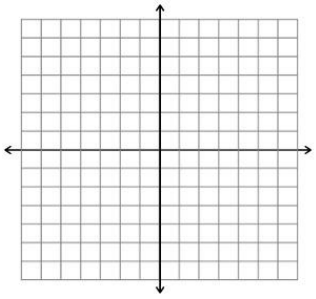
4.1 Worksheet

Name: _____ Per:___

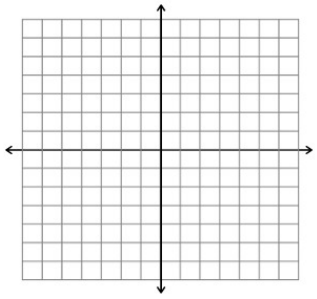
Learning Objectives:
1) Solve a system of equations by graphing and check the solutions by substitution.
2) Identify a system with infinite or no solutions by their graphs

For #1-6: Solve each system of equations using the graphing method.

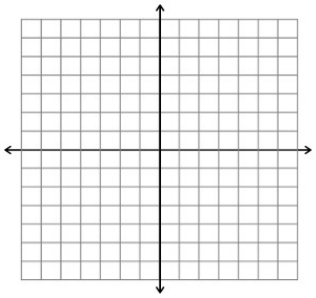
1) $\begin{cases} y = -x - 5 \\ y = x + 1 \end{cases}$



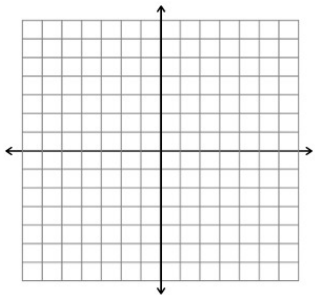
2) $\begin{cases} -2x + y = 6 \\ y = -x \end{cases}$



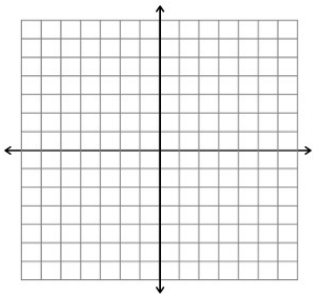
3) $\begin{cases} 4x - 2y = 8 \\ y = 2x + 3 \end{cases}$



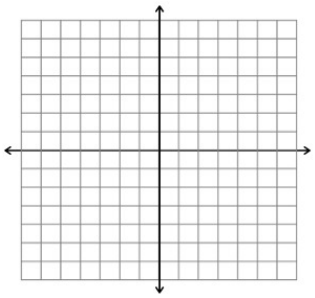
4) $\begin{cases} 2x + y = 6 \\ y = -2x + 6 \end{cases}$



5) $\begin{cases} x = -3 \\ y = 2 \end{cases}$



6) $\begin{cases} y = 3x - 4 \\ y = -5x + 1 \end{cases}$



7) Why is #6 difficult to solve by graphing?

8) Given the equation $2x = 2y - 6$ which of the following equations would give you a system of equations with the same line and infinitely many solutions?

A. $y = x - 3$
B. $y = -0.5x + 3$
C. $y = 2x - 4$
D $y = x + 3$

9) Given the equation $y = 3x - 5$, which of the following equations would give you a system of equations with parallel lines and no solution?

A. $y = -3x + 2$
B. $y = 3x + 4$
C. $y = 5x - 3$
D. $y = -5x + 2$

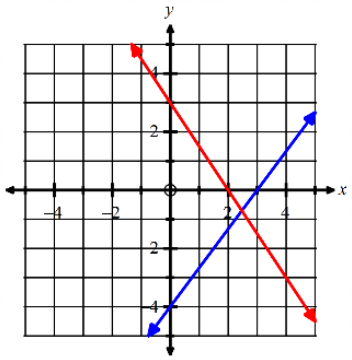
10) A system of two linear equations has one solution. What must be true about the lines?

A) They are parallel.
B) They are perpendicular.
C) They are the same line.
D) They intersect.

11) The functions $f(x)$ and $g(x)$ are graphed to the side. Approximate the value x when $f(x) = g(x)$.

$a)\ x = 2.5$ $b)\ x = -0.9$

$c)\ x = 3.5$ $d)\ x = -1$

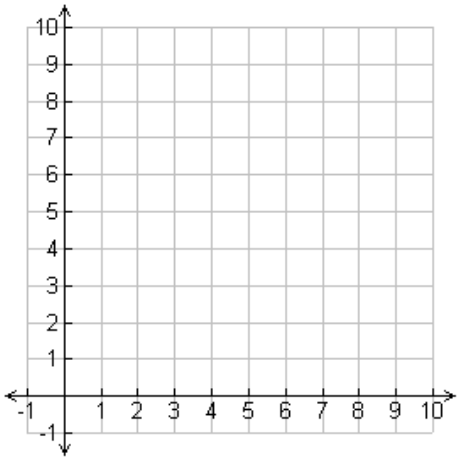


12) How many solutions will the following system of equations have? Support your conclusion with a written explanation of your thoughts.

$$\begin{cases} y = \frac{1}{2}x - 3 \\ y = -2x + 1 \end{cases}$$

For #13 – 14: A pet store sells angel fish for \$6 each and clown fish for \$4 each. If the pet store sold five fish for a total of \$24, how many of each type of fish were sold? Let *x* = # angel fish and *y*= # clown fish.

