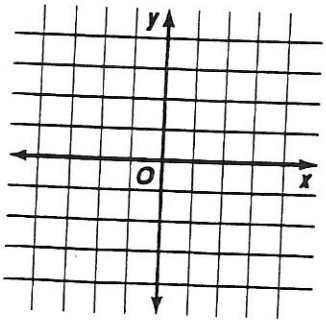
8. $2x + y > -3$



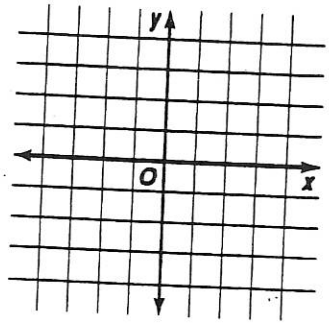
9. $x + y < -2$



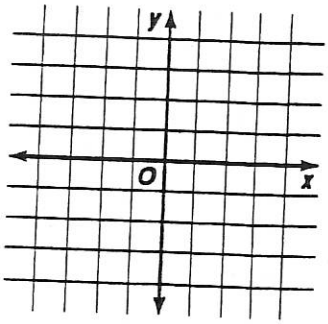
10. $y \leq 1 + 3.5x$



11. $-y < -x - 2$



12. $3x + 3 \geq y$



Name _____ Class _____ Date _____

Practice 7-5

Linear Inequalities

Graph each linear inequality.

1. $y \geq -4$
2. $x + y < -2$
3. $y < x$
4. $x > 2$
5. $4x + y > -6$
6. $-3x + y \leq -3$
7. $x + 4y \leq 8$
8. $y > 2x + 6$
9. $y > -x + 2$
10. $2x + 3y < -9$
11. $y \leq \frac{3}{7}x + 2$
12. $4x + 2y < -8$
13. $y \leq \frac{3}{4}x + 1$
14. $x - y > 4$
15. $y \geq -\frac{2}{5}x - 2$

16. Suppose your class is raising money for the Red Cross. You make \$5 on each basket of fruit and \$3 on each box of cheese that you sell. How many items of each type must you sell to raise more than \$150?

    a. Write a linear inequality that describes the situation.

    b. Graph the inequality.

    c. Write two possible solutions to the problem.

17. Suppose you intend to spend no more than \$60 buying books. Hardback books cost \$12 and paperbacks cost \$5. How many books of each type can you buy?

    a. Write a linear inequality that describes the situation.

    b. Graph the inequality.

    c. Write two possible solutions to the problem.

18. Suppose that for your exercise program, you either walk 5 mi/d or ride your bicycle 10 mi/d. How many days will it take you to cover a distance of at least 150 mi?

    a. Write a linear inequality that describes the situation.

    b. Graph the inequality.

    c. Write two possible solutions to the problem.

Graph each linear inequality.

19. $6x - 4y > -16$
20. $y \geq -\frac{1}{4}x - 3$
21. $-5x + 4y < -24$
22. $y < -5x + 6$
23. $6x - 4y < -12$
24. $y \geq -\frac{9}{5}x + 7$
25. $y > \frac{5}{7}x - 3$
26. $y < -5x + 9$
27. $-7x + 3y < -18$
28. $y \geq \frac{6}{5}x - 8$
29. $-12x + 8y < 56$
30. $16x + 6y > 36$

6-6 Reteaching (continued)

Systems of Linear Inequalities

Using elimination, solve for q by multiplying all terms in the first equation by –10 and eliminating d: $(q + d < 200)(-10)$.

$-10q - 10d > -2000$
$25q + 10d > 3995$
$15q > 1995$
$q > 133$

Now add the 2 systems together to solve for q.

$q + d < 200$

Write first inequality.

$133 + d < 200, d < 67$

Substitute in 133 for q, subtract 133 from both sides and solve for d.

The register contains at least 133 quarters and no more than 67 dimes.

Exercises

Graph the following systems of inequalities.

1. $x - 2y < 3$
$\frac{y}{2} > 3x + 6$

2. $y \geq -x + 5$
$-x \leq -2y - 3$

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

4. $3y \geq \frac{x}{4}$
$-y \leq x + 2$

5. $2x - y < 1$
$x + 2y < -4$

6. $5x - 4y \geq 3$
$2x + 3y \leq -2$

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6-6 Practice

Form G

Systems of Linear Inequalities

Solve each system of inequalities by graphing.

