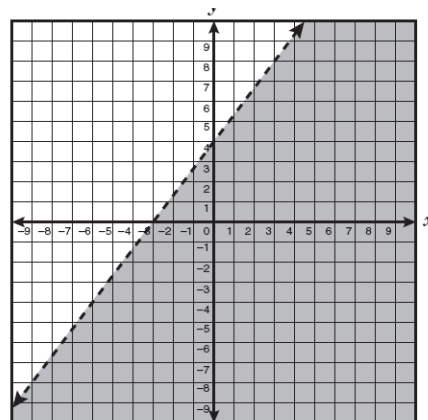Name _____   Date _____

Algebra 1 Fall Review 2013-2014

1. Write an inequality to best represent the graph shown at right. *(A.1.D.)*
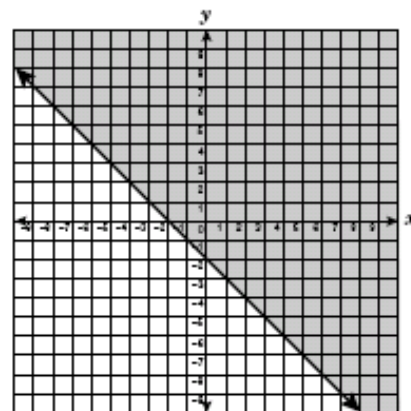
m: _____   b: _____
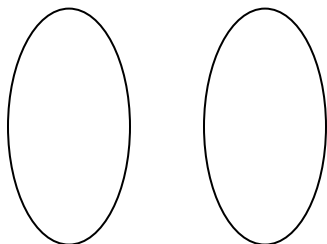
inequality: _____

2. Write an inequality to best describe the graph shown at right. *(A.1.D)*

m: _____   b: _____

inequality: _____

3. Draw a map to best represent the function $f(x) = -x^2 + 3$ when the x-values are {-1, 0, 4}. *(A.1.D.)*

4. Complete the table below by filling in the missing information *(A.1.D)*.

List	Table	Mapping	Graph
{(-3, 5), (6, 8), (1,-4)}			

5. The graph below best represents which of the following relationships between temperature and time? *(A.1.E)*

A   Oven temperature while a cake is baking

B   Temperature of water that is heated on a stove, removed, and then allowed to cool

C   Temperature of a container of hot tea after placing several cubes of ice in it

D   Room temperature of a gym after the air conditioner is turned on
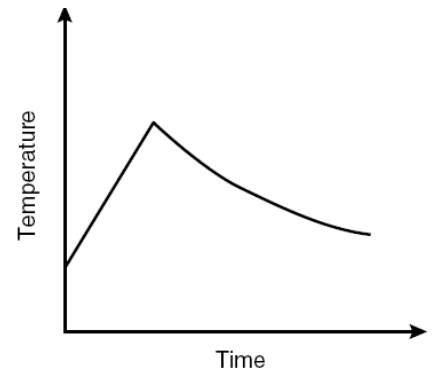
6. The graph below represents Lynne's car trip from her house to the mall and then back to her house. If each section of the graph represents part of Lynne's trip, which part of the trip took the least amount of time? *(A.1.E)*

Lynne's Car Trip
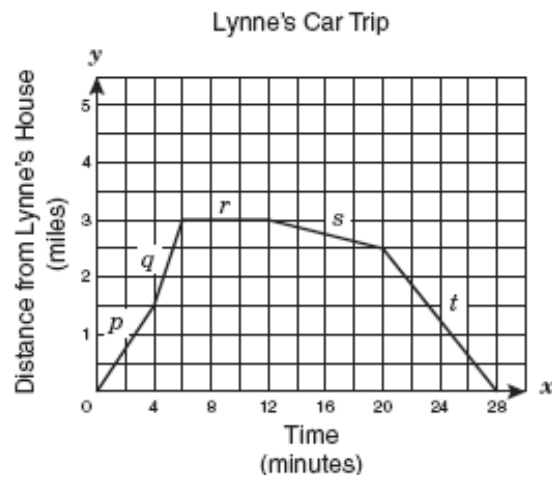
7. Gina did a research project on how age affects sleep patterns. She concluded that as people age, they sleep fewer hours until a point in adulthood when the number of hours remains constant. Gina also found that after the age of 70 the amount of time spent sleeping increases slightly. Which graph best shows Gina's results? *(A.1.E)*
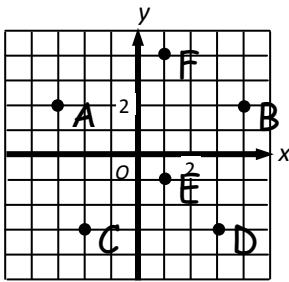
A   B   C   D

