Mr. Thurlwell's Assignment Sheet
Algebra 1

Unit 2: Linear Equations and Inequalities

Name:_____

Assignment #1 (3.3) pg 177 4-22e
Assignment #2 (4.3) pg 235 2-10e, 24,30,47,50
Assignment #3 (4.1) pg 219 2-14e,15,59
Assignment #4 (4.1) pg 219 18-36e,50,51
Assignment #5 (4.2) pg 229 1-9,24,34
Assignment #6 (4.2)*** pg 229 10-20e,30,40-42
Assignment #7 (5.6) pg 320 1-11o, 38,39
Assignment #8 (5.6) pg 320 20-23,27-30,46
Assignment #9 (4.4) pg 242 1-3,5,7,8,11,12,
Assignment #10 (4.4) pg 242 4,34,35,44,47,50
Assignment #11 (4.7) pg 267 1-6,18-20
Assignment #12 (5.3)*** pg 300 1-11,45,60
Assignment #13 (5.5) pg 320 12-17,26-28
Assignment #14 (5.5) pg 320 3-6,37,39,40,46

EQ 1: What is the equation of a line in point – slope form? Slope intercept form?

EQ 2: What determines parallel/perpendicular relationships between two lines?

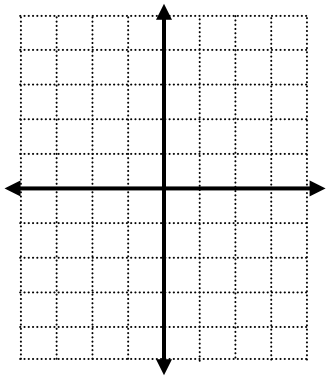
EQ 3: How do graphs represent inequalities?

***=quiz to follow

3.3: Slope(m) rise/run

1) A line that <u>rises</u> left to right

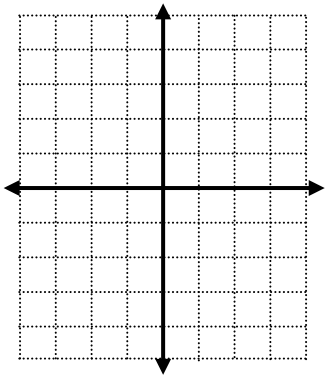
Ex:



Slope is _____

2) A line that <u>falls</u> left to right

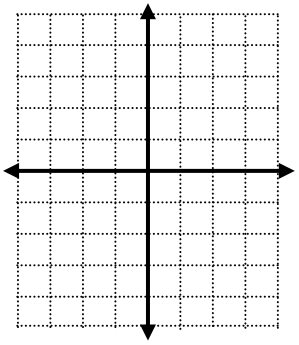
Ex:



Slope is _____

3) A <u>horizontal</u> line

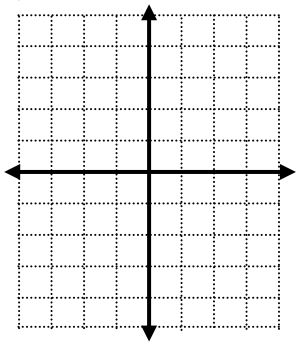
Ex:



Slope is _____

4) A <u>vertical</u> line

Ex:



Slope is _____

Name:_____

3.3 & 4.3 Review

For numbers 1-3, write the equation in standard form.

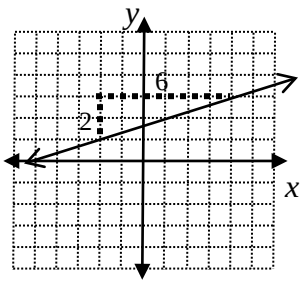
1. $7x - 2y + 9 = 0$

2. $2y = 5x - 12$

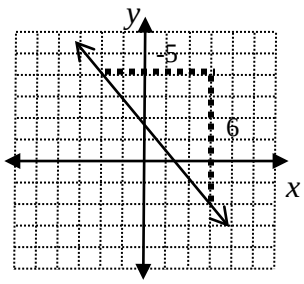
3. $-\frac{2}{3}x = -5 + y$

For numbers 4 and 5, write an equation of the line shown in the graph in <u>point-slope form</u>.

4.



5.



For numbers 6 and 7, write an equation in <u>point- slope</u> form of the line that passes through the given points.

6. (7, 6) and (-3, 0)

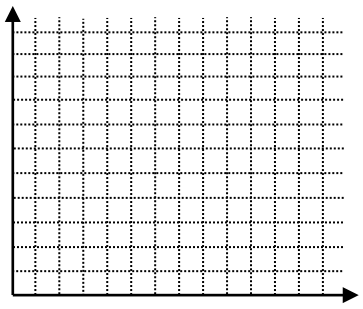
7. (–1, –1) and (0, -4)

8. Apple's iTunes sells downloadable music and has sales of 15 million pesos when the teenage population is 3 million. When the population grows to 4.5 million, sales increase to 26 million pesos.

a) Write an equation of the line in point-slope form that passes through the given points, letting *x* represent population and *y* represent sales in millions of pesos. Use the point (3, 15).

b) Graph the line found in exercise a.

c) Predict sales when the teenage population reaches 6 million. Test your prediction and interpret your findings.

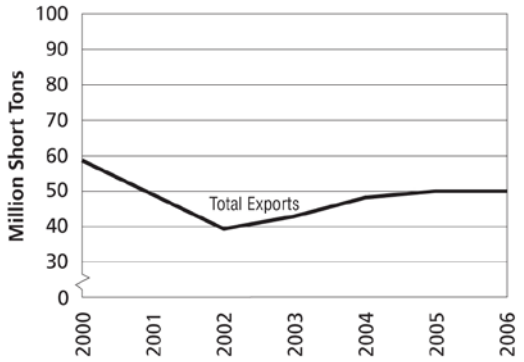


Find the value of *r* so the line that passes through each pair of points has the given slope.

9. $(r, 4), (7, 1), m = \frac{3}{4}$

10. A daily newspaper had 12,125 subscribers when it began publication. Five years later it had 10,100 subscribers. What is the average yearly rate of change in the number of subscribers for the five-year period?

11. The graph shows the annual coal exports from U.S. mines in millions of short tons.



Source: Energy Information Association

a. What was the rate of change in coal exports between 2001 and 2002?

b. How does the rate of change in coal exports from 2005 to 2006 compare to that of 2001 to 2002?

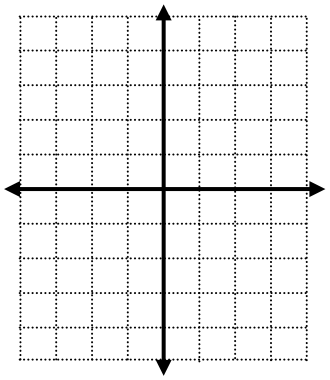
c. Explain the meaning of the part of the graph with a slope of zero.