13) Write two equations to model this situation.



14) Solve the system by graphing.

Angel fish =

Clown fish =

Review:

15) Multiple Choice: In the equation, $m = \frac{y_2 - y_1}{x_2 - x_1}$ solve for y_2.

A) $\frac{m(x_1 - x_2)}{y_1} = y_2$ B) $m(x_2 - x_1) + y_1 = y_2$ C) $my_1(x_1 - x_2) = y_2$

16) Solve for the value of a: $3a + 3 - 6a > 15$

4.2 Worksheet

Name: _____ Per:___

Learning Objectives:

1) Solve a system of equations by substitution.

2) Identify what a system with infinite or no solutions looks like when using substitution.

#1 – 10: Use substitution to solve each system of equations.

1) $\begin{cases} y = 2x - 4 \\ 3x - 2y = 1 \end{cases}$

2) $\begin{cases} y = 3x - 8 \\ y = 13 - 4x \end{cases}$

3) $\begin{cases} y = 2x - 7 \\ 9x + y = 15 \end{cases}$

4) $\begin{cases} y = -\frac{1}{2}x \\ 2x + 2y = 5 \end{cases}$

5) $\begin{cases} x = 3y - 4 \\ 2x - 3y = -2 \end{cases}$

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

7) $\begin{cases} 4x + 8y = -8 \\ x = -2y + 1 \end{cases}$

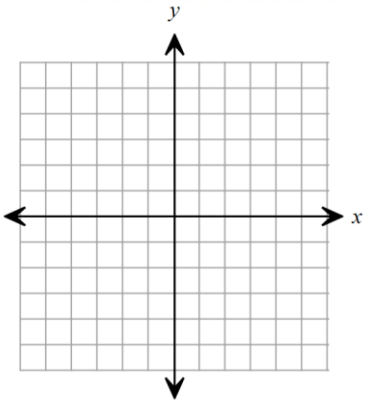
8) $\begin{cases} 2x - 3y = 6 \\ y = \frac{2}{3}x - 2 \end{cases}$

9) $\begin{cases} 2x + 2y = 6 \\ 4x + 4y = 4 \end{cases}$

10) $\begin{cases} 2x + 5y = -5 \\ y = -\frac{2}{5}x - 1 \end{cases}$

11) Consider the system of equations: $\begin{cases} \boldsymbol{x + y = 5} \\ \boldsymbol{y = 2x + 2} \end{cases}$

a) Solve the system by graphing.



b) Solve the system using substitution.

12) At a hot air balloon festival, Mohamed's is at an altitude of 40m and rises at 10m/min. Dana's balloon is at an altitude of 165 m and descends at 15m/min.

a) Write a system of equations to represent the situation.

b) In how many minutes will both balloons be at the same altitude?

c) What will be the altitude?

4.3 Day 1 Worksheet

Name: _____ Per:___

Learning Objectives:

1) Solve a system of equations by elimination by adding two equations

2) Identify what a system with infinite or no solutions looks like when using elimination.

For #1-6: Use the elimination method to solve each system of equations. Show all work!

1) $x + 2y = 13$
$-x + y = 5$

2) $-3x - 5y = -7$
$-4x + 5y = 14$

3) $x + y = 1$
$x + y = 1$

4) $0.25x - 0.10y = 3$
$0.25x - 0.20y = 1$

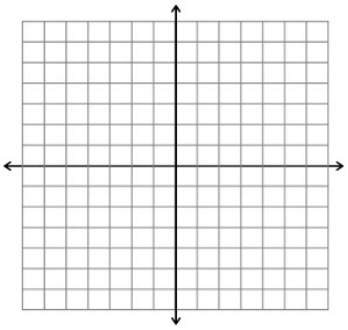
5) $\frac{1}{4}x - \frac{2}{3}y = 7$
$-\frac{1}{4}x + \frac{2}{3}y = -4$

6) $-11y = -3x - 18$
$16y - 3x = 33$

7) Two brothers Jason and Michael couldn't decide if they wanted to take their kids to McDonalds or Burger King for their soccer team's win. Jason took his children to McDonald's, where it was $3 per hamburger and $3 per French fries. He spent $24. Michael took his children to Burger King, where it was $3 per hamburger, but $2 for the fries. He spent $20. If they both purchased the same amount of burgers and fries, how many did they buy of each? Show all of your work.

8) Jenny and Bob are competing with one another to see who can sell the most cookies and wrapping paper for their school's fundraiser. Jenny's grade is selling wrapping paper for \$10 per roll and cookies for \$3 per bucket. She ended up making \$165 total. Bob's grade is selling the wrapping paper for \$10 and a bucket of gourmet cookies for \$7 per bucket. He ended up making \$185 total. If they tied and sold the same amount of wrapping paper and cookies, how many of each did they sell?

