

Name _____

8A; Algebra 1

Date _____

Period _____

Regents Review
Take Home Review Quiz #2

****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 is the sum of $4x\sqrt{5} + 3x\sqrt{5}$?

- (1) $7x^2\sqrt{5}$ (2) $7x^2\sqrt{10}$ (3) $7x^2\sqrt{10}$ (4) $7x\sqrt{5}$ 1 _____

2. What is the difference when $2x^3 + x - 5$ is subtracted from $6x^3 - x^2 + 4x + 8$?

- (1) $4x^3 - x^2 + 3x + 13$ (3) $8x^3 - x^2 + 5x + 3$
 (2) $4x^3 - x^2 - 3x - 13$ (4) $8x^3 + 3x + 3$ 2 _____

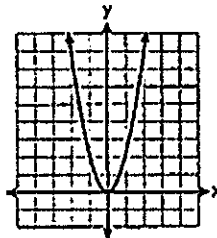
3. Which system of equations would have the same solution as the system:
 $x + y = 5$
 $3x + 2y = 10$

- (1) $3x + 2y = 5$ (3) $-3x - 3y = 5$
 $x + y = 10$ $3x + 2y = 10$
 (2) $-3x - 3y = -15$ (4) $2x + 2y = 5$
 $3x + 2y = 10$ $3x + 2y = 10$ 3 _____

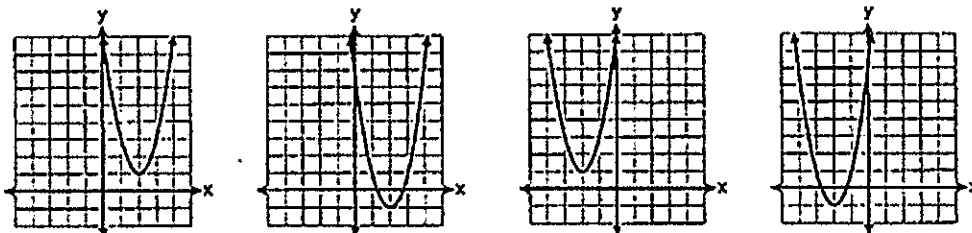
4. Which situation could be modeled with an exponential function?

- (1) the amount of money in a savings account where \$150 is deducted every month
 (2) the amount of money in Suzy's piggy bank which she adds \$10 to each week
 (3) the amount of money in a certificate of deposit that gets 4% interest each year
 (4) the amount of money in Jaclyn's wallet which increases and decreases by a different amount each week 4 _____

5. The graph of $y = f(x)$ is shown.

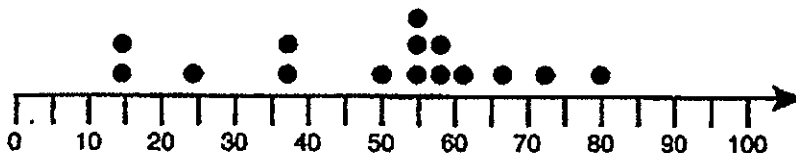


Which graph represents $y = f(x - 2) + 1$?



- (1) (2) (3) (4) 5 _____

6. In the dot plot below, what is the value of the median?

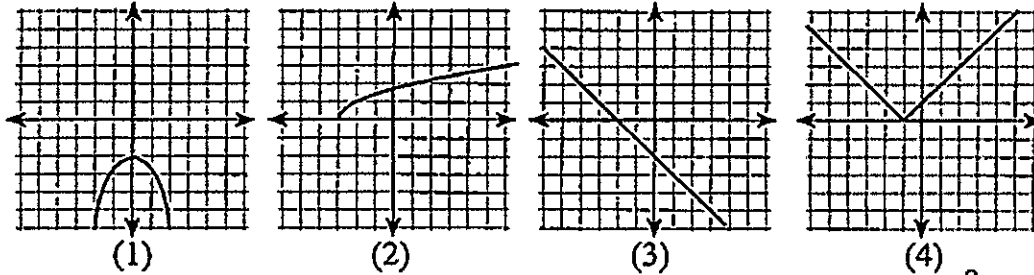


- (1) 25 (2) 55 (3) 58 (4) 60 6 _____

7. Dale is trying to find the height of a triangular wall. The formula for the area of a triangle is $A = \frac{1}{2}bh$. He already knows the area and the base measurement of the wall. Which is the equation of the area of a triangle, written in terms of the *height*?

- (1) $h = \frac{2A}{b}$ (2) $h = 2Ab$ (3) $h = \frac{b}{2A}$ (4) $h = \frac{1}{2}bA$ 7 _____

8. Which graph displays a square root function?



8 _____

9. If the function $f(x)$ represents the number of words that Janet can type in x minutes, what is the possible domain for the function?