Name:_____

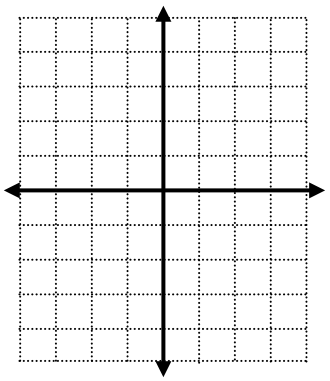
4.1 Summary and Examples

Equation	**Slope-Intercept Form**	**Slope**	***y*–intercept**
a. $y = -x + 4$			
b. $y = \frac{2x+9}{3}$			
c. $y = -2$			
d. $3x + 4y = 8$			

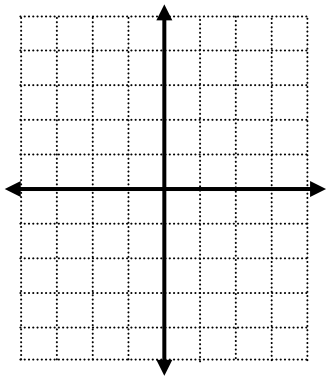
a)



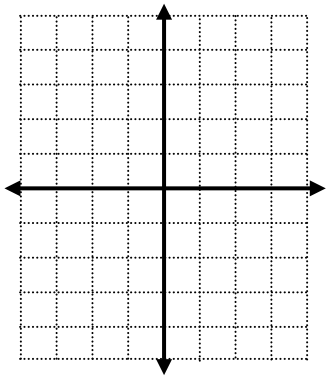
b)



c)



d)



Name:_____

3.3, 4.3 & 4.1 review

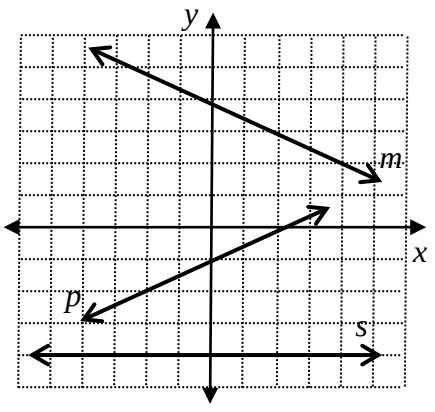
1) Given the point (-4,-7) and a slope of $-\frac{2}{5}$, write the equation of the line in point slope form.

2) Write an equation in point-slope form given the points (2, 0) and (-1, -1).

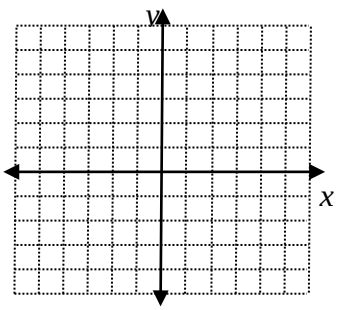
3) Write the equation of a line (in slope-intercept form) if the slope is $\frac{1}{8}$ and the y-intercept is 3.

4) A line goes through (-2, -5) and has a slope of 2. Write the equation of the line in slope intercept form.

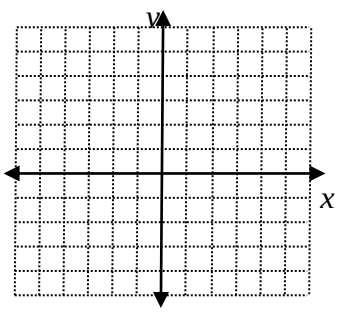
5) Write the equation of lines *m*, *p* & *s* given their graph.



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



7) Graph $y - 4 = \frac{1}{-3}x$

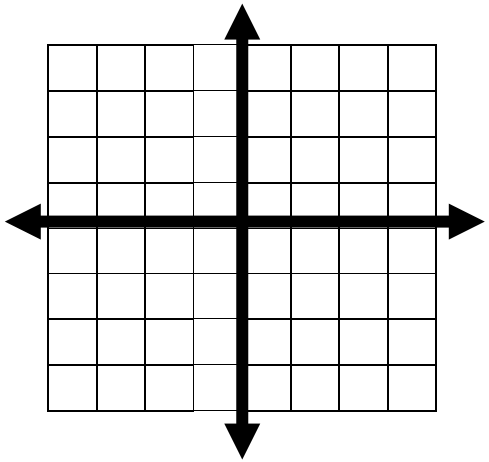


The Different Forms of Slope

I. Point-slope form

Equation of a line:

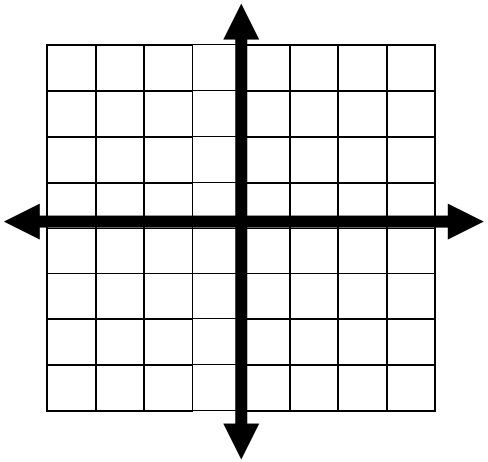
Example:



II. Slope-intercept form

Equation of a line:

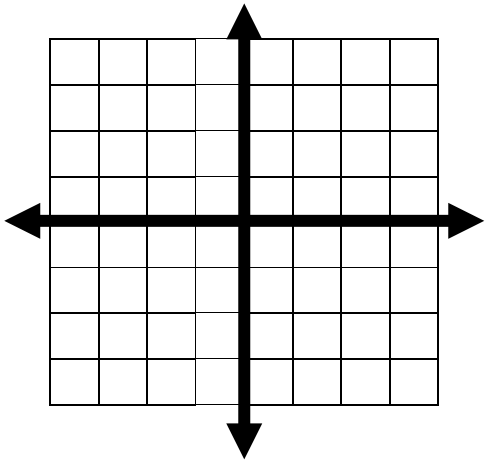
Example:



III. Vertical/Horizontal Line

Equation of a line:

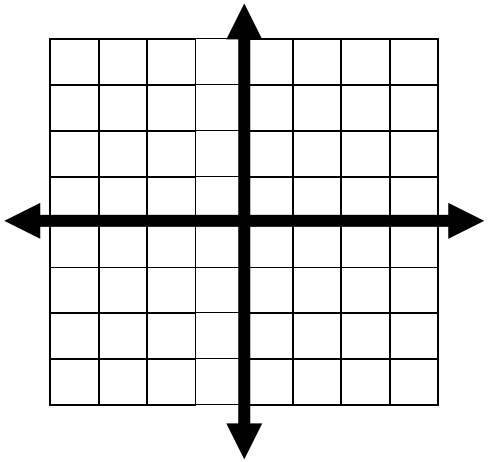
Example:



IV. Standard Form

Equation of a line:

Example:



Name:_____

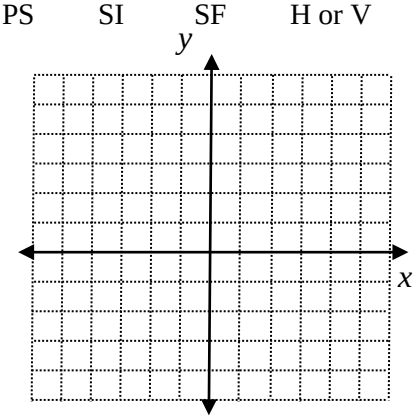
Unit 2, and graphing fun!

