

Name _____

8A; Algebra 1

Date _____

Period _____

Regents Review
Take Home Review Quiz #1

****Show ALL work on exam where possible to receive full credit****

Due: _____

#'s 1-24: Write the number on the line. **2 points each.**

#'s 25-30: Leave all work on exam. **2 points each.**

#'s 31-34: Leave all work on exam. **4 points each.**

#35 Leave work on exam. **6 points**

*****Out of 82 points just like the regents*****

1) _____

11) _____

21) _____

2) _____

12) _____

22) _____

3) _____

13) _____

23) _____

4) _____

14) _____

24) _____

5) _____

15) _____

25-35: Leave on exam

6) _____

16) _____

7) _____

17) _____

8) _____

18) _____

9) _____

19) _____

10) _____

20) _____

Reference Sheet for Algebra I (NGLS)

Conversions

1 mile = 5280 feet
 1 mile = 1760 yards
 1 pound = 16 ounces
 1 ton = 2000 pounds

Conversions Across Measurement Systems

1 inch = 2.54 centimeters
 1 meter = 39.37 inches
 1 mile = 1.609 kilometers
 1 kilometer = 0.6214 mile
 1 pound = 0.454 kilogram
 1 kilogram = 2.2 pounds

Quadratic Equation	$y = ax^2 + bx + c$
Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Equation of the Axis of Symmetry	$x = -\frac{b}{2a}$
Slope	$m = \frac{y_2 - y_1}{x_2 - x_1}$
Linear Equation Slope Intercept	$y = mx + b$
Linear Equation Point Slope	$y - y_1 = m(x - x_1)$

Exponential Equation	$y = ab^x$
Annual Compound Interest	$A = P(1 + r)^n$
Arithmetic Sequence	$a_n = a_1 + d(n - 1)$
Geometric Sequence	$a_n = a_1 r^{n-1}$
Interquartile Range (IQR)	$IQR = Q_3 - Q_1$
Outlier	Lower Outlier Boundary = $Q_1 - 1.5(IQR)$
	Upper Outlier Boundary = $Q_3 + 1.5(IQR)$

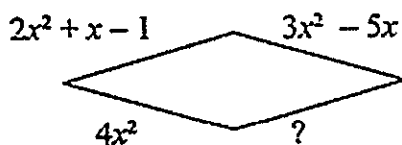
1. What are the values of x in the equation $x(x - 6) = 4(x + 6)$?
 (1) $\{-6, 6\}$ (2) $\{-12, 2\}$ (3) $\{-2, 12\}$ (4) $\{-6, 0, 6\}$ 1 _____

2. Which of ordered pairs is *not* a function?
 (1) $\{(0, 9), (9, 0), (1, 2), (3, 4)\}$ (3) $\{(2, 3), (3, 4), (4, 5), (5, 6)\}$
 (2) $\{(0, 1), (-1, 0), (1, 2), (3, 2)\}$ (4) $\{(2, 3), (2, 4), (4, 5), (4, 6)\}$ 2 _____

3. If $f(x) = |3x - 4| + 2$, find $f(-10)$.
 (1) 28 (2) 34 (3) 36 (4) 38 3 _____

4. What is the value of the 1st quartile in the data set below?
 Scores on a math quiz: 65, 90, 100, 72, 88, 55, 73
 (1) 65 (2) 73 (3) 90 (4) 55 4 _____

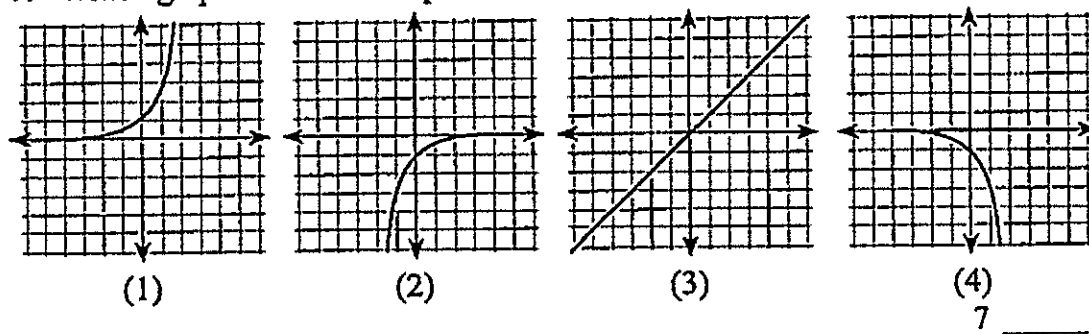
5. What is the length of the missing side of the quadrilateral shown if the perimeter is $5x^2 + 2x + 1$?