8. What point, when deleted from the coordinate grid, will result in a relationship that represents a function? *(A.1.E)*

9. The sales tax rate at a clothing store is 8.75%. Sales tax on an item is a function of its price. What are the independent and the dependent quantities in this function? *(A.1.A)*

Independent Variable: _____

Dependent Variable: _____

10. Which of the following does not represent a function? *(A.1.B)*

A {(–6, 4), (3, –5), (0, –2), (–1, –1)}

B $y = 3x^2 - 2$

C

x	y
–2	15
6	9
–5	–10
–2	–6
3	4

D $y = \dfrac{4x - 3}{5}$

11. Mitesh is *m* years old, and his brother Hiren is *h* years old. Write an inequality to best describe the statement; Mitesh is at least three years older than Hiren. *(A.1.C)*

12. Which of these are characteristics of the parent function of a linear equation? *(A.2.A)*
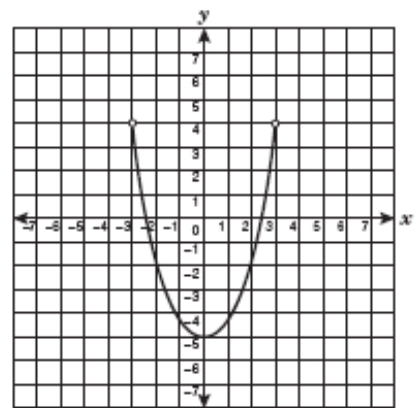
       I. The parent function of a linear equation has a y-intercept at 0.
       II. The parent function of a linear equation has a positive correlation.
       III. The parent function of a linear equation has a slope of 1.

A   I and II only
B   I and III only
C   II and III only
D   I, II, and III

13. What is the domain and range of the function shown on the graph? *(A.2.B)*
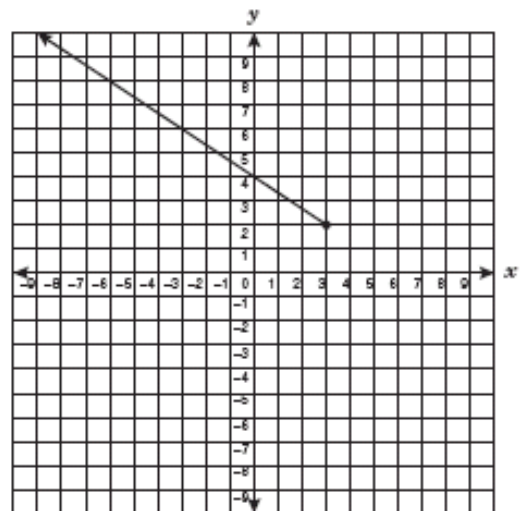
Domain: _____

Range: _____

14.   What is the domain and range of the function represented by this graph? *(A.2.B)*
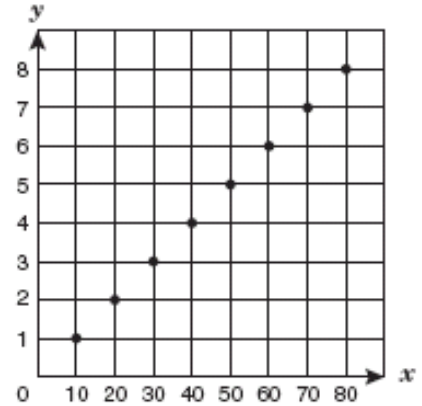
Domain: _____

Range: _____

15. Look at the graph below. Which is the best interpretation of this graph? *(A.2.C)*

A   Jorge earns $20 for each hour worked.
B   For every 10 pieces of candy Stacey buys, she pays $1.
C   For every 10 students at a dance, 2 teachers are needed as chaperones.
D   A runner runs at a constant rate of 2 miles every 30 minutes.