Identify which form of the equation by circling the abbreviation. Then, graph it!

KEY	
PS- Point Slope	**SF**-Standard Form
SI- Slope Intercept	**H or V –** Horizontal or Vertical

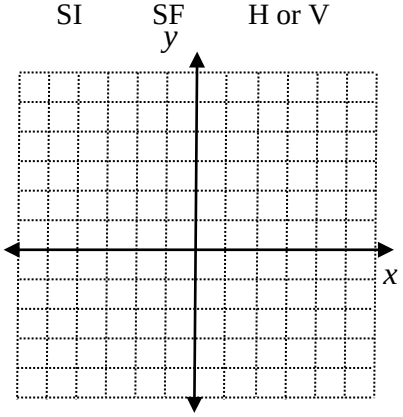
1) Graph the line $y = -\frac{2}{3}x + 1$

PS SI SF H or V



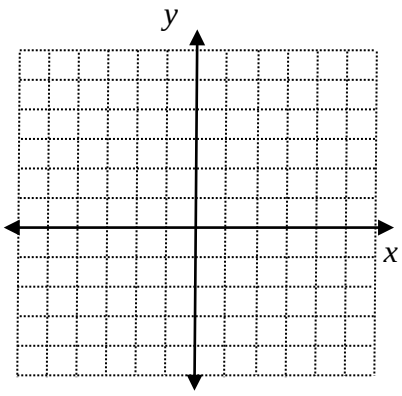
2) Graph the line $y - 1 = 2(x + 3)$

PS SI SF H or V



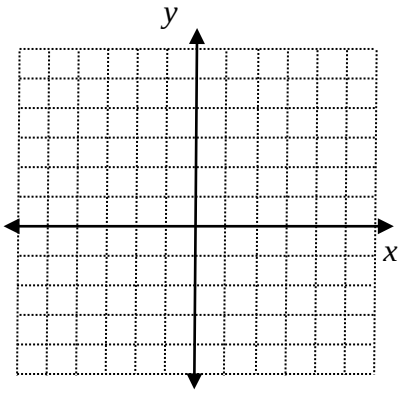
3) Graph the line $y = 2$

PS SI SF H or V



4) Graph the line $3x - 2y = 12$

PS SI SF H or V

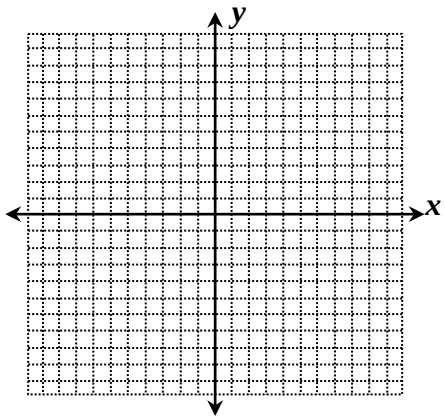


Name:_____

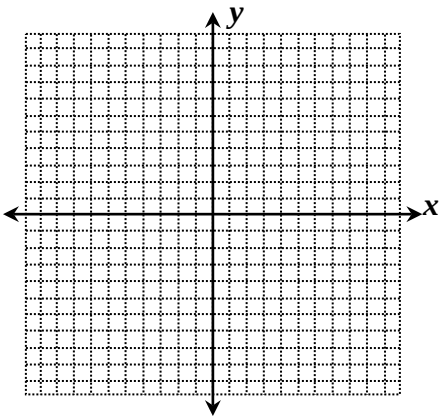
Algebra 1

Section 5.6 Graphing

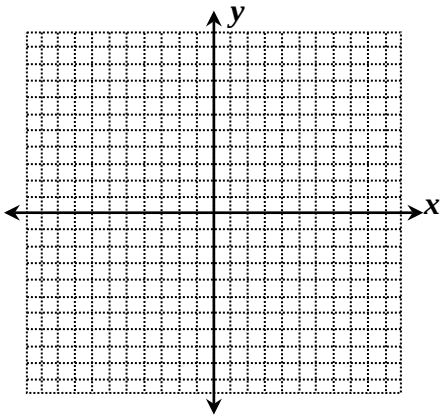
1) Sketch the graph of $x < -2$.



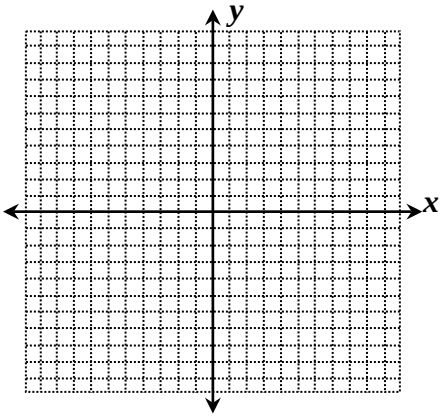
2) Sketch the graph of $x \geq 1$.



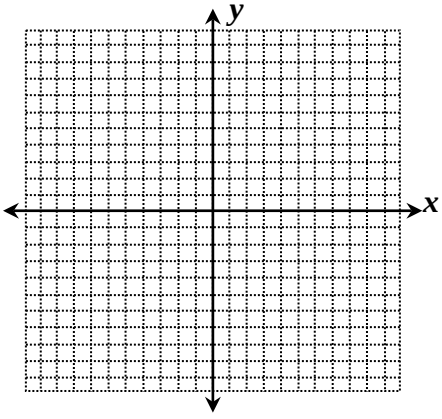
3) Sketch the graph of $y \leq 1$.



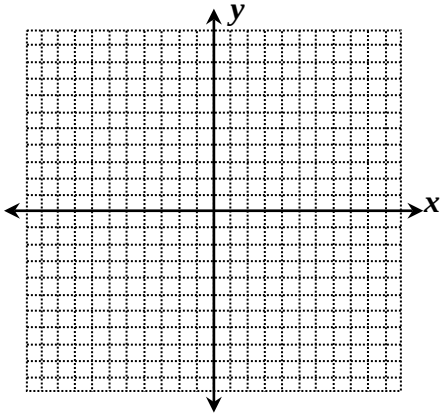
4) Sketch the graph of $y > -3$.



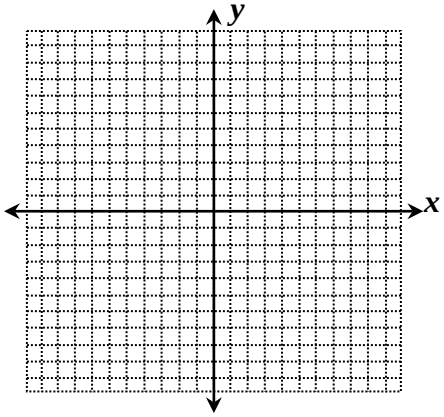
5) Sketch the graph of $x + y > 3$.



6) Sketch the graph of $x - y \leq 2$.