(1) $4x^2 - 6x + 2$ (3) $-4x^2 + 8x + 4$
 (2) $-4x^2 + 6x + 2$ (4) $4x^2 + 8x - 4$ 5 _____

6. What is the product of $(x + 1)$ and $(2x^2 + 3x - 1)$?
 (1) $2x^2 + 5x^2 - x - 1$ (3) $2x^3 + 3x^2 + 3x + 1$
 (2) $2x^3 + 5x^2 + 2x - 1$ (4) $2x^3 + 3x^2 - 3x - 1$ 6 _____

7. Which graph is a correct representation of the function $f(x) = 3^x$?



8. The formula for the volume of a cone is $V = \frac{1}{3}\pi r^2 h$. The radius, r , of the cone may be expressed as
 (1) $\sqrt{\frac{3V}{\pi h}}$ (2) $\sqrt{\frac{V}{3\pi h}}$ (3) $3\sqrt{\frac{V}{\pi h}}$ (4) $\frac{1}{3}\sqrt{\frac{V}{\pi h}}$ 7 _____

(1) $\sqrt{\frac{3V}{\pi h}}$ (2) $\sqrt{\frac{V}{3\pi h}}$ (3) $3\sqrt{\frac{V}{\pi h}}$ (4) $\frac{1}{3}\sqrt{\frac{V}{\pi h}}$ 8 _____

9. How can $b^2 + 9b + 14$ be re-written?

- (1) $(b + 7)(b - 7)$ (3) $(b + 7)(b - 2)$
 (2) $(b - 7)(b - 2)$ (4) $(b + 7)(b + 2)$

9 _____

10. What is the sum of $3x\sqrt{5} + 2x\sqrt{5}$?

- (1) $5x\sqrt{5}$ (2) $5x^2\sqrt{5}$ (3) $5x\sqrt{14}$ (4) $5x^2\sqrt{14}$

10 _____

11. Using the equation $y = ax^2 + bx + c$ to represent a parabola on a graph, which statement is true?

- (1) If b is negative, the parabola opens downward.
 (2) If a is negative, the parabola opens upward.
 (3) If a is positive, the parabola opens upward.
 (4) If c is negative, the parabola opens downward.

11 _____

12. If the function $h(x)$ represents the number of full hours that it takes a person to assemble x sets of tires in a factory, which would be an appropriate domain for the function?

- (1) the set of real numbers (3) the set of integers
 (2) the set of negative integers (4) the set of non-negative integers

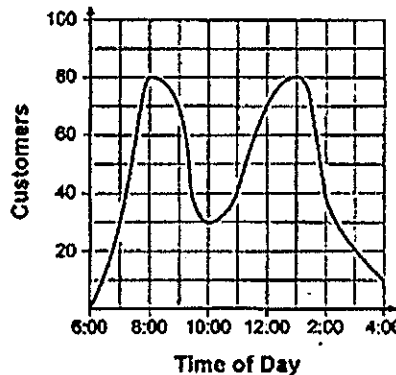
12 _____

13. A café owner tracks the number of customers during business hours.

The graph models the data.

Based on the graph, the café owner saw a continual

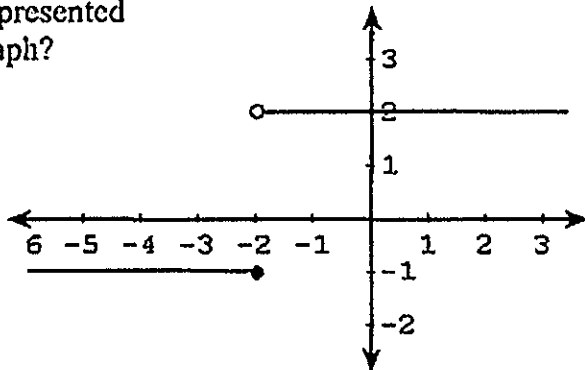
- (1) increase in customers from 6:00 to 11:00
 (2) increase in customers from 12:00 to 3:00
 (3) decrease in customers from 1:00 to 4:00
 (4) decrease in customers from 11:00 to 2:00



13 _____

14. Which equation is represented by the accompanying graph?

- (1) $y = \begin{cases} -1; x < -2 \\ 2; x > -2 \end{cases}$
 (2) $y = \begin{cases} -1; x \leq -2 \\ 2; x > -2 \end{cases}$
 (3) $y = \begin{cases} -1; x < -2 \\ 2; x \geq -2 \end{cases}$
 (4) $y = \begin{cases} -1; x \leq -2 \\ 2; x \geq -2 \end{cases}$



14 _____

15. Seven less than the product of twice a number is greater than 5 more than the same number. Which integer satisfies this inequality?