- (1) The set of integers (3) The set of non-negative integers
 (2) The set of real numbers (4) The set of irrational numbers 9 _____

10. Which function models the relationship shown in the table?

- (1) $f(x) = \frac{100}{x}$ (3) $f(x) = 50(2)^x$
 (2) $f(x) = 100\left(\frac{1}{2}\right)^x$ (4) $f(x) = 200\left(\frac{1}{2}\right)^x$

x	$f(x)$
1	100
2	50
3	25
4	12.5
5	6.25

10 _____

11. Which best describes a causal relationship?

- (1) one variable takes place at the same time as another
 (2) one variable is causing change in another
 (3) one variable has a relationship with another
 (4) one variable increases the possibility of another occurring 11 _____

12. Which is the equation of a line with a slope of -2 that passes through the point $(-2, 0)$?

- (1) $y + 2x = -4$ (2) $y - 2x = 4$ (3) $y + 2 = -2x$ (4) $y - 4x = 2$ 12 _____

13. The two-way table below represents the plans for seniors at Grant High School following graduation.

	Gender		Total
	Boys	Girls	
2-year college	36	28	64
4-year college	52	67	119
military	12	5	17
career	29	13	42
undecided	7	16	23
Total	136	129	265

What is the percentage of the number of girls planning to attend a 4-year college?

- (1) 11% (2) 14% (3) 20% (4) 25% 13 _____

14. The length of a rectangular flat-screen television is six inches less than twice its width, x . If the area of the television screen is 1100 square inches, which equation can be used to determine the width, in inches?

- (1) $x(2x - 6) = 1100$ (3) $2x + 2(2x - 6) = 1100$
 (2) $x(6 - 2x) = 1100$ (4) $2x + 2(6 - 2x) = 1100$ 14 _____

15. Which rule describes the relationship between x and y in the accompanying table?

- (1) $y = |-3x|$ (3) $y = |x| - 3$
 (2) $y = |x - 3|$ (4) $y = |x| + 3$

x	y
0	-3
-1	-2
-2	-1
-3	0

15 _____

16. Which function described below is quadratic?

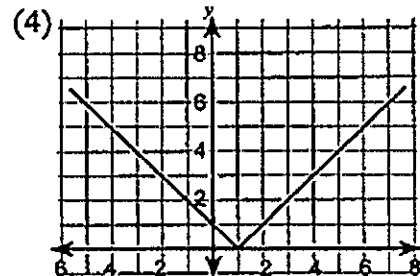
(1) $y = 2x$

(2)

x	y
-3	3
-2	2
-1	1
0	0
1	-1

(3)

x	y
-3	8
-2	3
-1	0
0	-1
1	0



16 _____

17. Which statement below is true about linear functions?

- (1) Linear functions grow by equal factors over equal intervals.
 (2) Linear functions grow by equal differences over equal intervals.
 (3) Linear functions grow by equal differences over unequal intervals.
 (4) Linear functions grow by unequal factors over equal intervals. 17 _____

18. Labor at the car repair shop can be represented by the function:

$$\text{Total charge for repairs} \begin{cases} 150, & 0 < h \leq 1 \\ 150 + 80(h - 1), & h > 1 \end{cases}$$

If h represents the number of hours worked, what is the charge for a 3-hour car repair?

- (1) \$150 (2) \$230 (3) \$310 (4) \$390 18 _____

19. If $g(x) = x^2 + 3x$, what is the value of $g(-3)$.

- (1) 0 (2) 3 (3) 18 (4) 21 19 _____

20. The height of a ball above the ground in feet is defined by the function $h(t) = -16t^2 + 80t + 3$ where t is the number of seconds after the ball is thrown. What is the value of $h(t)$, two seconds after the ball is thrown?

- (1) 80 feet (2) 99 feet (3) 103 feet (4) 200 feet 20 _____

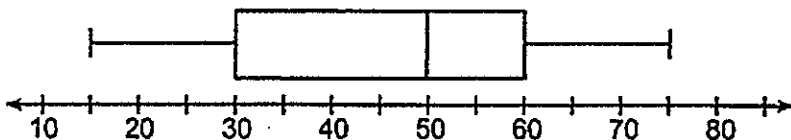
21. Which function below will result in a downward vertical shift of the graph of the parent function: $y = x^2$?

- (1) $y = \frac{1}{2}x^2$ (2) $y = 2x^2$ (3) $y = x^2 + 2$ (4) $y = x^2 - 1$ 21 _____

22. Which set of data of temperatures has the largest dispersion as measured by its interquartile range?

- (1) 15, 17, 19, 21, 21, 22, 28 (3) 10, 19, 22, 23, 23, 29, 44
 (2) 21, 23, 36, 37, 44, 48, 50 (4) 42, 47, 49, 50, 52, 59, 60 22 _____

23. A box plot is shown below.



Which number represents the third quartile?