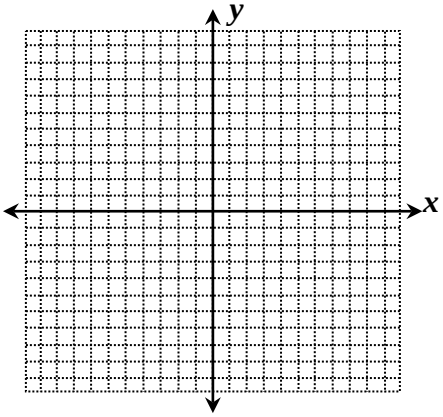


7) Sketch the graph of $x - 3y \leq 0$



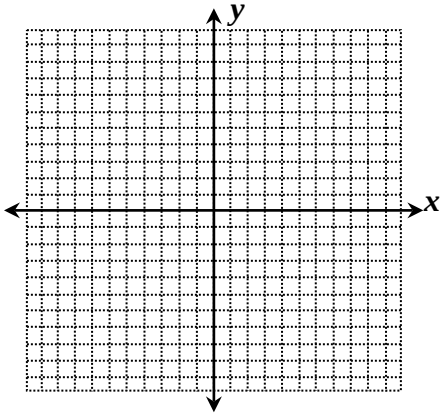
Give a possible solution:

8) Sketch the graph of $3y - 2x < 6$



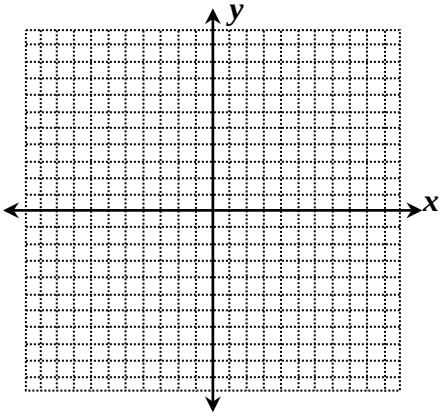
Give a possible solution:

9) Sketch the graph of $5x - 3y > 9$



Which quadrants are included in the shading of the graph? Does it included the boundary line?

10) Sketch the graph of $2y - x > 10$

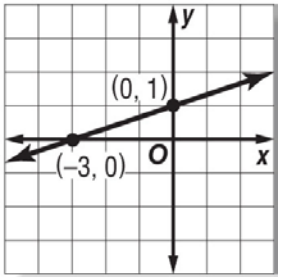


Which quadrants are included in the shading of the graph? Does it included the boundary line?

Name:_____

3.3,4.1-4.3,5.6 practice

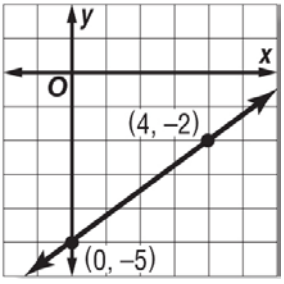
Write an equation of the line that passes through the given point and has the given slope.

1) 

2) (4, –5); slope $-\frac{1}{2}$

3) The cost for 7 dance lessons is $82. The cost for 11 lessons is $122. Write a linear equation to find the total cost C for ℓ lessons. Then use the equation to find the cost of 4 lessons.

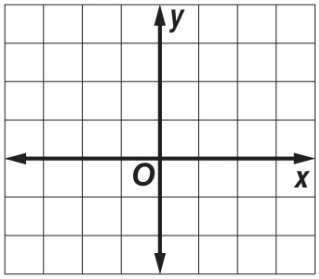
Write an equation in <u>slope-intercept form</u> given the information.

4) 

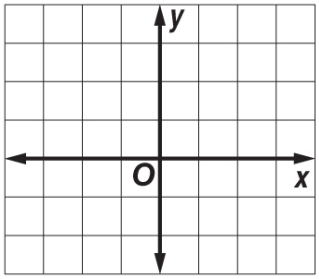
5) slope: –1, y-intercept –7

Graph each equation.

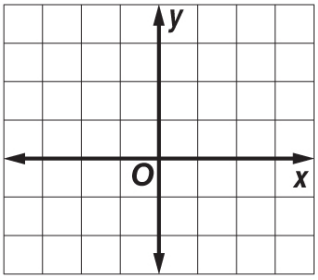
6) $y - 2 = -(x + 3)$



7) $2 = x$



8) $2y = 3x - 6$



9) Write an equation in point-slope form for a horizontal line that passes through (4, –2).

Write each equation in standard form.

10) $y + 2 = -3(x - 1)$

11) $y - 1 = -\frac{1}{3}(x - 6)$

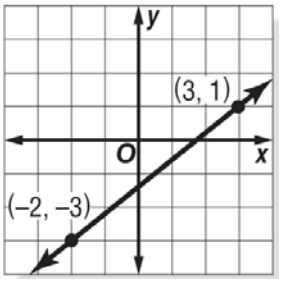
Find the value of *r* so the line that passes through each pair of points has the given slope.

12) $(-2, r)$, $(6, 7)$, $m = \frac{1}{2}$

Find the slope of the line that passes through each pair of points.

13) $(3, 9)$, $(-2, 8)$

14)



For 15-18, match the inequality to the graph.

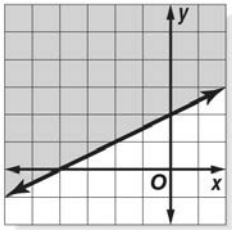
15) $y - 2x < 2$

16) $y \leq -3x$

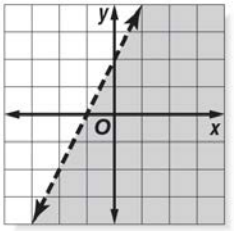
17) $2y - x \geq 4$

18) $x + y > 1$

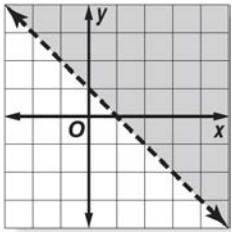
a.



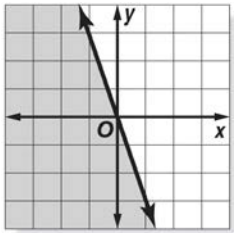
b.



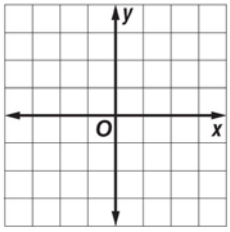
c.



d.



19) Graph $-2y - x > -3$

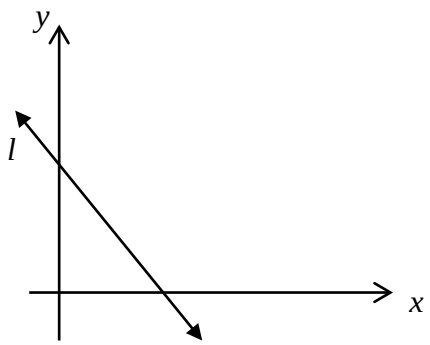


20) Determine which ordered pairs are part of the solution set for the inequality.

$3x + y \geq 6$, $\{(4, 3), (-2, 4), (-5, -3), (3, -3)\}$

Standardized Test Practice!