- (1) 1 (2) 2 (3) 12 (4) 13

15 _____

16. A mouse population starts with 2,000 mice and grows at a rate of 5% per year. The number of mice after t years can be modeled by the equation, $P(t) = 2000(1.05)^t$. What is the average rate of change in the number of mice between the second year and the fifth year, rounded to the nearest whole number?

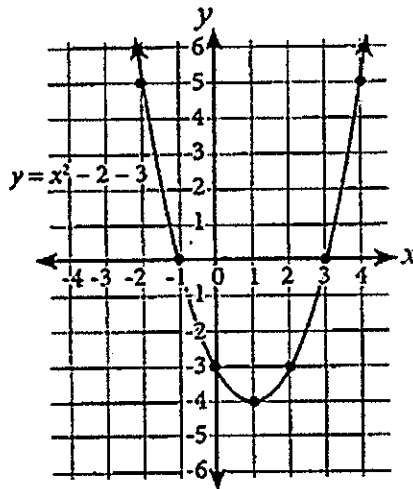
- (1) 116 (2) 348 (3) 2205 (4) 2553 16 _____

17. What is the value of x in the equation $\frac{5(2x-4)}{3} + 9 = 14$?

- (1) 1.9 (2) 3.5 (3) 5.3 (4) 8.9 17 _____

18. Which statement is true about the accompanying graph?

- (1) It is decreasing when $-1 < x < 3$ and positive when $x > 1$.
 (2) It is increasing when $x > 1$ and negative when $x < 0$.
 (3) It is increasing when $x > 1$ and negative when $-1 < x < 3$.
 (4) It is decreasing when $-1 < x < 3$ and positive when $x > 3$.



18 _____

19. The two-way table below represents the travel history of the seniors in the local Travel Club.

Travel Club History			
	Gender		Total
	Men	Women	
Aruba	14	19	33
Jamaica	17	18	35
Canada	32	22	54
Spain	4	11	15
Total	67	70	137

What is the percentage of the number of men and women that have traveled to Canada?

- (1) 16% (2) 23% (3) 39% (4) 42% 19 _____

20. What is the equation of the line with a slope of $-\frac{1}{2}$ that passes through the point (6, -6)?

- (1) $y = -\frac{1}{2}x - 3$ (2) $y = \frac{1}{2}x - 3$ (3) $y = -\frac{1}{2}x + 3$ (4) $y = -2x - 3$ 20 _____

21. Alex makes ceramic bowls to sell at a monthly craft fair in a nearby city. Every month, she spends \$50 on materials for the bowls from a local art store. At the fair, she sells each completed bowl for a total of \$25 including tax. Which equation expresses Alex's profit as a function of the number of bowls that she sells in one month?

- (1) $p(x) = 50x + 25$ (3) $p(x) = 25x$
 (2) $p(x) = 15x + 25$ (4) $p(x) = 25x - 50$ 21 _____

22. Which expression is equivalent to $x^4 - y^4$?

- (1) $(x^2 - y^2)(x^2 + y^2)$ (3) $(2x^2)^2 - (2y^2)^2$
 (2) $(x^2 - y^2)(x^2 - y^2)$ (4) $(x^2y^2) - (x^2y^2)$ 22 _____

23. A bottle rocket that was made in science class had a trajectory path that followed the quadratic equation $y = -x^2 + 4x + 6$. What is the vertex of the rocket's path?