9) Graph $y = -2x + 4$



10) An apple orchard allows people to come and pick their own apples. Customers pay \$5 for a basket and \$0.10 for each apple. The function $f(x) = 0.10x + 5$ gives the cost for x apples picked. What is the range of the function?

A. $\{all\ real\ numbers\}$

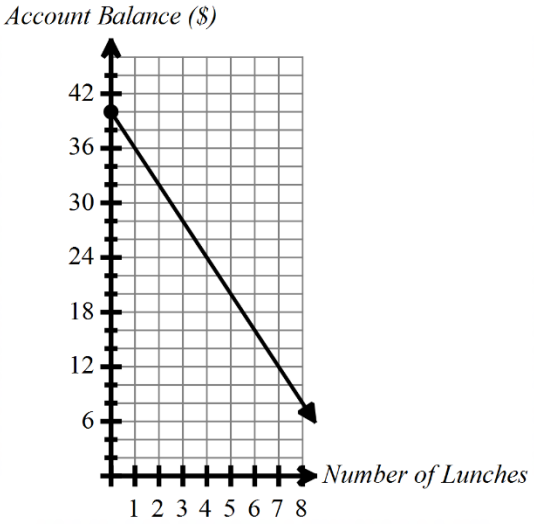
B. $\{0, 1, 2, 3, 4, 5 \ldots\}$

C. $\{0, 0.10, 0.20, 0.30, 0.40, 0.50 \ldots\}$

D. $\{5, 5.10, 5.20, 5.30, 5.40, 5.50 \ldots\}$

11) The graph shows the account balance of a student's lunch money account.

Which of the following statements are true? Select all that apply.



F. Each lunch costs \$4.

G. Each lunch costs \$5.

H. The account started with a balance of \$40.

I. The student won't have any money left in the account after eating 8 lunches.

J. The student has enough money in the account to pay for 40 lunches.

Bonus:

A line graphed on the coordinate plane has a slope of 2 and contains the point $(3, 1)$.

Which of the following points is on the same line?

A. $(-3, -5)$

B. $(-3, -2)$

C. $(0, -5)$

D. $(-5, 0)$

4.3 Day 2 Worksheet

Name: _____ Per:___

Learning Objectives:

1) **Solve a system of equations by elimination by adding two equations <u>after multiplying one or both equations by a constant</u>**
2) **Model situations using a system**

For #1 – 5: Solve the linear system.

1) $x + y = 2$
$2x + 7y = 9$

2) $4x + 12y = 8$
$x + 3y = 2$

3) $11x - 20y = 28$
$3x + 4y = 36$

4) $12x - 7y = -2$
$-8x + 11y = 14$

5) $x + y = 9$
$0.05x + 0.25y = 1.65$

6) Tickets for admission to a high school football game cost $3 for students and $5 for adults. During one game, $2995 was collected from the sale of 729 tickets. How many adult tickets and student tickets were sold?

7) Given the system $\begin{cases} 3x - 2y = 5 \\ 2x + 3y = 38 \end{cases}$ which of the following ordered pairs is a solution?

A) (4, 9) B) (7, 8) C) (11, -3) D) (-5, 10)

8) Write the equation of a line in ***slope-intercept form*** ($y = mx + b$) that passes through (2, 5) and (-1, 8).

9) If $h(x) = -\frac{1}{2}x + 3$, find $h(-27)$.

A. $\frac{33}{2}$

B. $\frac{30}{3}$

C. 60

D. $\frac{27}{2}x - 81$

10) The equations of four lines are given below. Which two equations form a system with no solutions?

Line 1	$x - 3y = 9$
Line 2	$y = -2(x + 1) - 7$
Line 3	$y = \frac{1}{3}x + 2$
Line 4	$y = -\frac{1}{2}(x - 4) - 1$

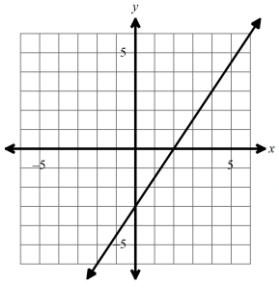
A. *Line* 1 *and Line* 2

B. *Line* 2 *and Line* 3

C. *Line* 2 *and Line* 4

D. *Line* 1 *and Line* 3

11) The graph and a table of values are given to represent two linear equations in a system of equations. Which of the following is the solution to the system? (***hint:*** which point is on both lines?)

Line A	**Line B**
	x | y -1 | 6 0 | 4 1 | 2

A. $(2, 0)$ **B.** $(0, -3)$ **C.** $(-1, -5)$ **D.** $(-2, -6)$

Bonus: A group of 30 students from the senior class charters a bus to an amusement park. The total amount they spend on the bus and admission to the park for each student is $1,770. A group of 50 students from the junior class also go the amusement park, but they require two buses. If the group from the junior class spent $3,190 in total, how much does it cost to charter one bus? Assume the costs of admission and busses are the same for both groups.