1) Line *l* is graphed in the standard coordinate plane as shown below. Which of the following is true given that *l* is written in slope-intercept form?



a) *m* and *b* are both positive
b) *m* is negative and *b* is positive
c) *m* is positive and *b* is negative
d) Either *m* or *b* must equal 0
e) *m* and *b* are both negative

2) Line *T* in the standard coordinate plane has y-intercept -3 and is parallel to the line determined by the equation $3x - 5y = 4$. Which of the following is an equation for line *T*?

a) $y = -\frac{3}{5}x + 3$

b) $y = -\frac{5}{3}x - 3$

c) $y = \frac{3}{5}x + 3$

d) $y = \frac{3}{5}x - 3$

e) $y = \frac{5}{3}x + 3$

Name:_____

4.7

Inverse Linear Functions

Find the inverse of each relation.

1. {(5, 11), (1, 6), (–3, 1), (–7, –4)}

2. {(0, 3), (2, 3), (4, 3), (6, 3)}

Find the inverse of each function.

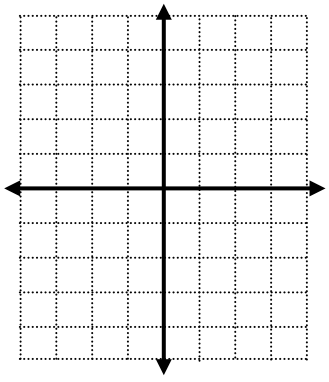
3. $f(x) = -5(-x - 6)$

4. $f(x) = \frac{6}{5}x - 3$

5. $f(x) = \frac{3x - 1}{6}$

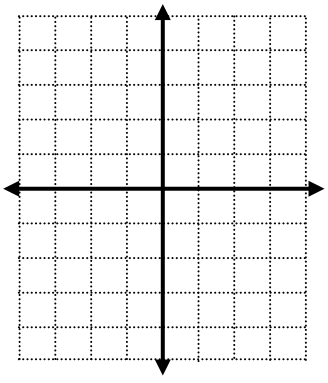
Graph relation **and** the inverse of each function.

6.



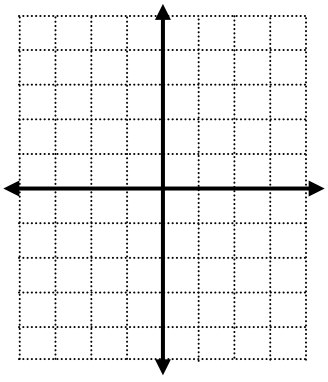
f(x) = x +6

7.



3x + 3y = 18

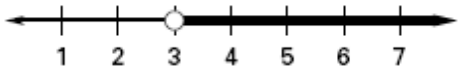
8.



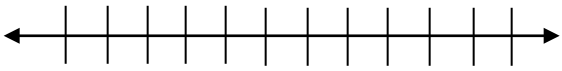
y + 8 = -3 (x - 2)

Name: _____

Algebra 1 Inequality Review

1. Given the graph, 

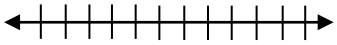
what would the inequality be? _____

2. Graph $x > -4$**.** 

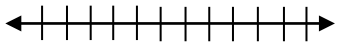
3. What is another way to write 2 > x? _____

For problems 4 – 7, solve the inequality AND graph the solution.

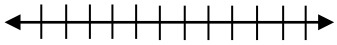
4.) x + 5 > -4



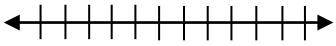
5.) $3 \geq y - 4$



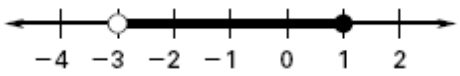
6.) $0 \leq \frac{1}{2}x + 6$

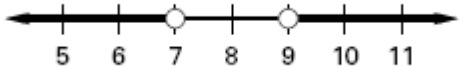


7.) $-(4 + x) > 2(x - 5)$



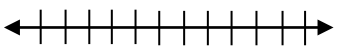
For problems 8 and 9, write an inequality that describes the graph.

8. 

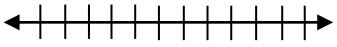
9. 

For #'s 10 and 11, solve the inequality AND graph its solution.

10. $0 \leq x + 9 < 17$



11. $2x + 1 > 13$ or $-18 > 7x + 3$



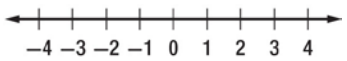
Name:_____

5-4

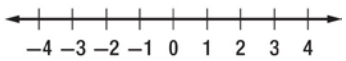
Solving Compound Inequalities

Graph the solution set of each compound inequality.

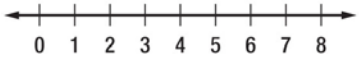
1. $b > 3$ or $b \leq 0$



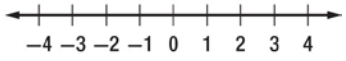
2. $-2 \leq z \leq 3$



3. $5 > k > 1$

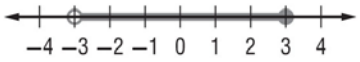


4. $y < -1$ or $y \geq 1$

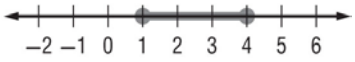


Write a compound inequality for each graph.

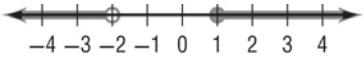
5.



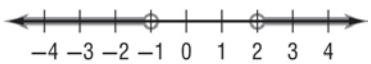
6.



7.

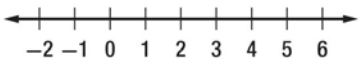


8.

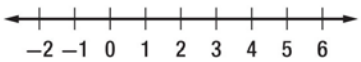


Solve each compound inequality. Then graph the solution set.

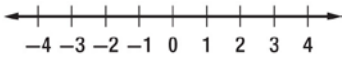
9. $7 > m + 3 \geq 5$



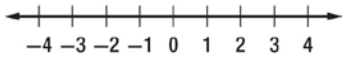
10. $y - 5 < -4$ or $y - 5 \geq 1$



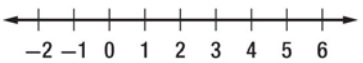
11. $4 < f + 6 < 5$



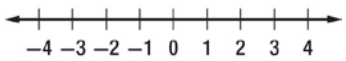
12. $w + 3 \leq 0$ or $w + 7 \geq 9$



13. $-6 < b - 4 < 2$



14. $p - 2 \leq -2$ or $p - 2 > 1$



Define a variable, write an inequality.

15. A number plus one is greater than negative five and less than three.

16. A number decreased by two is at most four or at least nine.

17. The sum of a number and three is no more than eight or is more than twelve.

Name:_____

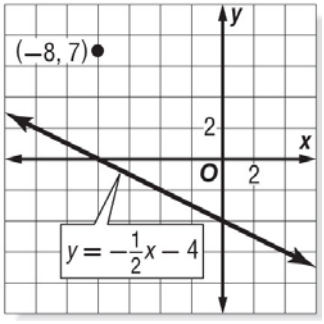
4.4, 4.7, 5.3-5.5 Review

4.4 [$\parallel$ & $\perp$ Lines]

1) What do we focus on to assess if two lines are parallel?