1. $3x + y \leq 1$
$x - y \leq 3$

2. $5x - y \leq 1$
$x + 3y \leq -2$

3. $4x + 3y \leq 1$
$2x - y \leq 2$

4. Writing What is the difference between the solution of a system of linear inequalities and the solution of a system of linear equations? Explain.

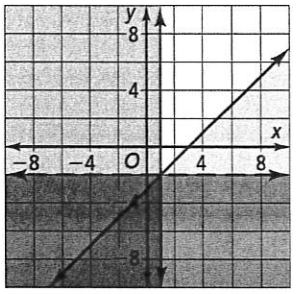
5. Open-Ended When can you say that there is no solution for a system of linear inequalities? Explain your answer and show with a system and graph.

6. Error Analysis A student graphs the system below. Describe and correct the student's error.

$x - y \geq 3$

$y < -2$

$x \geq 1$



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

7. (0, 1);
$1 - x \geq 3y$
$3y - 1 > 2x$

8. (–2, 3);
$2x + 3y > 2$
$3x + 5y > 1$

9. (1, 4);
$2x + y > 3$
$-3x - y \leq 5$

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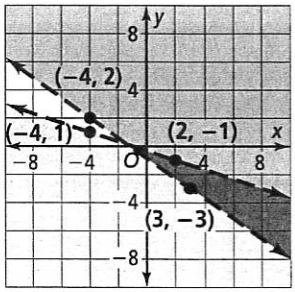
6-6 Practice (continued) *Form G*

Systems of Linear Inequalities

10. Mark is a student, and he can work for at most 20 hours a week. He needs to earn at least \$75 to cover his weekly expenses. His dog-walking job pays \$5 per hour and his job as a car wash attendant pays \$4 per hour. Write a system of inequalities to model the situation, and graph the inequalities.

11. Britney wants to bake at most 10 loaves of bread for a bake sale. She wants to make banana bread that sells for \$1.25 each and nut bread that sells for \$1.50 each and make at least \$24 in sales. Write a system of inequalities for the given situation and graph the inequalities.

12. Write a system of inequalities for the following graph.



Solve each system of inequalities by graphing.

13. $5x + 7y > -6$
$x + 3y < -1$

14. $x + 4y - 2 \geq 0$
$2x - y + 1 > 2$

15. $\frac{x}{2} - 5 > -6y$
$3x + y > 2$

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6-6 Standardized Test Prep

Systems of Linear Inequalities

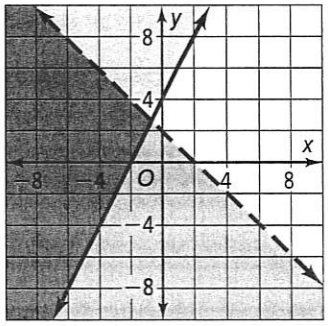
Multiple Choice

For Exercises 1–4, choose the correct letter.

1. You and a friend both would like a salad and a small drink. Between the two of you, you have \$8.00. A salad costs \$2.49 and a small drink is \$.99. Can either of you have a second salad or drink?

   A. yes, 1 salad **B.** yes, 1 of each **C.** yes, 1 drink **D.** no, you cannot

2. Which of the following systems of inequalities represents the graph?



   F. $y > 2x + 4$, $y \leq -x + 2$ **G.** $2x - y \geq 4$, $y < -x + 2$

   H. $y \geq 2x + 4$, $-x + y < 2$ **I.** $-2x + y \geq 4$, $x + y < 2$

3. For the graph above, what is the approximate y-value of the point of intersection?

   A. -1 **B.** 4 **C.** 3 **D.** 2

4. A student spends no more than 2 hours on his math and English homework. If math takes about twice as long as English, what is the maximum time that the student can spend on English?

   F. $\frac{1}{3}$ hour **G.** $\frac{1}{2}$ hour **H.** 1 hour **I.** $\frac{2}{3}$ hour

Short Response

5. A young woman wants to make at least \$200 a week and can work no more than 30 hours a week. She works at the library for \$8 an hour and babysits for \$6 an hour.

   a. What system of inequalities shows the possible combination of hours and jobs she can work?

   b. Why did you exclude points to the left of the y-axis and below the x-axis?