Algebra I Fall Final Exam Review – 2012   NAME_____

- *The review is <u>due on the day of the final exam</u>.*
- *Review will not be graded unless answers are written on separate paper with answers circled. <u>Review MUST be legible (I can read it and easily find your answers)You must show all work.</u>*
- ★ *In order to be eligible to retest the final exam, this review must be complete, accurate, and turned in as per instructions*
- *Final Exam: Calculator section:40 multiple choice; Non-Calculator: 11 graphs*

1. A taxi company charges a $4.00 fee plus an additional $2.10 per mile traveled. The function $f(x) = 2.1x + 4$ represents this relation. If the taxi fee increases to $4.25, what characteristic of the graph of this relationship would increase?

    Ans_____

2. A graph shows the amount of money in a savings account over a 10-year period of time. What is the dependent variable?

    Ans_____

3. A function is described by the equation $f(x) = x^2 - 3$. The replacement set for the independent variable is {1, 3, 5, 7}. Which of the following is contained in the corresponding set for the dependent variable?

    F -6

    G -3

    H 25

    J 46

4. Renee owns a yogurt shop. The amount a customer pays for a yogurt cone depends on the number of scoops of yogurt. Renee sells two scoops for $2.75. What is the independent variable?

    Ans_____

5. Mitch's Motors charges Mr. Williams $219 for an automotive part plus $52 per hour for labor. The total charge was $388. For how long did the mechanic work to install the part in Mr. William's car?

    Ans: _____

6. The area of a triangle is given by the function $A = \frac{1}{2}bh$. Which statement about this relationship is true?

    A The area of the triangle depends on the product of the length of the base and one-half.

    B The area of the triangle depends on the product of one-half the length of the base times the height.

    C The area of the triangle depends on the product of the height and one-half.

    D The area of the triangle depends on only the length of the base.

7. The following data set was generated by adding 1 to the product of x and what factor?

x	y
−10	−1
−5	0
0	1
5	2

    A 5

    B $\frac{1}{2}$

    C $\frac{1}{5}$

    D $-\frac{1}{2}$

8. A store sells truffles in a box. An empty box weighs 4.2 ounces. Each truffle weighs at least 2.1 ounce. Which inequality best describes the total weight in ounces, w, of a box of truffles in terms of c, the number of truffles in the box?

    F $w \geq 2.1c - 4.2$

    G $w \geq 4.2c + 2.1$

    H $w \geq 2.1c + 4.2$

    J $w \geq 2.1c + 2.1$

9. To raise money, the school math team is selling wrapping paper and greeting cards. The team makes $2.00 on each roll of wrapping paper and $0.25 on each greeting card that they sell.

Write the equation that describes the total profit, **p,** that the math team will make for selling, **r,** rolls of wrapping paper and **c,** greeting cards.

Ans:_____

10. Which equation best describes the relationship between x and y in this table?

x	y
−4	−15
−2	−7
2	9
6	25

A $y = 4x - 1$

B $y = 4x + 1$

C $y = \frac{1}{4}x + 1$

D $y = \frac{1}{4}x - 1$

11. Students in a math class recorded how much various weights stretched a slinky. The results are shown in the table below.

Length of Slinky

Distance Stretched (mm)	Weight on the Slinky (grams)
0	0
1	3
3	9
5	15
7	21
9	27

Which equation best represents the relationship between the distance stretched, x, and the weight on the slinky, y?

F $y = 3x$

G $y = -3x$
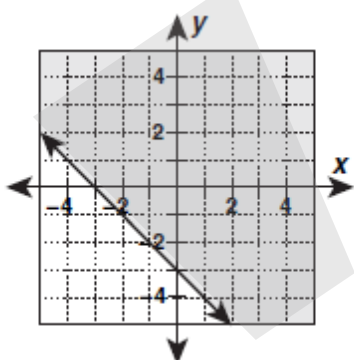
H $y = 3x^2$

J $y = \frac{3}{x}$

12. What is the range of the function $f(x) = 4x - 1$ if the domain is $\{-3, 0, 4\}$?

A $\{-13, 1, -15\}$

B $\{11, -1, 15\}$
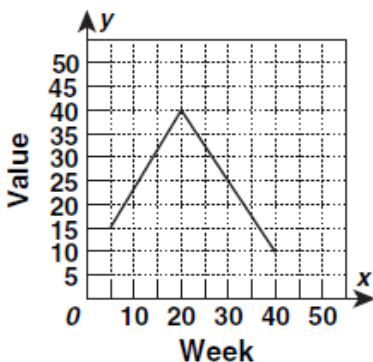
C $\{-3, 0, 4\}$

D $\{-13, -1, 15\}$

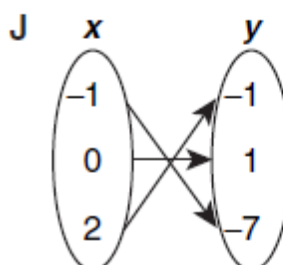**13.** Write an inequality that describes the graph shown below.