- (1) (1, 5) (2) (2, 10) (3) (-2, -10) (4) (1, -5) 23 _____

24. What is the solution to this system of linear equations:

$$y - x = 4 \text{ and } y + 2x = 1?$$

- (1) (-1, 3) (2) (0, 4) (3) (1, -1) (4) (-3, 3) 24 _____

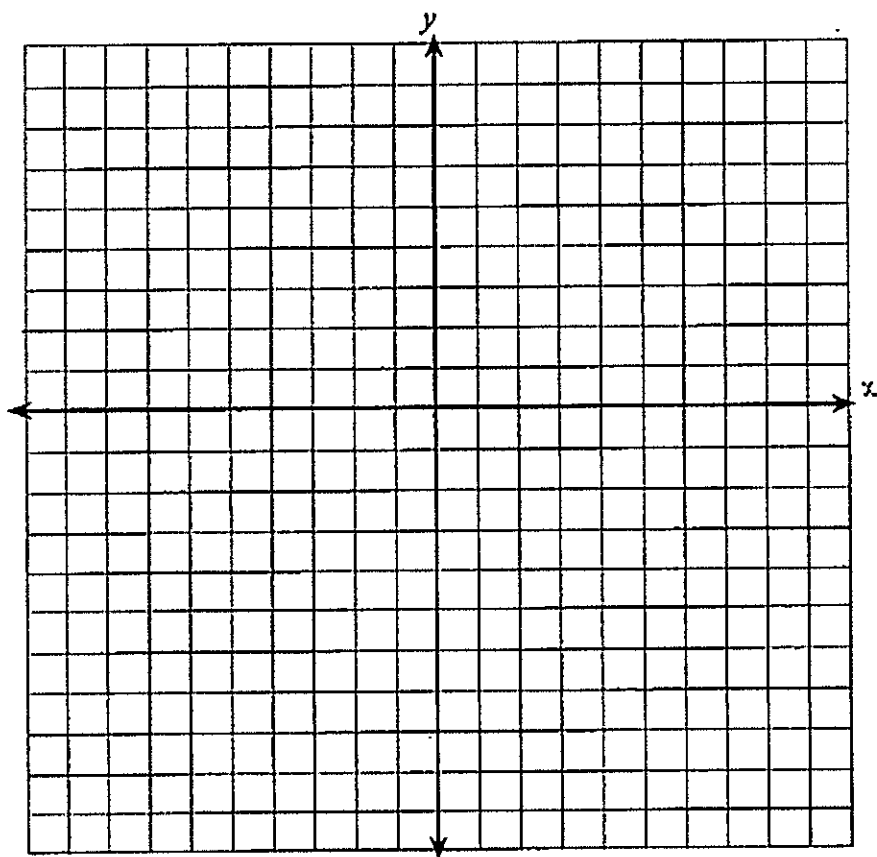
Remember to show as much work as possible to get full credit

25. The function shown to the right represents the amount of money in a savings account in Lender's Bank.

Week	Balance
1	\$128
2	\$142
3	\$156
4	\$170
5	\$184

Find the average rate of change of the domain for week 2 through week 5.

26. Graph $2x + y < 7$ and state one point in the solution set.



27. Solve for x : $2x^2 + 4x - 16 = 0$

28. Solve for x : $\frac{1}{2}x + 12 > 0.4x + 10$

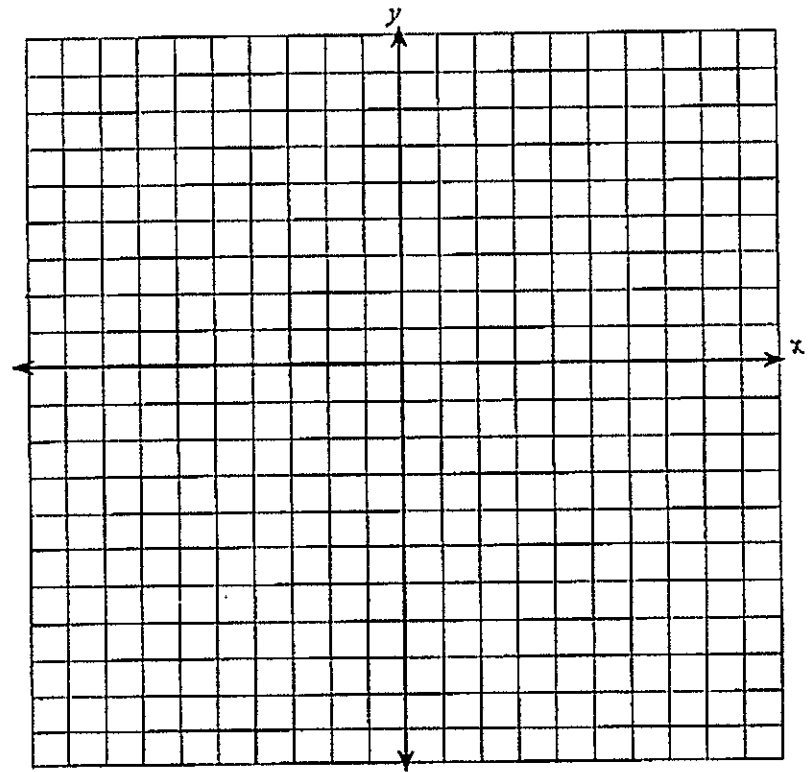
29. MaryJo decided to solve the equation $3x - 2 = -x - 6$ by entering each of the expressions into her graphing calculator. To solve the equation as a system, she entered $y_1 = 3x - 2$ and $y_2 = -x - 6$. When she used the calculator to find the intersection, she found $x = -1$ and $y = -5$. Show the work to check to see if MaryJo found the correct solution for x to the linear equation.

