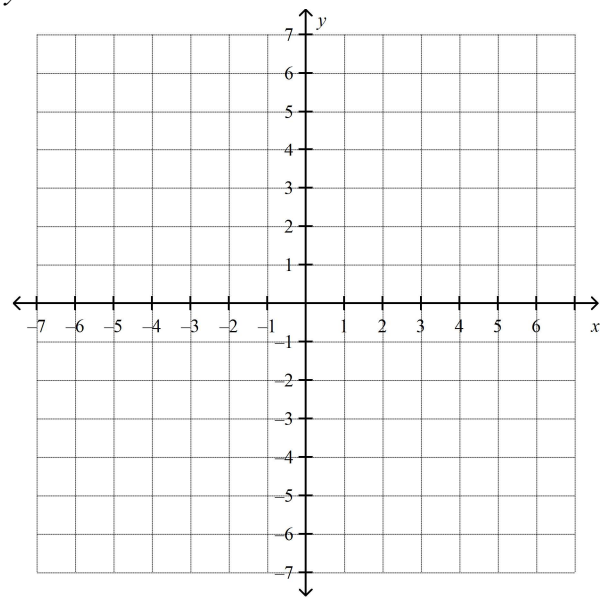
Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Algebra Unit 6 Study Guide--Systems of Equations

Graph the system of equations. Then determine whether the system has no *solution,* one *solution, or* infinitely many *solutions. If the system has one solution, name it.*

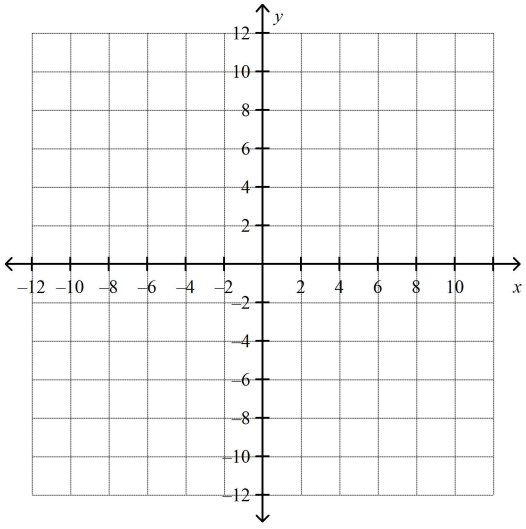
1. $y = -2x + 1$

   $y = -5x - 5$



2. $-5x + y = 4$

   $-2x - 6 = \frac{y}{3}$



Use substitution to solve the system of equations.

3. $y = x + 3$

   $3x - 4y = 14$

4. $8 = x - 2y$

   $-4x + 8 = -4y$

5. $6 = x - 3y$

   $x + 6 = y$

Use elimination to solve the system of equations.

6. $3x - 4y = 5$

   $2x + 4y = -10$

7. $2x - 2y = 2$

   $-7x + 6y = 6$

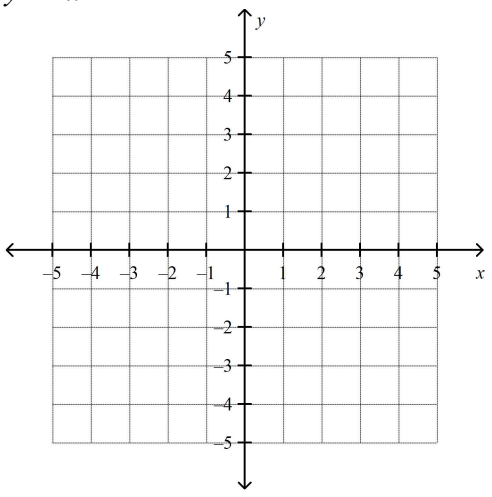
8. $4x - 2y = -10$

   $3x + 3y = -3$

Solve the system of inequalities by graphing.

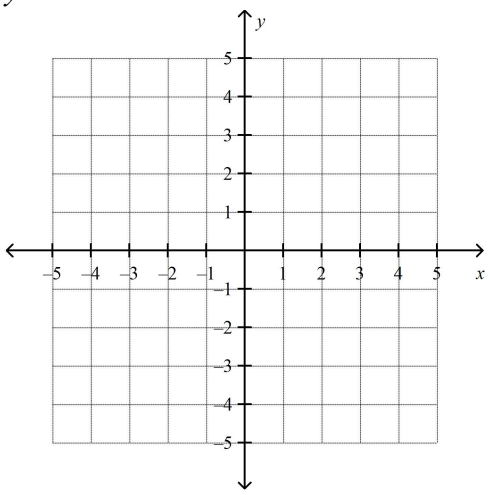
9. $y \leq -2x + 1$

   $y > -x - 4$

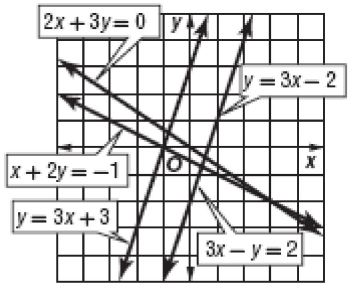


10. $y \geq x - 4$

    $y < 2$



Use the graph to answer the following questions.