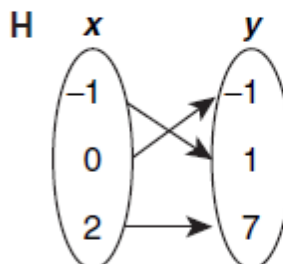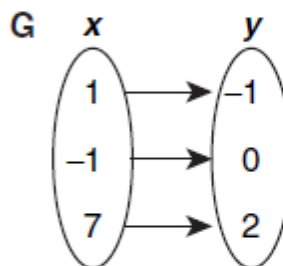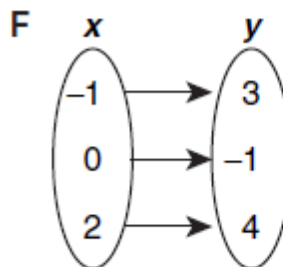No Calculator

Ans:_____

14. The value of a stock is graphed below. What is the domain of the function?

Assume end point are dots.

Ans: {   }

15. Which mapping best represents the function $y = 2x^2 - 1$ when the replacement set for x is $\{-1, 0, 2\}$?

F   x   y

G   x   y

H   x   y

J   x   y

16. What is the range of the function shown in the table?

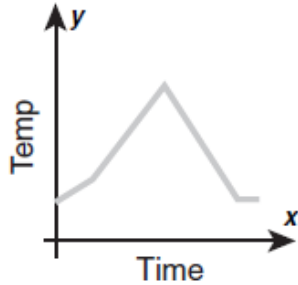| x	−3	0	1	3
f(x)	4	1	1.5	4

Ans: {   }

17. What is the range of the function $f(x) = 3x^2 + 2$ if the domain is $\{-3, 0, 4\}$?

Ans: {   }

18. The graph shown best represents which of the following relationships between temperature and time?

F Oven temperature while cookies are baking.

G Temperature of a person warming up, exercising, and cooling down.

H Temperature of a greenhouse on a rainy summer day.

J Temperature of a car parked in a garage.

19. Predict which of the following points is NOT part of the solution set of the function graphed below.

No Calculator
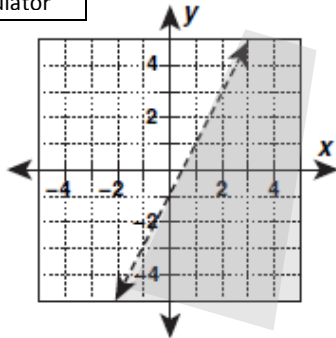
F (7, 0)

G (−4, 5)

H (−3, −10)

J (12, −3)

20. Eric's football team scored x points; Jason's team scored six more points than Eric's. Which equation best represents the total number of points scored by both teams?

A $P = x + (x + 6)$

B $P = x + 6$

C $P = x + 6x$

D $P = 7x$

21. The cost of renting a jet ski at the Wave Shop is described by the function $f(x) = 15x + 6$, where $f(x)$ is the cost and x is the time in hours. If Meredith has $100 to spend, what is the maximum number of hours that she can rent a jet ski, if tax is not applied?

Ans_____

22. Which equation is the parent function of the graph represented below?
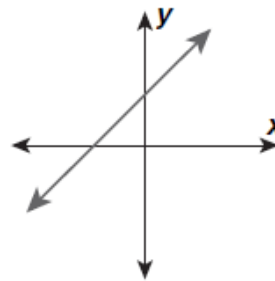
A $y = |x|$

B $y = x$

C $y = x^2$

D $y = \sqrt{x}$

**23.** What is the value of $-2x^3 + 5x - 7$ when $x = -3$?

x=_____

24. When the expression
$-2x^2 + 5x - 3 - (-7 - 9x + 5x^2)$
is simplified, what is the coefficient on the **x-term?**

ANS:_____

25.
The perimeter of a rectangle with a length of x feet and a width of y feet cannot exceed 500 feet. Which is NOT a restriction on the domain of the function?