The energy output from a chemical reaction is dependent on the amount of chemicals used. The table shows this relationship. Use the table to answer questions 16 – 17.

16. What is a reasonable amount of energy output from the reaction of 32 moles of the chemicals? (A.2.D.)

Amount of Chemicals (moles)	Energy Output (joules)
5	20
8	32
12	48
15	60

**17.** What type of correlation does the data represent? *(A.2.D)*

18. Ben left from college to come home for spring break. The graph below shows a portion of Ben's journey from college to his home. If Ben made no additional stops for the remainder of the trip, about how many hours did it take Ben to travel from college to his home? *(A.2.D)*
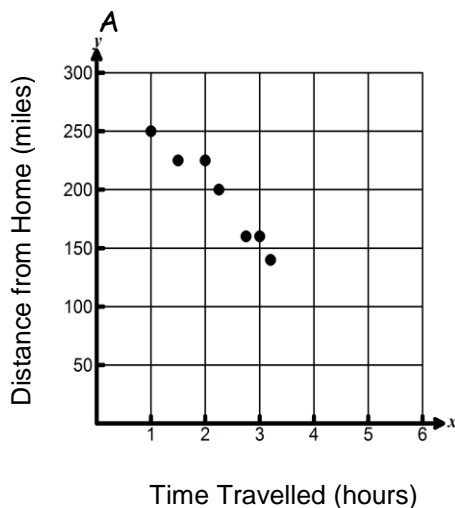
19. Write an algebraic expression that is equivalent to the phrase "5 less than the sum of x and y *is less than 5 more than x*"? (A.3.A)

20. The blocks below are arranged in sequence to show a pattern.

Write an expression that can be used to determine the number of blocks at Stage n? (A.3.B)

Stage 1   Stage 2   Stage 3   Stage 4
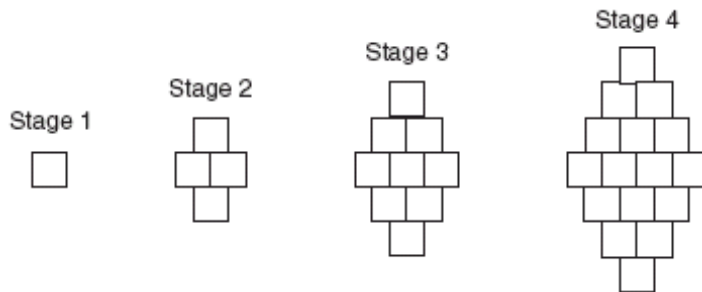
21. A function is described by the equation $y = 2x^2 - 5x - 3$, in which y is dependent on x. If a value for the independent variable is selected from the set $\{-4, -1, 0, 2, 5\}$, what would be the corresponding dependent values? (A.4.A)

22. If $(-3.5, y)$ is a solution to the equation $2x - 5y = 10$, what is the value of y? (A.4.A)

23. Simplify the algebraic expression $2(5x + 4) + 3x - (7 - x)$. (A.4.B)

24. Given the function $f(x) = 3x^2 - 7$, what is the value of $f(-2)$? *(A.4.C)*

25. Chanté bought a package of 36 tickets for carnival rides. Each ride requires 4 tickets per person. Write a linear function to represent the relationship between x, the number of carnival rides Chanté went on, and y, the number of tickets remaining? *(A.5.A)*