2) What do we focus on to assess if two lines are perpendicular?

3) Write an equation in slope-intercept form for the line that passes through the given point and is parallel to the graph of the equation.



4) Write an equation in slope-intercept form for the line that passes through the given point and is perpendicular to the graph of each equation.

(6, –2), $y = –3x – 6$

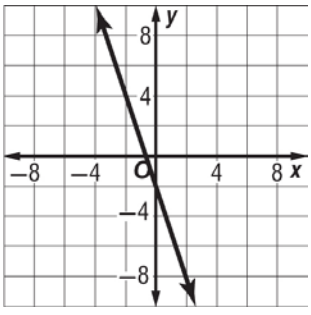
4.7 [$f^{-1}(x)$ functions]

5) How do you find the inverse of a function?

6) Write the inverse of the equation in $f^{-1}(x)$ notation:

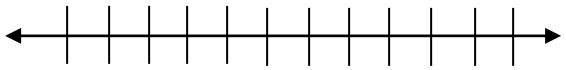
$4x + 6y = 24$

7) Graph the inverse of the function.



5.3 [multi-step inequalities]
8) When do you change the inequality when solving equations?

9) Solve and graph inequality. Give a possible solution.

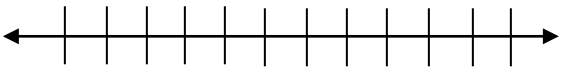


$-6(w + 1) < 2(w + 5)$

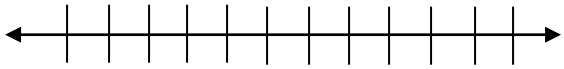
5.4 [compound inequalities]
10) Compare and contrast "and" and "or" inequalities

For 11 & 12, solve each compound inequality. Then graph the solution set.

11) $\frac{1}{2}n < -2$ or $2n - 2 > 6 + n$



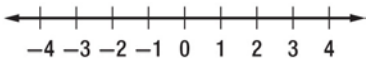
12) $4 > -x - 2 \geq 2$



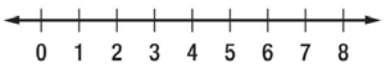
5.5 [Inequalities involving absolute value]
13) What makes an absolute inequality an "and?" What makes it an "or?"

For 14 & 15, solve each inequality. Then graph the solution set.

14) $|2d - 1| - 2 \geq 2$



15) $|x - 4| < 4$



Name:_____

Unit 2 Assessment Review

1. Bertha's solution to an inequality is shown in the box.

Which statement about Bertha's solution is true?

A) Bertha made a mistake in Step 1.
B) Bertha made a mistake in Step 2.
C) Bertha made a mistake in Step 4.
D) Each step is correct.

Given: $4(3x + 5) + 2 \geq 2x + 7$

Step 1: $12x + 20 + 2 \geq 2x + 7$

Step 2: $12x + 22 \geq 2x + 7$

Step 3: $12x - 2x + 22 \geq 7$

Step 4: $10x \geq 7 - 22$

Step 5: $10x \geq -15$

Step 6: $\frac{10x}{} > \frac{-15}{}$

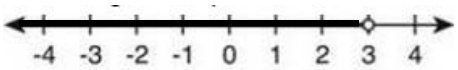
2. In the inequality below, let *x* represent the number of cakes a bakery makes each day.

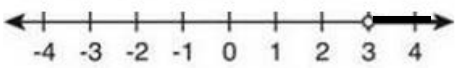
$5x + 15 \leq 240$

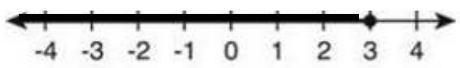
Which phrase most accurately describes the number of cakes the bakery makes each day?

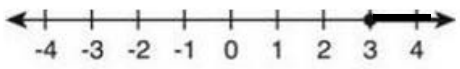
A) less than 45 cakes B) at most 45 cakes C) exactly 45 cakes D) more than 45 cakes

3. Which line segment represents the solution to $3x + 4 < 13$?

A)


B)


C)


D)


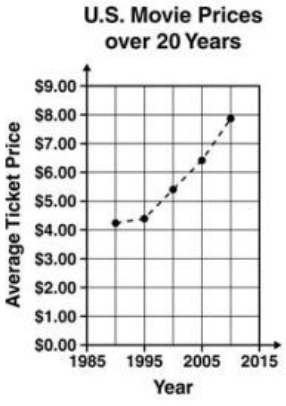
4. What is the slope of the line with an equation of $5x + 8y = 16$?

5. The table and graph below show the average movie ticket prices in the United States over a 20 – year period.

Based on this information, which value is closest to the average rate of change from 1990 to 2010?

A) \$0.03 B) \$0.18 C) \$1.48 D) \$3.67

Year	Average Ticket Price per Movie
1990	\$4.22
1995	\$4.35
2000	\$5.39
2005	\$6.41
2010	\$7.89

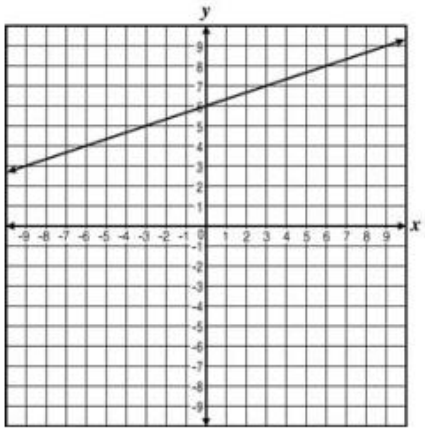


6. Write an equation, in slope – intercept form, for a line that passes through the points (-2, 7) and (1, -5).

7. Which equation is BEST represented by the graph shown?

A) $y = -6x + \frac{1}{3}$ B) $y = -\frac{1}{3}x - 6$

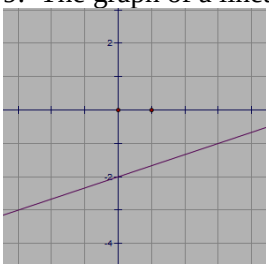
C) $y = \frac{1}{3}x + 6$ D) $y = 6x + \frac{1}{3}$

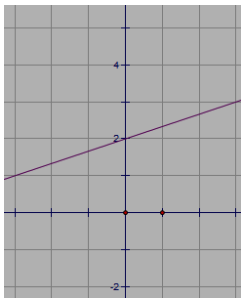


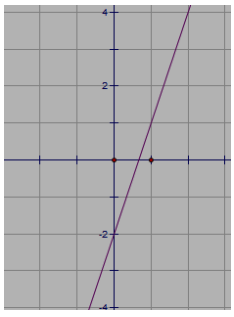
8. April takes 2 vitamins each day from a bottle that contained 250 pills when she bought it. Which of the equations below could be used to determine *y*, the number of pills remaining *x* days after April bought the bottle?