4.4 Worksheet

Name: _____ **Per:**___

Learning Objectives:

1) Graph a linear inequality and identify multiple solutions and non-solutions.

For #1 – 3: Determine whether the ordered pair is a solution of the inequality. (Yes or no: show work for credit)

1) $x + y > -9$; (0,0)

2) $x - y \geq 8$; (14,9)

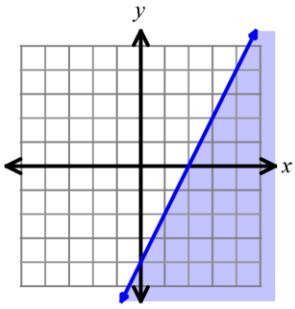
3) $2x - y > 4$; $(-6, -15)$

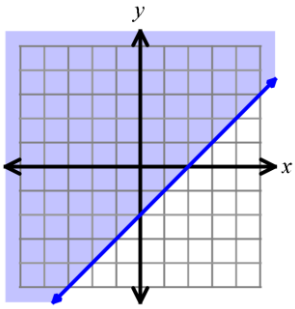
For #4 – 6: Match each linear inequality to its graph.

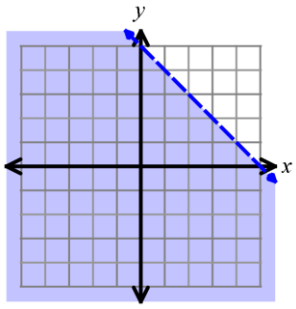
4) $y < -x + 5$

5) $2x - 2y \leq 4$

6) $3y \leq 6x - 12$

A) 

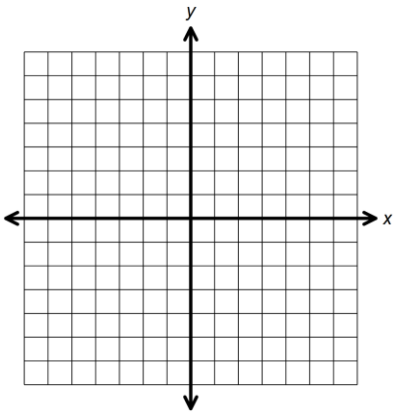
B) 

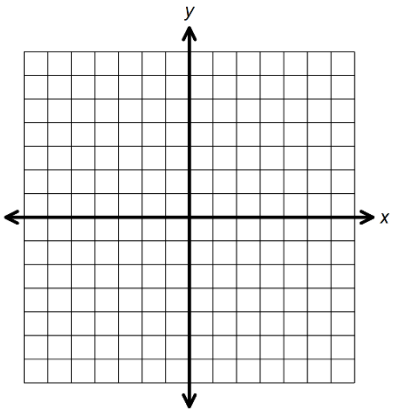
C) 

For #7 – 10: Graph the inequality. (Show work for credit)

7) $y < x + 6$

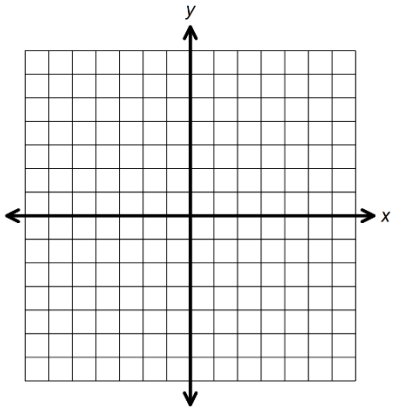
8) $5y \geq 10x - 15$

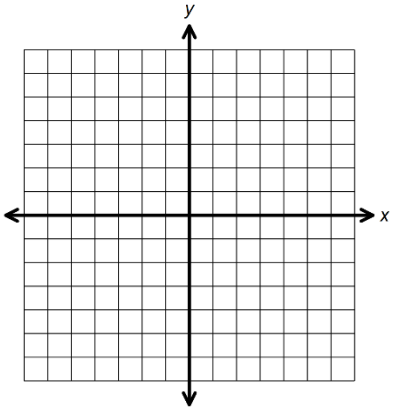




9) $-6y - 12 \geq 18x$

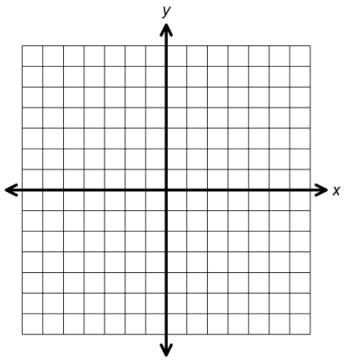
10) $3(y + 3) > 12x$

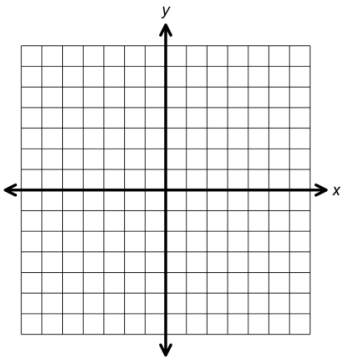


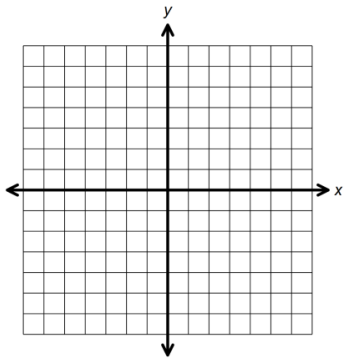


For #11 – 13: Graph the inequality. (Show work for credit)