26. A math club decided to buy T-shirts for its members. A clothing company quoted the following prices for the T-shirts. What would be a reasonable domain and range for the relationship between the total cost, c, and the number of T-shirts, s? *(A.5.B)*
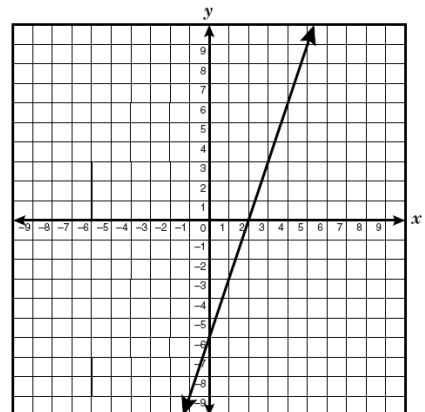
Domain: _____

Range: _____

Math Club T-Shirts

Number of T-Shirts	Total Cost (dollars)
10	75
15	105
20	135

27. What is the equation for the line graphed at right? *(A.5.C)*
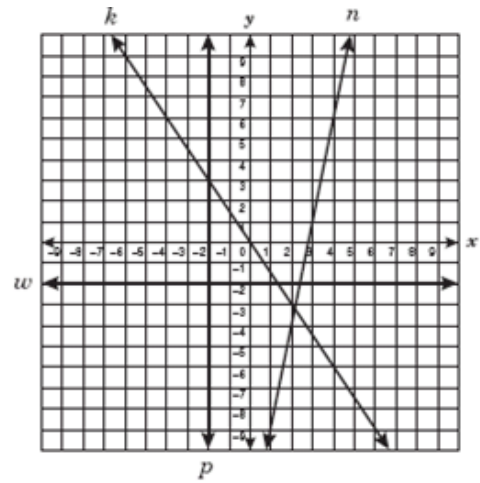
28. Which of the following is a correct description of the graph of the function $y = -2x - 7$? *(A.5.C)*

      I.   The slope of the line is -2
      II.   The line passes through the points (-2, -3) and (1, -9)
   III.   The line has a positive correlation

  A I only   **B** II and III only

  C I, II, and III   **D** I and II only

**29.** Which line appears to have a slope of zero? *(A.6.A)*

30. The cost of renting a car for 1 day at Cars Plus is $20 plus 10 cents per mile driven. The cost of renting a car for 1 day at Need-A-Car is $20 plus 15 cents per mile driven. In a graph of the cost of a car rental, what does the cost per mile driven represent? *(A.6.B)*

31. Some employees of Ace Corporation left their office building and drove separately on the same road to a convention. The graph shows the distance traveled by each employee after 5 hours of nonstop driving at 4 different speeds. Which employee drove at the slowest rate to the convention? *(A.6.B)*
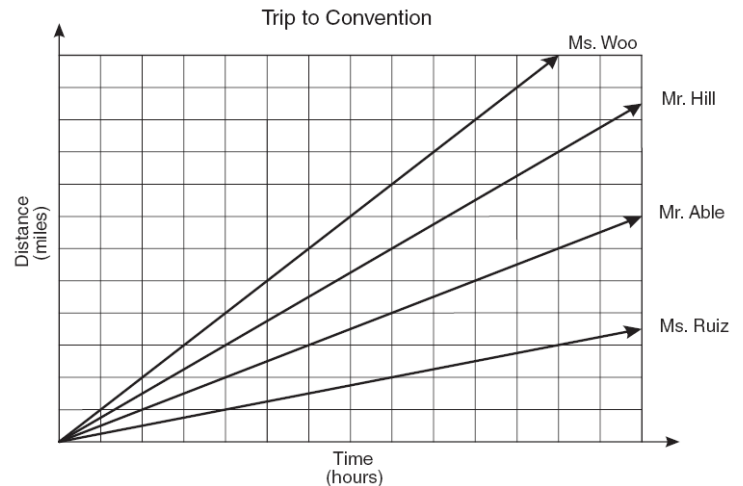
32. The graph shows the distance a certain motorbike can travel at a constant speed with respect to time. What is the slope representing this situation? *(A.6.B)*