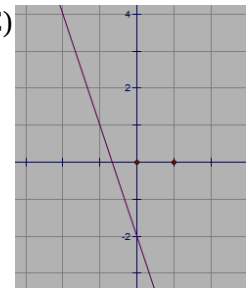
A) $y = 250 + x$ B) $y = 250 - x$ C) $y = 250 + 2x$ D) $y = 250 - 2x$

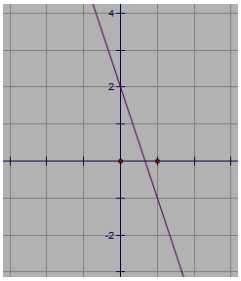
9. The graph of a linear function is shown below. Which graph shows the same function with its slope changed to -3?



A) 

B) 

C) 

D) 

10. Solve the inequality $6(x + 3) \leq 3(x - 4)$.

11. The members of the Math Club are buying t-shirts. The shirts will cost $5.00 each plus a one-time fee of $20.00 for the design of the shirt. The total order can be at most $170. The inequality $5n + 20 \leq 170$ can be used to determine *n*, the number of t-shirts that can be purchased. Which inequality BEST represents the solution?

A) $n \geq 30$ B) $n \leq 30$ C) $n \geq 38$ D) $n \leq 38$

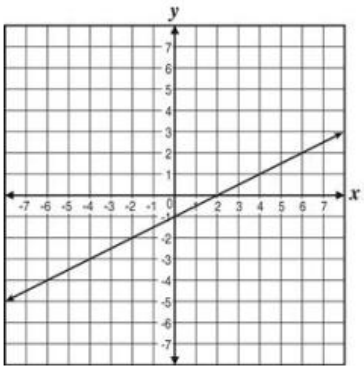
12. Which equation represents the line that passes through the points (4, 6) and (2, - 4)?

A) $y = -x + 10$ B) $y = -5x + 26$ C) $y = x + 2$ D) $y = 5x - 14$

13. Which of the following BEST represents the graph shown?

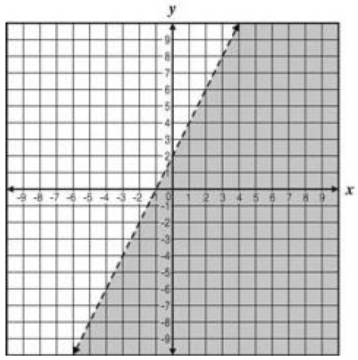
A) $3x + 4y = 4$ B) $2x + 4y = -3$

C) $x - 2y = -1$ D) $x - 2y = 2$



14. Which inequality is represented by the graph shown?

A) $y < 2x + 2$
B) $y > 2x + 2$
C) $y < 2x - 2$
D) $y > 2x - 2$



15. Amy has $725 in savings. She plans to save an additional $25 per month. What is the number of additional months Amy will need to save money in order to have exactly $1,000?

16. What is the inverse, $f^{-1}(x)$, of the function $f(x) = \frac{2}{5}x - 6$?

A) $f^{-1}(x) = -6x + \frac{2}{5}$ B) $f^{-1}(x) = -\frac{5}{2}x + 6$ C) $f^{-1}(x) = -\frac{2}{5}x + 6$ D) $f^{-1}(x) = \frac{5}{2}x + 15$

17. Which is the equation for a line that has a x-intercept of 5 and a y-intercept of -3?

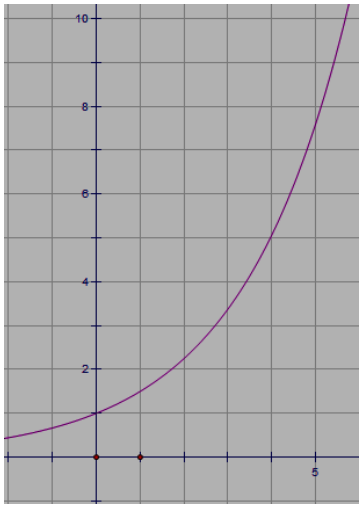
A) $y = -\frac{3}{5}x - 3$ B) $y = \frac{3}{5}x - 3$ C) $y = -\frac{5}{3}x - 3$ D) $y = \frac{5}{3}x - 3$

18. The freshmen class at OEHS is collecting canned goods for a food drive that lasts 50 days. The chart below gives the amount of canned goods collected so far. If the pattern continues, how many cans can the class expect to collect at 50 days?

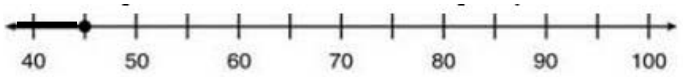
Days	Cans Collected
5	27
10	42
15	57
20	72

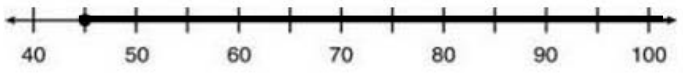
19. The graph shows a relationship between two variables. Which value is the closest to the average rate of change from $x = 0$ to $x = 2$?

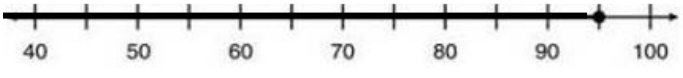
A) $\frac{20}{13}$ B) $-\frac{13}{20}$ C) $-\frac{20}{13}$ D) $\frac{13}{20}$

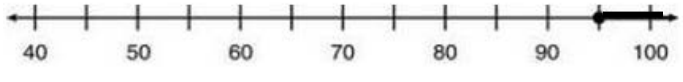


20. The width of a rectangle is 25 units. The inequality $50 + 2L \geq 140$ can be used to determine L, all possible values of the length of the rectangle if the perimeter is at least 140 units. Which graph BEST represents the solution to this inequality?

A)


B)


C)


D)


21. An electrician's shop charges a \$55 service fee plus \$50 per hour for labor. The linear equation that models this is $c = \$50h + \$55$, where h is the number of labor hours and c is the total cost. How much would the shop charge a customer for a job that takes 17 hours?

22. The function $f(x)$ is represented in the table. What is the value of $f^{-1}(2)$?

x	-5	-2	$-\frac{1}{2}$	$\frac{1}{2}$	2	5
$f(x)$	2	9	4	-4	-9	-2

23. Kelsie gets paid by her employer at a costant rate per hour. Which table could represent the amount, in dollars, that Kelsie was paid during the last 4 weeks?

A)

Kelsie's Pay

Number of Hours Worked	Amount Paid
25	$400
34	$400
40	$400
46	$400

B)

Kelsie's Pay

Number of Hours Worked	Amount Paid
25	$420
34	$440
40	$400
46	$460

C)

Kelsie's Pay

Number of Hours Worked	Amount Paid
25	$340
34	$400
40	$250
46	$460

D)

Kelsie's Pay

Number of Hours Worked	Amount Paid
25	$250
34	$340
40	$400
46	$460

24. Which equation represents a line that has a slope of – 5 and an *x* – intercept of 7?

A) $y = -5x - 35$ B) $y = -5x - 7$ C) $y = -5x + 7$ D) $y = -5x + 35$

25. Yellow Cab Taxi charges $0.65 per mile plus a fee of $2 per passenger. You cannot afford more than $10 for a cab ride with you and your friends. Which inequality could be used to determine *m*, the number of miles traveled and *p* the number of passengers you can afford?