F $x > 0$

G $x < 500$

H $x > 500 - y$

J $x \leq 250 - y$

26. Which of the following relationships has a positive correlation?

F The number of data files stored on a CD and the amount of space left on the CD.

G Your height in inches and the last digit of your phone number.

H The amount of time you exercise and the amount of Calories you burn.

J The amount of time studying during study hall and the number of mistakes made on a test.

27.
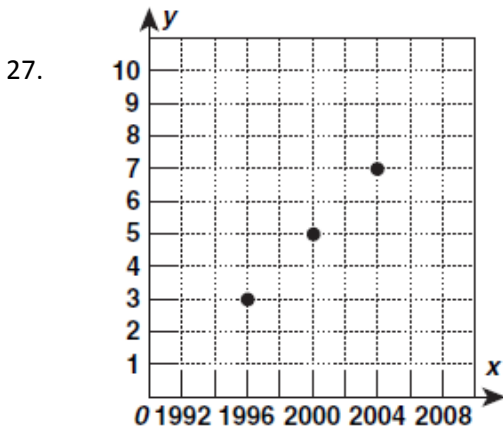
Which set of data is correctly displayed by the scatter plot?

F 1996, 2; 2000, 5; 2008, 8

G 1992, 4; 2000, 6; 2004, 9

H 1996, 3; 2006, 5; 2006, 7

J 1996, 3; 2000, 5; 2004, 7

28. The coaches of a group of recreational softball teams answered a survey about the hours of team practice and the number of team wins. The scatter plot shows the results of this survey.
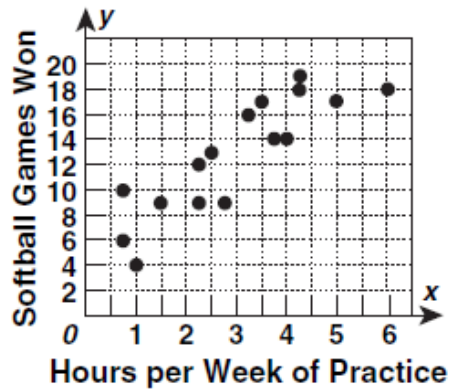
Based on these results, if a softball team practices 4 hours per week, which is the best estimate of the number of wins the team can expect to make?

F 10

G 12

H 15

J 20

**29.** The squares below show a pattern.

Which expression can be used to determine the number of squares at stage n?

F $5n - 3$

G $4n - 2$

H $2n^2$

J $n^2 + n$

30. The Appliance Center is deciding whether to increase the commission that sales people make selling appliances. The graph shows the current relationship between the sales and total earnings for a salesperson. Which statement is true based on the graph?
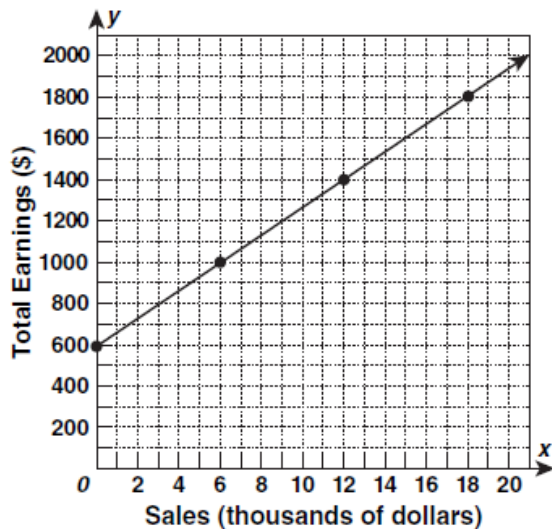
A Mr. Nicholas will earn $600 if he sells $4000 worth of appliances.

B Mrs. Nagel will not earn any money if she does not sell any appliances.

C Mr. Lancaster will earn $1400 if he sells $12,000 worth of appliances.

D Ms. Westin will earn $1800 if she sells $20,000 worth of appliances.

31. Simplify: $2(3n - 4m - 7n)$.

ANS:_____

32. When $-5(2x^2 - 4x - 12)$ is simplified, what is the value of the constant term?

ANS:_____

33. A soccer team determines that it needs at least 30 points for the season in order to advance to the playoffs. A win, y, is worth 2 points and a tie, x, is worth one point.

Write an inequality to describe this situation. Graph the inequality showing the x- and y-intercepts.