Motorbike
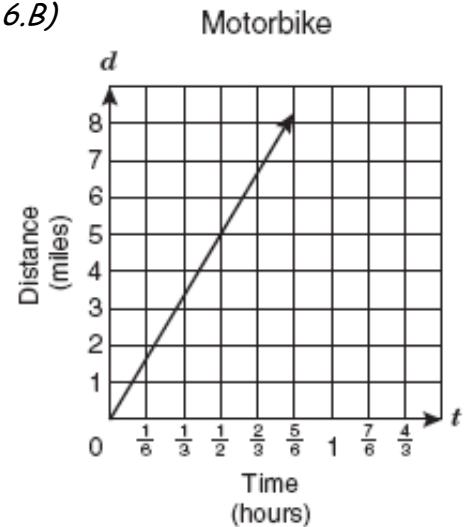
33. What will happen to the slope of line *p* if the line is shifted so that the *y*-intercept increases and the *x*-intercept remains the same? *(A.6.C)*
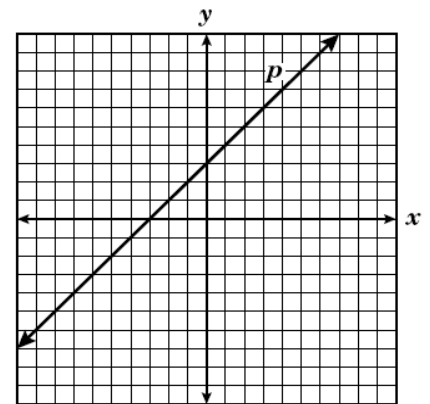
34. If the slope of the function $y = -3.5x + 12.8$ is changed to 1.5, which of the following best describes the graph of the new function? *(A.6.C)*

   I. The graph of the new function intercepts the *y*-axis at the same point as the original function.

   II. The graph of the new function intercepts the *x*-axis at the same point as the original function.

   III. The graph of the new function has a negative slope.

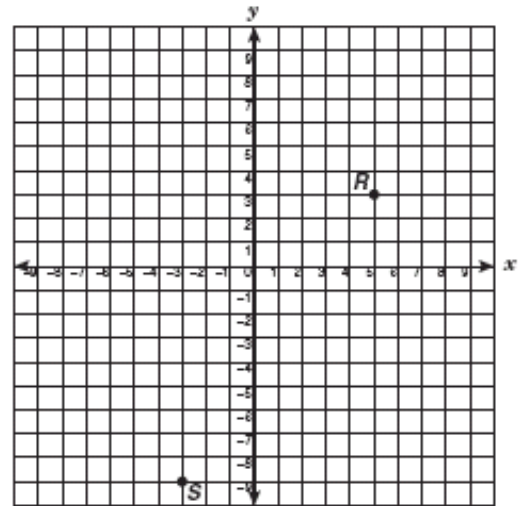   IV .The graph of the new function has a positive *x*-intercept.

A IV only

B II and IV only

C I and IV only

D II and III only

35. Write the linear equation that represents the line passing through points *R* and *S*? *(A.6.D)*

36. Write an equation that describes the line containing the points (0, 4) and (3, –2)? *(A.6.D)*

37. What is the *y*-intercept of the function $f(x) = 3(x - 2)$? *(A.6.E)*

38. Find the *x*- and *y*-intercepts of $-4x + 7y = -28$. *(A.6.E)*

x-intercept : _____

y-intercept : _____

39. Kirk repairs computers. He charges an hourly rate plus a base fee for his services. The table below shows the relationship between h, the number of hours of labor, and c, the total cost for Kirk's services. If Kirk decides to keep his base fee the same, how would his hourly rate change if the new total cost for 8 hours of work is $157? *(A.6.F)*

Hours, h	Total Cost, c
1	$57
2	$69
4	$93
6	$117

40. The amount an appliance repairman charges for each job is represented by the function $T = 25h + 50$, where h represents the number of hours he spent on the job and T represents the total amount he charges in dollars for the job. The repairman plans to change the amount he charges for each job. How would the rate change if the new total cost for 3 hours of work is $155? *(A.6.F)*

