Name: _____

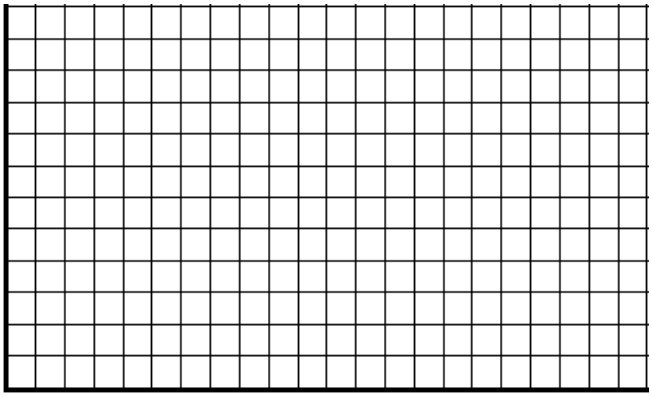
9.3 – CREATING & USING RESIDUALS

Past due on: _____ Period: _____

1. For a health project, Dylan recorded the number of grams of fat and the number of calories in lunch entrees sold at his favorite diner.

FAT (IN GRAMS)	4	6	8	8	10	12	14	16	18	18	20
CALORIES	300	250	300	400	450	400	350	500	400	500	500

a. Make a scatter plot of the data.

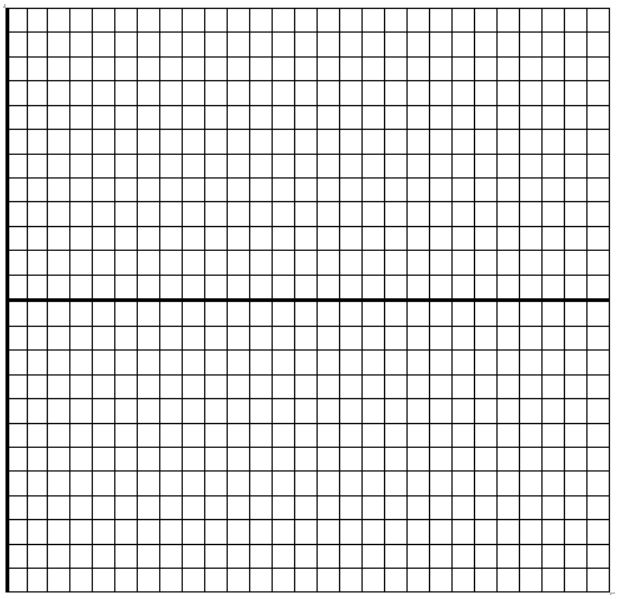


b. Describe the correlation of the data.

c. The least squares regression equation is the line given by: $y = 12.5x + 250$. Graph this line. In your opinion, do you think that the line is a good fit or not? Justify your answer.

d. Use residuals to determine if the least squares regression equation, $y = 12.5x + 250$, is a good fit for the data. (Make a scatterplot of the residuals.)

x	y	y-VALUE FROM MODEL	RESIDUAL
4	300		
6	250		
8	300		
8	400		
10	450		
12	400		
14	350		
16	500		
18	400		
18	500		
20	500		



e. What does the residual plot tell us in this situation?

f. Does this confirm your results about least squares regression equation, $y = 12.5x + 250$? Is it a good fit? Was your prediction correct? Explain.

Spiral Review – Refer to your 1st Semester Summary or your quadratics card

2. Which quadratic function has the largest maximum?

$h(x) = (3 - x)(2 + x)$

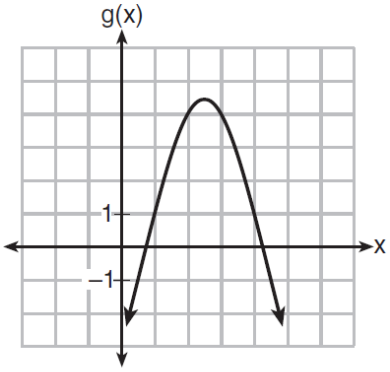
(1)

x	f(x)
−1	−3
0	5
1	9
2	9
3	5
4	−3

(2)

$k(x) = -5x^2 - 12x + 4$

(3)



(4)

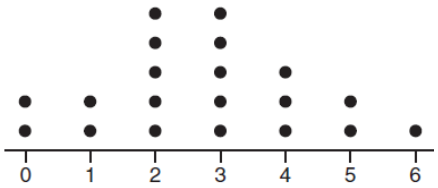
3. A student is asked to solve the equation $4(3x - 1)^2 - 17 = 83$. The student's solution to the problem starts as: $4(3x - 1)^2 = 100$

$(3x - 1)^2 = 25$

A correct next step in the solution of the problem is…

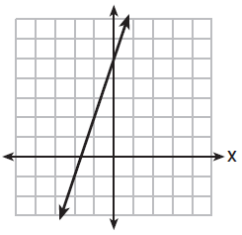
A. $3x - 1 = \pm 5$ *B.* $3x - 1 = \pm 25$ *C.* $9x^2 - 1 = 25$ *D.* $9x^2 - 6x + 1 = 5$

4. The dot plot shown represents the number of pets owned by students in a class. Which statement about the data is NOT true?
   a. The median is 3.
   b. The IQR is 2.
   c. The mean is 3.
   d. The data contain no outliers.



5. Which function has the greatest y-intercept?

A. $f(x) = 3x$ *B.* $2x + 3y = 12$ *C.* The line that has a slope of 2 and passes through $(1, -4)$ *D.*



Solve the quadratic equation using ANY algebraic method: factoring, square roots, completing the square, or the quadratic formula. If necessary, approximate the solutions to the nearest hundredth.

6. $8x^2 - 10x - 3 = 0$ 7. $2n^2 + 15 = 11n$ 8. $7z^2 - 30z + 27 = 0$