Ans_____

34. Martha is choosing between two cell phone providers, Space Plus and Always On. The graph shows the relationship between the total cost per month of each cell phone provider and the minutes of service used.
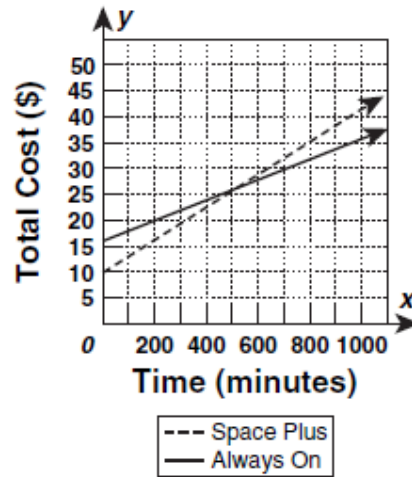
According to the graph, which of these statements is true?

F Always On would cost less than Space Plus if Martha used her cell phone less than 500 minutes per month.

G Space Plus would cost less than Always On if Martha used her cell phone less than 500 minutes per month.

H Always On would cost less than Space Plus if Martha used her cell phone for exactly 500 minutes per month.

J Space Plus would cost less than Always On if Martha used her cell phone more than 500 minutes per month.

35. The statement *five increased by the square of x is equal to 28* translates to which equation?

A $(5 + x)^2 = 28$

B $5 + x^2 = 28$

C $5^2 + x^2 = 28$

D $x^2 - 5 = 28$

36. At a local department store, a certain sweater costs $34 and a certain pair of socks costs $9. Uma buys 3 sweaters and 4 pairs of socks. What is her total cost?

ANS:_____(units!)

37. If $s = 9$ and $t = -2$, find r given that $r = 2(-2s + 4t)$.

ANS:_____

38. Which function is equivalent to $y = -6 + 3x$?

F $f(x) = -2x - 4 + x$

G $f(x) = -2x - 5 + 5x - 1$

H $f(x) = 3x$

J $f(x) = -2x - 6$

39. Which table represents a linear function?

F

x	-2	4	6	8
y	-3	9	13	17

G

x	-2	4	6	8
y	4	16	36	64

H

x	-2	4	6	8
y	8	0	8	0

J

x	2	4	9	16
y	1	2	3	4

40. Translate to an equation: Three times a number decreased by 2 is 10.

ANS: _____

41. What is the slope of the line $y = \frac{1}{3}x + 4$?

m=_____

42. Identify the linear statements by marking with an **L**.
Identify non-linear statements by marking with an **N.**

_____ The height of a person jumping on a trampoline.

_____ The price for x pounds of cheese at $6.99 per pound.

_____ The length of songs on a CD.

_____ The water level of a swimming pool as it is being filled with water for 20 minutes, then stopped and filled for another 20 minutes.

_____ The price for y pounds of strawberries at $2.99 per pound.

_____ The amount of water being drained from a reservoir at a rate of 200 gallons per minute.

_____ The number of fruit flies in an experiment that is tripling every 6 minutes.

43. Which point on the grid would be part of the domain and range of the function $y = -x + 7$?
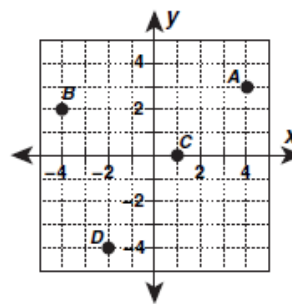
Ans:_____

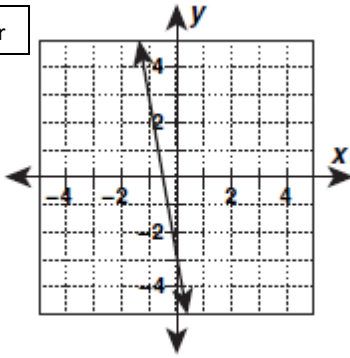44. Determine the slope of the line passing through the points listed in the table.

x	0	1	2	3
y	12	10	8	6

m=_____

45. Write the equation of a line as seen in the graph:

ANS: _____

No Calculator

46. Find the slope of the line identified by the equation $6x + 9y = 18$.

m=_____

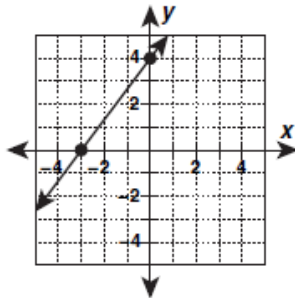47. Which equation has an x-intercept of $(3, 0)$ and a y-intercept of $(0, -2)$?