41. The amount of chlorine, y, needed for a swimming pool varies directly with the amount of water, x, needed to fill the pool. If 16 units of chlorine are needed for every 1250 gallons of water, write an equation to represent the direct variation? *(A.6.G)*

42. The amount of money Kate earns, A, varies directly with the number of cars she washes, c. Kate earned $120 for 12 cars she washed. If the amount Kate earns varies directly with the number of cars she washed, how much will she earn for 5 cars? *(A.6.G)*

43. A weather balloon is launched from a height of 475 feet above sea level. If the balloon rises at a constant rate of 85 feet per minute, write an equation that could be used to determine t, the time in minutes it will take the balloon to reach a height of 9245 feet above sea level? *(A.7.A)*

44. Brandon has a budget of $58 to spend on clothes. The shirts he wants to buy are on sale for $9 each, and the pair of pants he wants costs $21. All prices include tax. Write an inequality which could be used to determine s, the maximum number of shirts Brandon can buy if he also buys the pair of pants? *(A.7.A)*
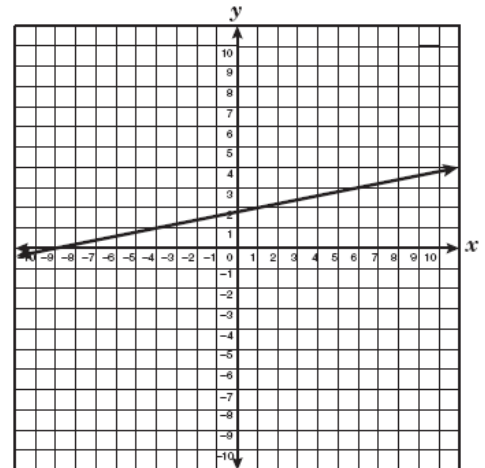
45. Use the grid to graph $y \geq x - 2$. Determine whether or not the coordinate point represents a solution of this inequality. *(A.7.B)*

I.   Point A (4, 0)   _____

II. Point B (-3, -5) _____

III. Point C (7, 9)   _____

IV. Point D (-2, 3) _____
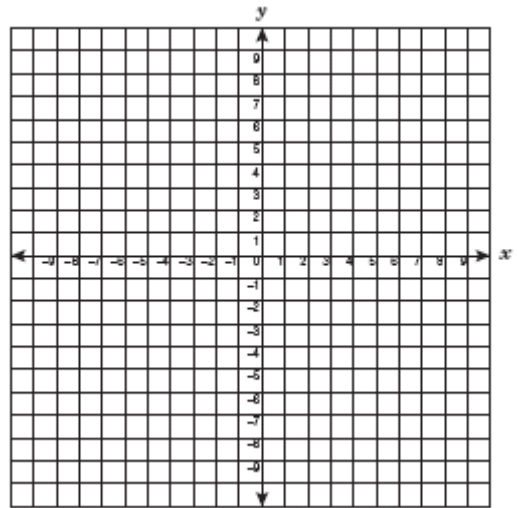
46. The graph of $-x + 5y = 9$ is shown below. Which point represents a solution to this equation? *(A.7.B)*

A   (0, 1)

B   (2, 1)

C   (1, 2)

D   (-7, 0)

47. What is the value of y if (3, y) is a solution to the equation $5x - 3y = 18$? *(A.7.B)*

48. A recycling center pays $0.35 per pound of glass that it receives. If students at Falcon High School want to raise $500 in a glass-recycling project, what is a reasonable number of pounds of glass they must collect? *(A.7.C)*

49. In 1998 the enrollment at a community college was approximately 2500 students. In 2002 the enrollment had increased to 3250 students. If the enrollment continues to increase at this rate, what is a reasonable projection of enrollment for 2010? *(A.7.C)*

50. Josh earns money by washing cars in his neighborhood. He spent $215 on supplies and charges $15 for each car washed. Josh's profit, p, can be represented by the function $p = 15n - 215$, where n represents the number of cars that Josh washes. What is the minimum number of cars Josh must wash to make a profit? *(A.7.C)*