- (1) 30 (2) 50 (3) 60 (4) 75 23 _____

24. Which point is in the solution set to the system of inequalities: $y > 2x - 1$ and $y \leq \frac{1}{2}x + 5$?

- (1) (-3, 10) (2) (8, 2) (3) (-2, 1) (4) (4, 1) 24 _____

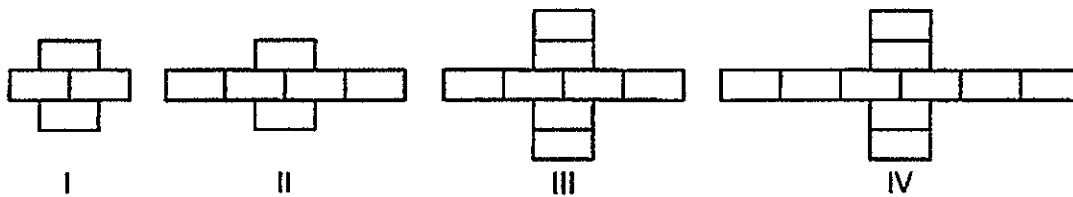
Remember to show as much work as possible to get full credit

25. Given the formula: $d = \left(\frac{v_i + v_f}{2} \right)$ Solve for v_f .

26.

Rhonda deposited \$3000 in an account in the Merrick National Bank, earning 4.2% interest, compounded annually. She made no deposits or withdrawals. Write an equation that can be used to find B , her account balance after t years.

27. Breanna creates the pattern of blocks below in her art class.



A friend tells her that the number of blocks in the pattern is increasing exponentially. Is her friend correct?

Explain your reasoning.

28. Find the area of the rectangle with a length of $(x^2 - 2)$ and a width of $(2x^2 - x + 2)$. Write your answer in simplest form.

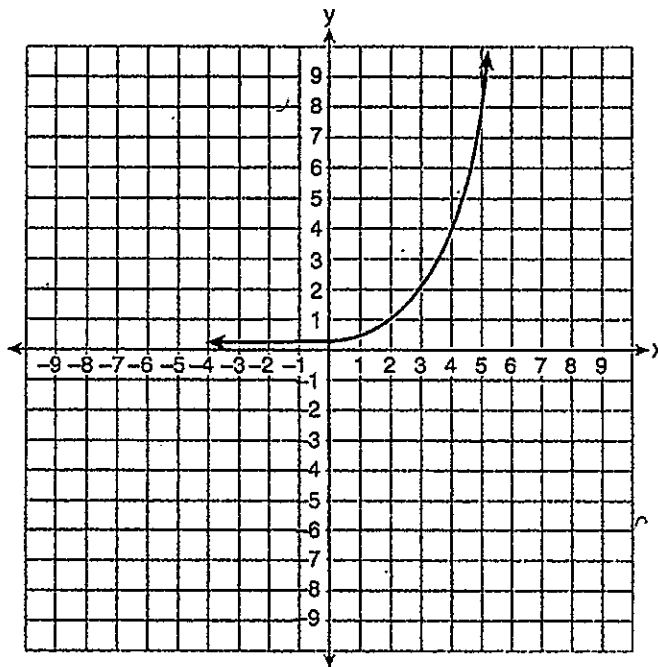
29. a)

If $g(x) = f(x) - 2$, how is the graph of $f(x)$ translated to form the graph of $g(x)$?

b)

If $h(x) = f(x - 4)$, how is the graph of $f(x)$ translated to form the graph of $h(x)$?

30. Create a table that represents the following exponential function. Then, use your calculator to find its equation.



31.

Jacob and Zachary go to the movie theater and purchase refreshments for their friends. Jacob spends a total of \$18.25 on two bags of popcorn and three drinks. Zachary spends a total of \$27.50 for four bags of popcorn and two drinks.

Write a system of equations that can be used to find the price of one bag of popcorn and the price of one drink.

Using these equations, determine and state the price of a bag of popcorn and the price of a drink, to the nearest cent.

32.

Caitlin has a movie rental card worth \$175. After she rents the first movie, the card's value is \$172.25. After she rents the second movie, its value is \$169.50. After she rents the third movie, the card is worth \$166.75.

Assuming the pattern continues, write an equation to define $A(n)$, the amount of money on the rental card after n rentals.

Caitlin rents a movie every Friday night. How many weeks in a row can she afford to rent a movie, using her rental card only?

33. Solve the following systems of equations algebraically for all values of x and y :

$$y = x^2 + 5x - 17$$
$$x - y = 5$$

34. The data chart to the right represents the local Baseball Team shoe order.

Write the linear regression equation for the line of best fit for the data in the chart. *Round the numbers to the nearest hundredth.*

Baseball Team Shoe Order

Height in Inches	Shoe Size
68	11
60	8
64	10
78	13
74	12.5
78	14
74	11
60	7
70	10
64	9
72	11
74	13
72	12
78	13.5

State the correlation coefficient to the nearest hundredth.