11) $5y \geq -15$ **12)** $-6x \geq 18$ **13)** $x + 3 > 4$

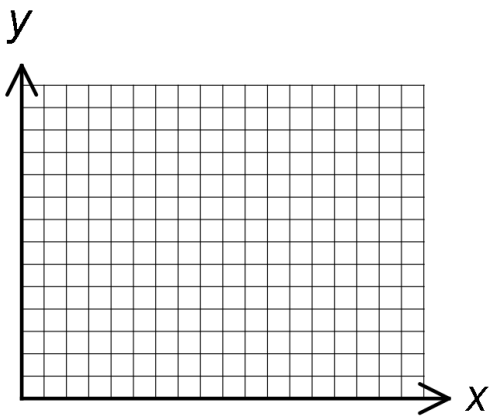






For #14 – 16: A soccer team holds a banquet at the end of the season.

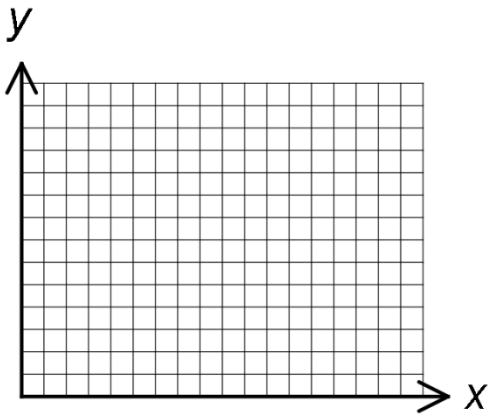
14) The team needs to seat at least 96 people and plans to use two different-sized tables. A small table can seat 6 people, and a large table can seat 8 people. Write a linear inequality that represents the numbers of each size table the team needs. Let x = # of small tables and let y = # of large tables.



15) Graph your inequality from #14.

16) If the school has 5 small tables and 9 large tables, will this be enough for the banquet?

17) Tandy has at most \$100 to spend on summer clothes. Shorts cost \$12.50 a pair and tanktops cost \$6.25 each. Write and graph an inequality that represents the possible combinations of shorts and tanktops that Tandy can buy. Let x represent the number of shorts and y represent the number of tanktops.



Bonus:

Write an equation, in (h, k) form, of the line that passes through the point (3, -2) and is parallel to $y = 4x - 1$

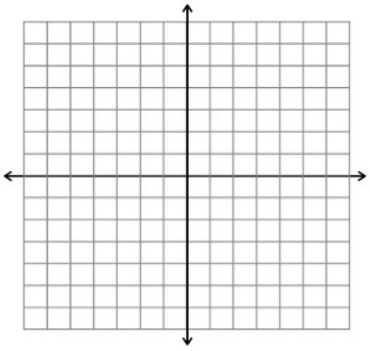
4.5 Worksheet

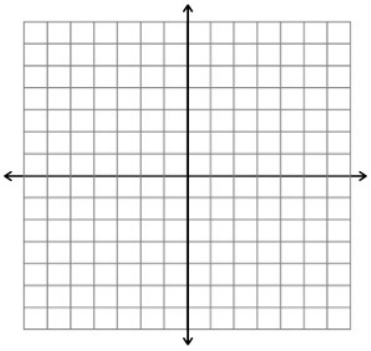
Name: _____ Per:___

Solve each system of inequalities by graphing.

1. $\begin{cases} y \leq -x + 4 \\ y > -2x - 4 \end{cases}$

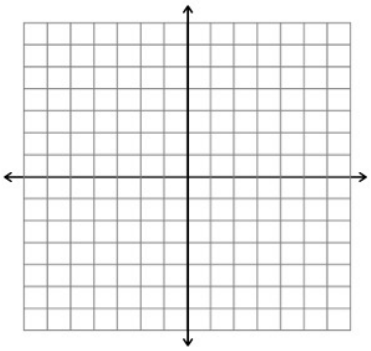
2. $\begin{cases} 4x - 8y \leq 16 \\ 2x + 5y < 10 \end{cases}$