A) $0.65m + 2p \geq 10$ B) $0.65m + 2p \leq 10$ C) $0.65m + 2p < 10$ D) $0.65m + 2p > 10$

26. A gym membership plan has a monthly fee, and then each exercise class is at a fixed price per class. If 12 classes cost $42 and 29 classes cost $84.50, which of the following linear functions for the cost of the gym membership, *G*, in terms of the number of classes taken, *c* could be correct?

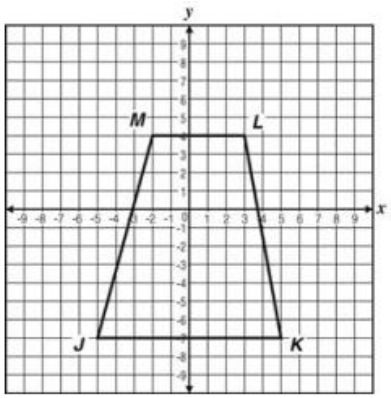
A) $G = 42c + 84.50$ B) $c = 2.50G$ C) $G = c + 2.50$ D) $G = 2.50c + 12$

27. Which equation represents the line that passes through the point (-1.2, -5.6) and has a slope of – 2.9?

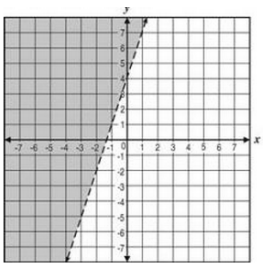
A) $y - 5.6 = -2.9(x - 1.2)$ B) $y + 5.6 = -2.9(x + 1.2)$

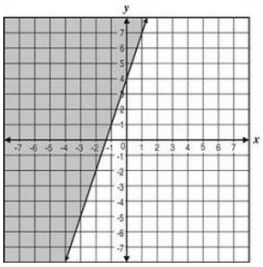
C) $y + 1.2 = -2.9(x + 5.6)$ D) $y - 1.2 = -2.9(x - 5.6)$

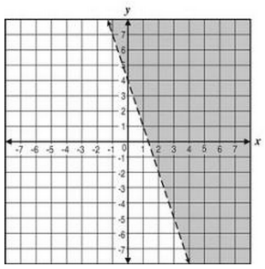
28. Trapezoid *JKLM* is shown below. The coordinates of *J*, *K*, *L*, and *M* are (-5, -7), (5, -7), (3, 4) and (-2, 4), respectively. Write an equation for $\overline{KL}$ in slope – intercept form.

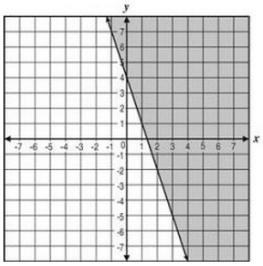


29. Which graph represents the inequality $3x + y > 4$?

A) 

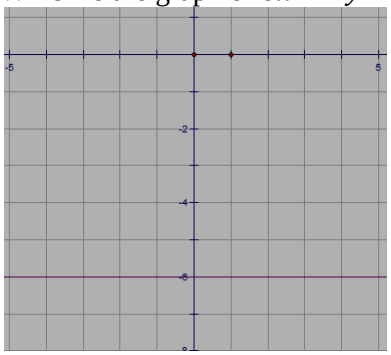
B) 

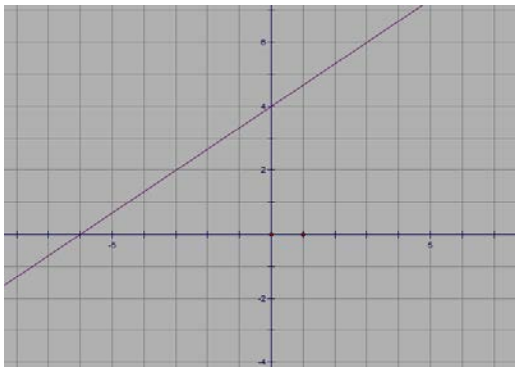
C) 

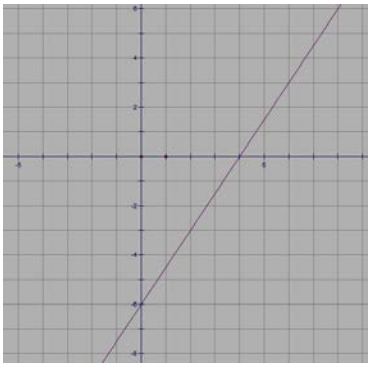
D) 

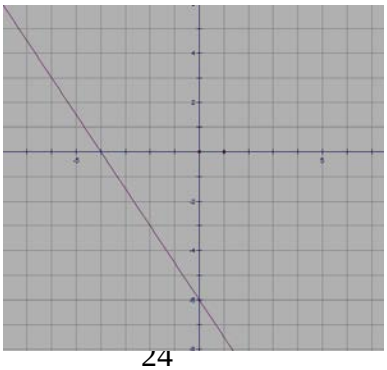
30. Write the equation for the inverse, $f^{-1}(x)$, of the function $f(x) = 5x + 8$.

31. Which is the graph of $3x - 2y = 12$?

A) 

B) 

C) 

D) 

32. The equation $T = 3.7h + 65$ can be used to determine *T*, the temperature in degrees outside *h* hours after sunrise. Which statement about this equation is true?

A) The temperature at sunrise was 65 degrees.

B) The temperature outside 5 hours after sunrise was 79.8 degrees

C) Each hour after sunrise the temperature rose 65 degrees.

D) The temperature increased by 3.7 degrees every second.

33. The table below shows the balance in a savings account after a certain number of months. The data can be modeled by a linear equation where x is the number of months and y is the total balance in the account.

What does the y-intercept of the linear equation that models the data indicate?

A) The account had a zero balance at the start.

B) The account increased by $800 each month.

C) The starting balance in the account was $672.

D) The account increased by $640 each month.

Months, *x*	Balance, *y*
1	800
2	928
3	1056
4	1184
5	1312
6	1440

34. Which equation represents a line with a slope of 0 that passes through the point (-14, 2)?

A) $x = -14$ B) $y = -14$ C) $x = 2$ D) $y = 2$

35. For which values of *x* is $x + 2 > 5 - x$?

A) All values of *x* greater than $\frac{3}{2}$ B) All values of *x* greater than $\frac{5}{2}$

C) All values of *x* greater than $\frac{7}{2}$ D) There are no values of *x* for which this is true

36. What is the inverse, $f^{-1}(x)$, of the function $f(x) = 2x - 8$?

A) $f^{-1}(x) = \frac{1}{2}x + 4$ B) $f^{-1}(x) = \frac{1}{2}x + 8$ C)$f^{-1}(x) = 2y - 8$ D) $f^{-1}(x) = 2x - 4$

37. The table of values represents all points in the function $g(x)$. What is the value of $g^{-1}(2)$?

A) – 4

B) – 3

C) 0

D) 4

x	*g(x)*
- 4	- 2
- 2	- 3
0	- 1
2	0
4	2