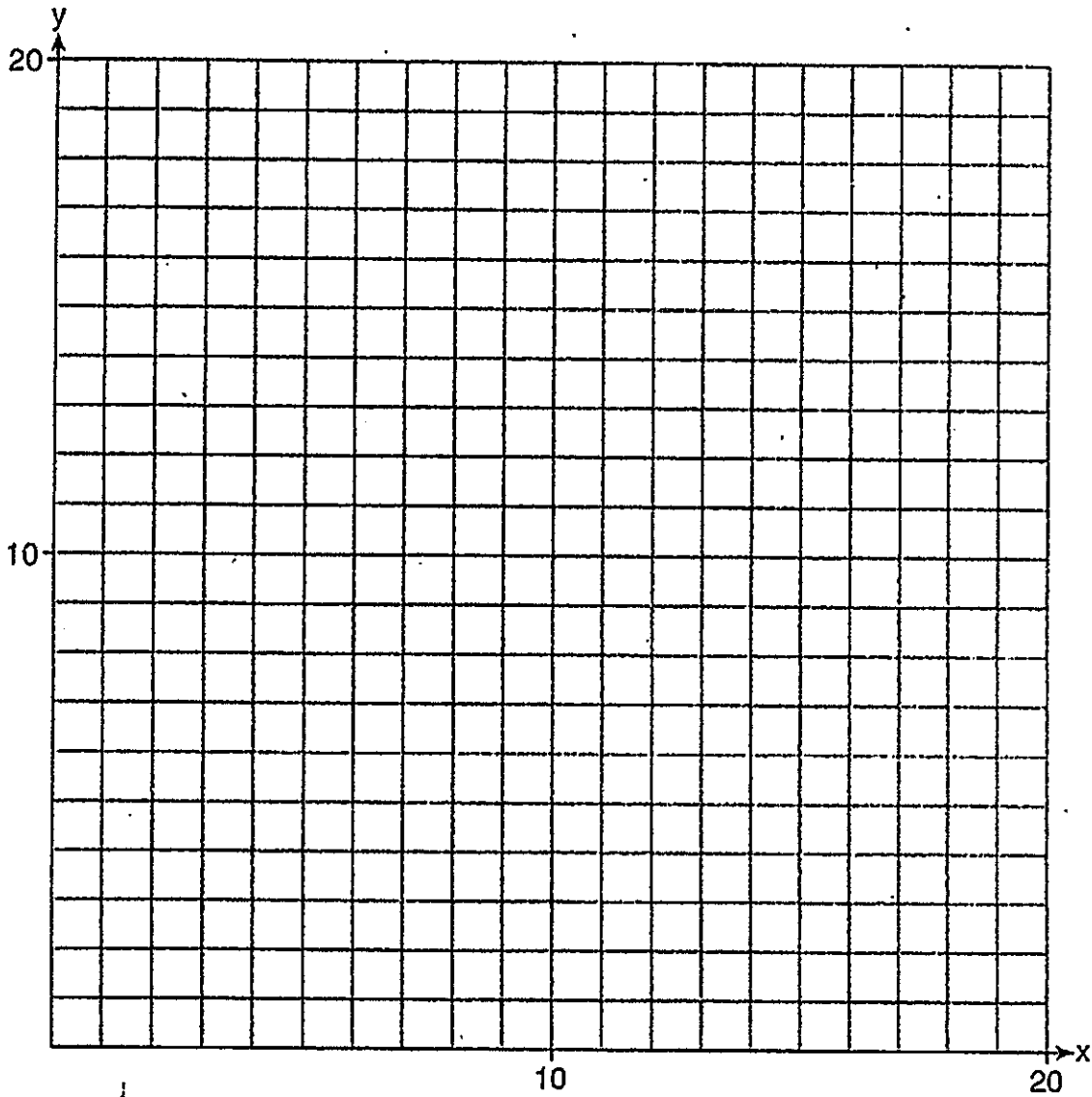
Describe the strength of the correlation.

35.

Edith babysits for x hours a week after school at a job that pays \$4 an hour. She has accepted a job that pays \$8 an hour as a library assistant working y hours a week. She will work both jobs. She is able to work *no more than* 15 hours a week, due to school commitments. Edith wants to earn *at least* \$80 a week, working a combination of both jobs.

Write a system of inequalities that can be used to represent the situation.

Graph these inequalities on the set of axes below.



Determine and state one combination of hours that will allow Edith to earn *at least* \$80 per week while working *no more than* 15 hours.