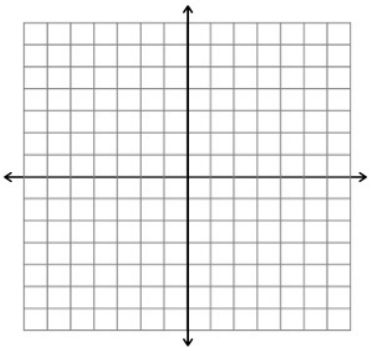




3. $\begin{cases} 2x - y \leq -7 \\ x > -3 \end{cases}$

4. $\begin{cases} 4x + y > 4 \\ 4x + y \geq -4 \end{cases}$

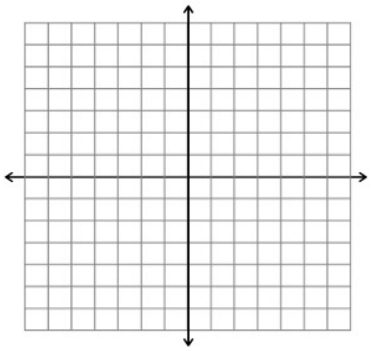


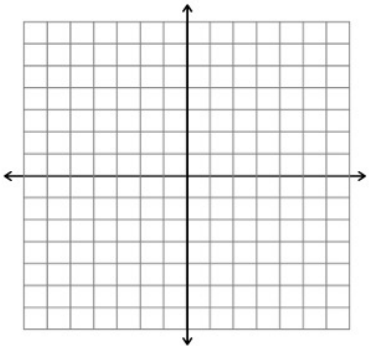


5. Is (0, 0) a solution for #4 above? Explain your reasoning.

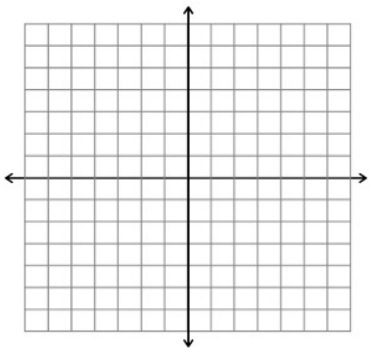
6. $\begin{cases} y \leq -3 \\ y > 2 \end{cases}$

7. $\begin{cases} y \leq \frac{1}{3}x + 4 \\ -x + 3y > 3 \end{cases}$

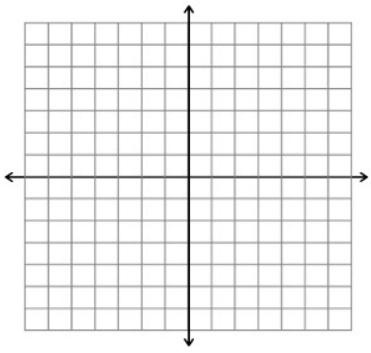




8. $\begin{cases} x - y \leq -3 \\ y \leq -x - 3 \end{cases}$



9. $\begin{cases} y \leq 6 \\ x + y > -2 \end{cases}$



10. Name one point that is a solution for #9.

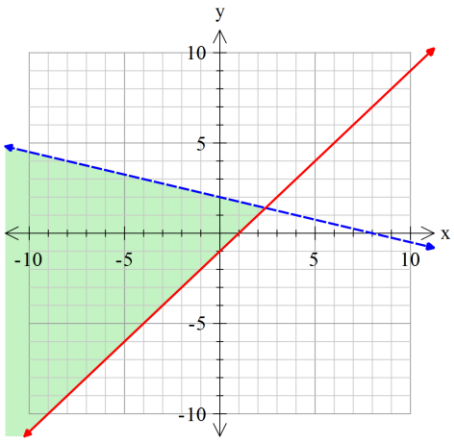
11. The solution set of a system of inequalities is shown in the graph below as a shaded region. The equations of the boundaries are $x + 4y = 8$ and $y = x - 1$. Which system of inequalities represents the solution?

A. $\begin{cases} x + 4y < 8 \\ y \geq x - 1 \end{cases}$

B. $\begin{cases} x + 4y > 8 \\ y \geq x - 1 \end{cases}$

C. $\begin{cases} x + 4y > 8 \\ y > x - 1 \end{cases}$

D. $\begin{cases} x + 4y < 8 \\ y > x - 1 \end{cases}$

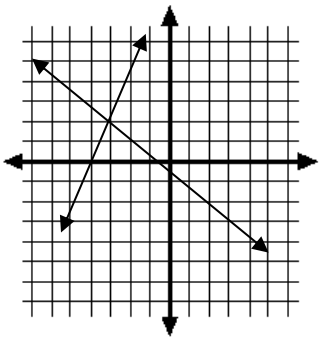


Chapter 4 Practice Test

Name: _____ Per:___

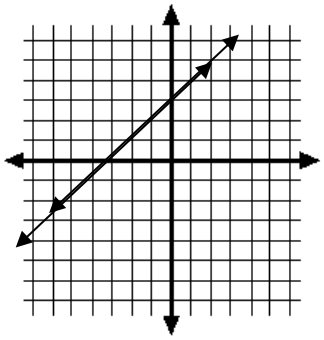
For #1 – 3: Solve the system.