30. A company produces x units of a product per month, where $C(x)$ represents the total cost and $R(x)$ represents the total revenue for the month. The functions are modeled by $C(x) = 300x + 250$ and $R(x) = -0.5x^2 + 800x - 100$. The profit is the difference between revenue and cost where $P(x) = R(x) - C(x)$. What is the total profit, $P(x)$, for the month?

31. Find one point that lies in the solution set of the following system of inequalities:

$$y \geq x$$

$$y < -x - 2$$



Justify your answer.

32. Jonathan has been on a diet since January. So far, he has been losing weight at a steady rate. Based on monthly weigh-ins, his weight, w , can be modeled by the function $w = -3m + 205$ where m is the number of months after January.

How much did Jonathan weigh at the start of the diet?

How much weight has Jonathan been losing each month?

How many months did it take Jonathan to lose 45 pounds?

33. The final exam in an Algebra class of 15 students. The grades are:

65, 70, 78, 80, 83, 85, 85, 85, 85, 85, 87, 87, 87, 90, 90

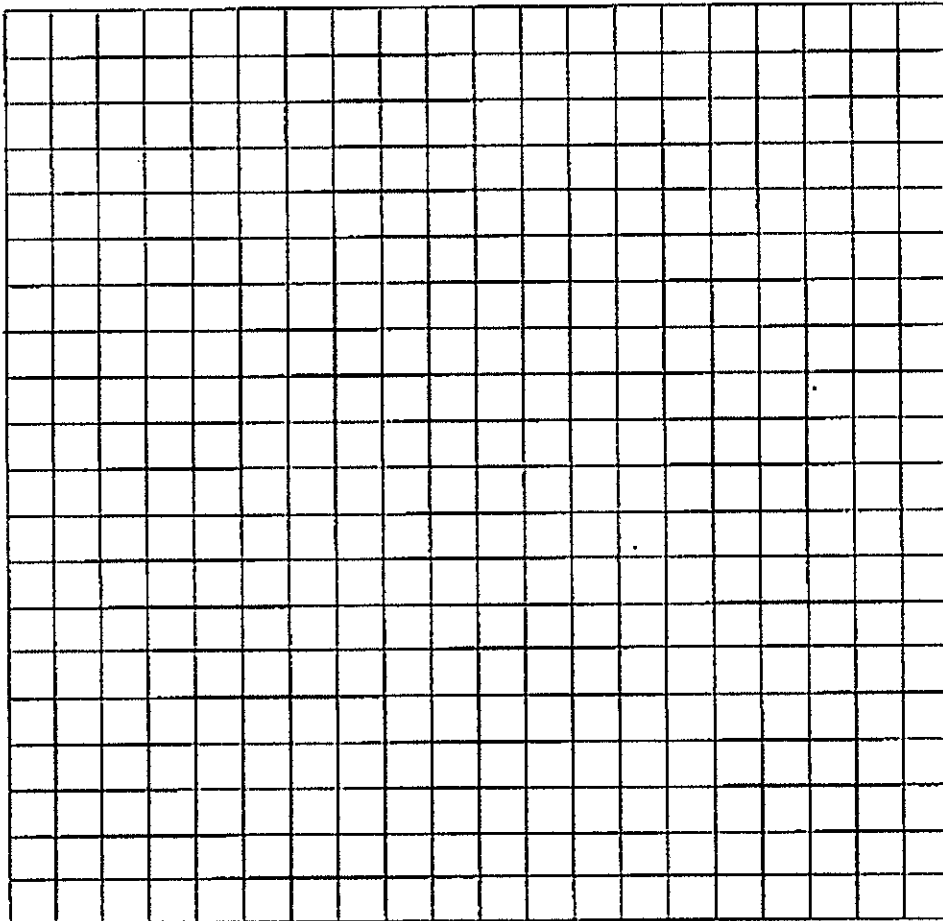
Create a dot plot for the final test scores.

What is the value of the lower and upper quartile?

What is the Interquartile Range (IQR) of the data?

34. Yolanda owns 4 rabbits. She expects the number of rabbits to double every year.

Write an equation and graph to model this situation.



After how many years will she have 64 rabbits?

35. Solve this system of equations graphically and check:

$$y = x + 4$$

$$y = -2x + 1$$