11. Determine how many solutions exist for each system of equations.

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

    a. no solution

    b. one solution

    c. infinitely many solutions

    d. cannot be determined

12. Determine how many solutions exist for each system of equations.

    $x + 2y = -1$
    $2x + 3y = 0$

    a. no solution

    b. one solution

    c. infinitely many solutions

    d. cannot be determined

13. The solution to which system of equations has an x value of 3?

    a. $x + 2y = -1$
       $y = 3x + 3$

    b. $3x - y = 2$
       $x + 2y = -1$

    c. $y = 3x + 3$
       $2x + 3y = 0$

    d. $2x + 3y = 0$
       $x + 2y = -1$

14. The solution to which system of equations has a y value of 0?

    a. $x + 2y = -1$
       $y = 3x + 3$

    b. $3x - y = 2$
       $x + 2y = -1$

    c. $y = 3x + 3$
       $2x + 3y = 0$

    d. $2x + 3y = 0$
       $x + 2y = -1$

15. Your teacher is giving a test that has 5 more four-point questions than six-point questions. The test is worth 120 points. Which system represents this information?

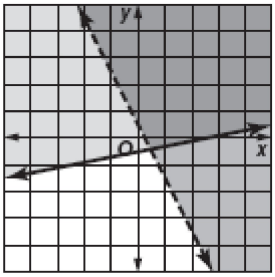
    a. $x + 5 = y$
    $4x + 6y = 120$

    b. $x + y = 5$
    $6x + 4y = 120$

    c. $x - y = 5$
    $6x + 4y = 120$

    d. $x - y = 5$
    $4x + 6y = 120$

16. What system of inequalities is represented in the graph?



    a. $y < -2x + 1$
    $y \leq \frac{1}{5}x - 1$

    b. $y > -2x + 1$
    $y \leq \frac{1}{5}x - 1$

    c. $y < -2x + 1$
    $y \geq \frac{1}{5}x - 1$

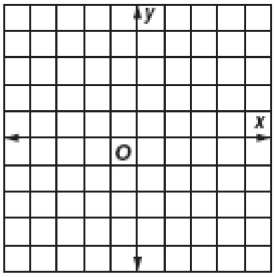
    d. $y > -2x + 1$
    $y \geq \frac{1}{5}x - 1$

17. Adult tickets for the school musical sold for $3.50 and student tickets sold for $2.50. Three hundred twenty-one tickets were sold altogether for $937.50. How many of each kind of ticket were sold?

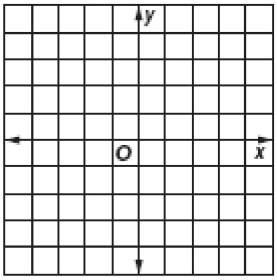
18. Ayana has $2.35 in nickels and dimes. If she has 33 coins in all, find the number of nickels and dimes.

Graph each system of equations. Then determine whether the system has *no* solution, *one* solution, or *infinitely many* solutions. If the system has one solution, name it.

19. $y = -x + 3$
    $y = x - 3$



20. $2x - y = 5$
    $4x - 2y = 10$



Determine the best method to solve each system of equations. Then solve the system.

21. $y = 3x + 1$
    $x - 2y = 8$

22. $5x - 15y = -20$
$5x - 4y = -9$

23. The sum of two numbers is 16 and their difference is 20. What are the two numbers?

24. Brent has $3.35 in quarters and dimes. If he has 23 coins in all, find the number of quarters and dimes.

Solve the system of inequalities by graphing.

25. $y < \frac{1}{3}x + 1$
$y \leq 2x - 3$

26. A trail mix that costs $2.45 per pound is mixed with a trail mix that costs $2.30 per pound. How much of each type of trail mix must be used to have 30 pounds of a trail mix that costs $2.35 per pound?

27. When Katie was visiting her Grandpa's farm, she saw the farm only raised hens and pigs. Katie counted 32 heads and 100 feet in the barnyard. How many hens and pigs were there in the barnyard?

28. The sum of two numbers is 54, and their difference is 26. What are the numbers?

29. Five times one number added to another number is 32. Three times the first number minus the other number is 8. Find the numbers.

30. Jack has 20 more stamps than Dylan has. Together they have 46 stamps. Find the number of stamps each has.