1)



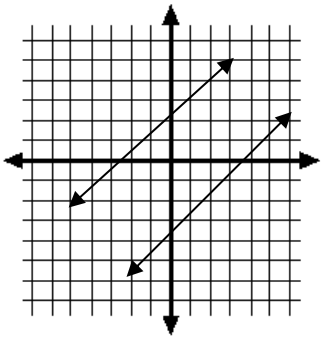
Solution:

2)



Solution:

3)



Solution:

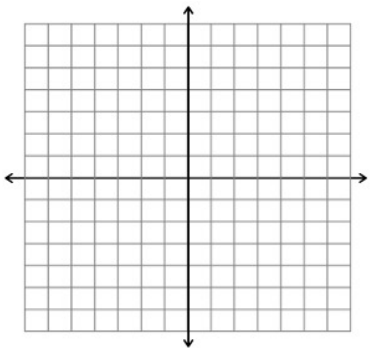
4) Given the equation $3x = 6y + 18$ write an equation that would give you a system of equations with parallel lines and no solution.

5) A system of two linear equations has infinitely many solutions. What must be true about the lines?

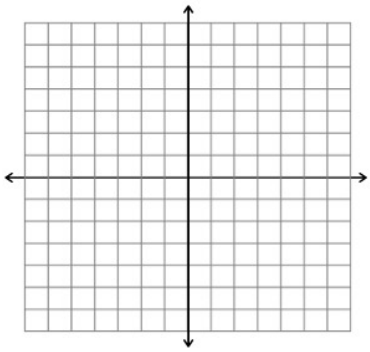
A) They are parallel.
B) They are perpendicular.
C) They are the same line.
D) They intersect at one point.

For # 6 – 8: Solve the system by graphing:

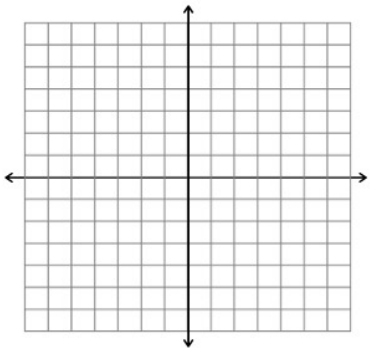
6) $-3x + y = 1$
$y = 2x + 2$



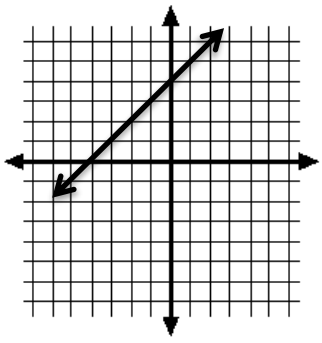
7) $-12x + 6y = 6$
$-2x + y = 1$



8) $x = 2$
$y = -3$



9) Draw a line that creates a system of equations with a solution at (-2, 2) and has a positive slope.



For #10 – 15: Solve each system.

10) $4y + 6 = 10x$
$y = 2x + 1$

11) $-4x - 15y = -17$
$-x + 5y = -13$

12) $4y = 8x - 28$
$x = 5$

13) $y = -6x - 5$
$y = -5x + 4$

14) $3x - 2y = 12$
$-3x + 6y = 12$

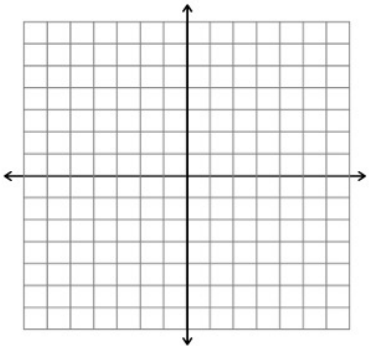
15) $2x - 4y = 10$
$6y = 3x + 12$

16) List all the points which are a solution to $2x - y > 4$.

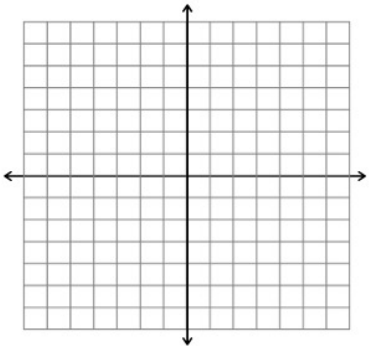
A) (0, -4) B) (6, 1) C) (-2, 4) D) (1, -2)

For #17-19, Graph the linear inequality:

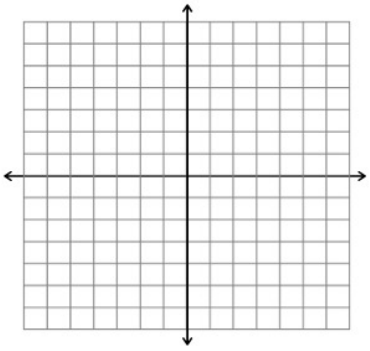
17) $y > 3x - 2$



18) $10x - 5y \leq 20$

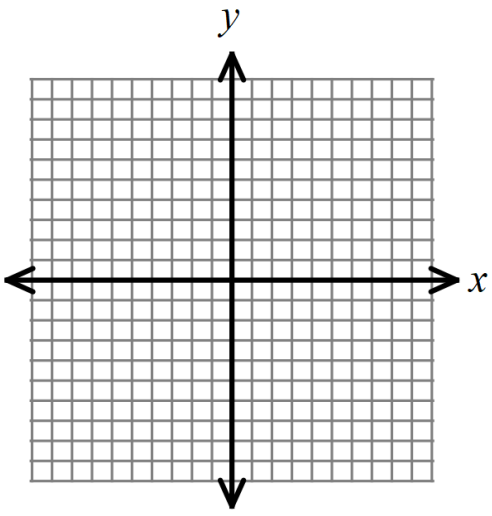


19) $y > 5$

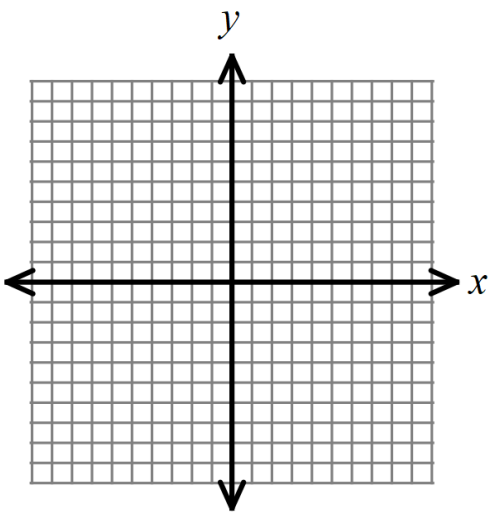


Solve the following systems of inequalities by graphing:

20) $y > 3x-1$
$y < \frac{1}{2}x+2$



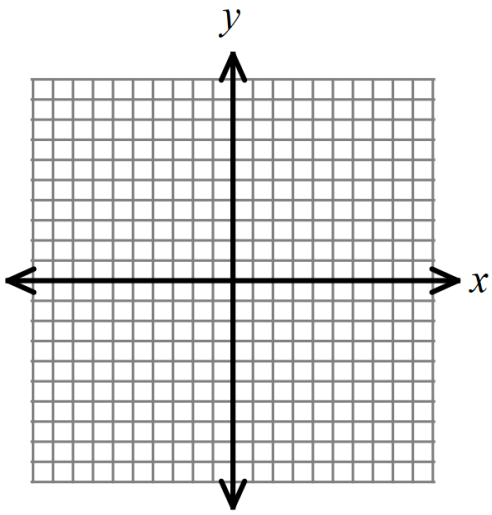
21) $x+2y \geq 4$
$3x+6y \leq -24$

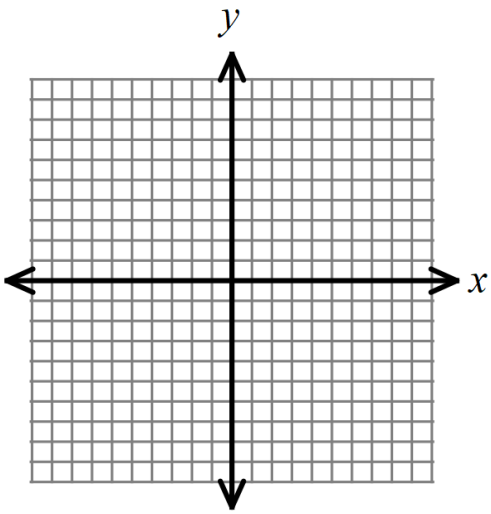


Solve the following systems of inequalities by graphing:

22) $x \geq -2$
$x+y<4$

23) $x-3y \leq 6$
$y>3x-4$





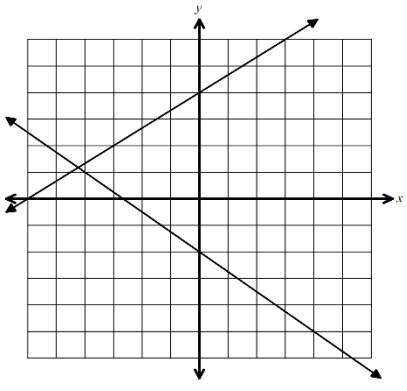
24) Jessica is looking for a nice place to order flowers for her party. Square Root Flowers charges $40 for labor and $10 per bouquet of flowers. Beautiful Flowers charges $80 for labor and $5 per bouquet of flowers. How many bouquets would need to be ordered to cost the SAME price at either shop? And how much does it cost?

25) Sammy took his family to the airport on Wednesday. It was $200 per ticket and $4 to park per day. He paid a total of $608. Bobby took his family to the airport on Friday and it was $250 per ticket and $3 to park per day. Bobby spent a total of $756. If they both bought the same amount of tickets and parked the same amount of time, how many tickets did they buy, and for how many days did they park?

26) The functions $f(x)$ and $g(x)$ are graphed below. Approximate the value of x when $f(x) = g(x)$.

A. $x = -4.1$

B. $x = 1.1$

C. $x = -1.1$

D. $x = 4.1$