F $-2x - 3y = 6$

G $2x - 3y = 6$

H $2x + 3y = 6$

J $2x - 3y = -6$

48. What does the slope of the line shown indicate?

A For every rise of 3, there is a run of 4.

B As the x-value increases by 3 units, the y-value increases by 4 units.

C The line crosses the y-axis at $\frac{4}{3}$.

D The line crosses the x-axis at $\frac{4}{3}$.

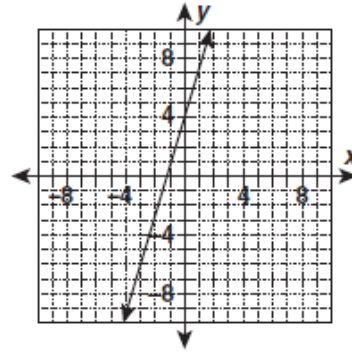49. Which of the following equations has the slope with the greatest absolute value?

A $y = 3x - 5$

B $x = 9y + 45$

C $9y = 3x - 5$

D $9y + 45x = 5$

50. The graph of a line is shown below.

If the slope of this line is multiplied by -1 and the y-intercept decreases by 2 units, which linear equation would represent these changes?

A $y = -x + 2$

B $y = \frac{1}{3}x + 2$

C $y = -3x + 2$

D $y = -x - 2$

51. Which linear function includes the points $(3, 9)$ and $(-2, -11)$?

A $y = 4x - 3$

B $y = 4x - 2$

C $y = \frac{1}{4}x + 2$

D $y = -4x + 3$

52. Write an equation of a line that contains the points (0, 3) and (4, -5).

53. What is the equation of a line that has slope 3 and y-intercept (0, 2)?

54. What is the equation of the line that passes through the point $(-6, 2)$ with a slope of $-\frac{2}{3}$?

55. What is the y-intercept of the function $f(x) = 2(x - 5)$?

56. What are the coordinates of the *x*-intercept of the line represented by the equation $6x + 4y = 12$?

57. A video rental company charges a membership fee of $5 per year plus $4 for each movie rented. If the slope of the function were to increase, what does that mean about the price that the rental company charges?

F They raised their yearly membership fee.

G They lowered the cost for each movie rental.

H They raised the cost for each movie rental.

J They lowered their yearly membership fee.

58. When $x = 44$, $y = 246.4$. If *y* varies directly with *x*, what is *y* when *x* equals 1?

ANS: _____

59. Is the data shown in the table direct variation? If so, then write the direct variation equation. If NOT, explain why it is not a direct variation.

(a)

x	11	59	144	268
y	33	77	121	165

ANS: _____

(b).

x	0	1	2	3	4
y	0	350	700	1050	1400

ANS: _____

60. The number of bushels of corn per acre in the United States varies directly as the number of acres of corn planted. If an average of 20 acres yields 1150 bushels of corn, about how many bushels of corn are yielded each year by 72.5 acres?

ANS: _____

61. In order to collect a bonus, Andrew must sell at least 150 cars during a month. In the third week of the month, Andrew started with a total of 95 car sales and sold 12 more cars during that week. Which inequality describes how many cars *C* Andrew must sell during the last week of the month to earn his bonus?

A $C + 83 \geq 150$

B $C + 107 \leq 150$

C $C - 107 \leq 150$

D $C + 107 \geq 150$

62. Madison is in charge of buying pizzas for the gymnastic meet. She collected $60 from the parents, and pizzas cost $7.50 each. What is the greatest number of pizzas she can buy?

63. If $(x, -6)$ is a solution to the equation $7x - 2y = 33$, what is the value of *x*?

64. Which property do you use to isolate *x* in the inequality $x - 2 < -\frac{11}{8}$?

65. What is the value of *y* if $(4, y)$ is a solution to the equation $5x - 8y = -20$?

NON – CALCULATOR SECTION

GRAPH THE FOLLOWING:

1. $y = -\frac{1}{4}x + 5$

2. $3x - 7y = 35$

3. $\begin{cases} x + 3y = 15 \\ 2x - 3y = -6 \end{cases}$ identify the solution as an (x, y) ordered pair.

4. Completely describe the transformation: f(x) to g(x)

$f(x) = -\frac{1}{4}x + 5$

$g(x) = 3x - 3$

graph:

5. $2x - 4y < 16$

6. $y \geq -\frac{2}{3}x - 3$