REGENTS REVIEW PACKET #2

CREATED FOR YOU BY MS. NICOLSON

1. Lexi, the manager at Beans Beans, collected data on the daily high temperature and revenue from coffee sales. Data from nine days this past fall are shown in the table below.

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
High Temperature, t	54	50	62	67	70	58	52	46	48
Coffee Sales, f(t)	$2900	$3080	$2500	$2380	$2200	$2700	$3000	$3620	$3720

State the linear regression function, f(t), that estimates the day's coffee sales with a high temperature of t. Round all values to the nearest integer.

$f(t) = -58t + 6182$

State the correlation coefficient, r, of the data to the nearest hundredth. Does r indicate a strong linear relationship between the variables? Explain your reasoning.

$r = -0.94$

Strong negative correlation b/c it is close to 1.

2. Kellan determine the zeros of the function, F, to be –6 and 5, what is the equation of the axis of symmetry of F? Justify your answer.

$x = -6 \quad x = 5$

$x = \frac{-1}{2(1)} = -\frac{1}{2}$

What is the equation of the function F? Justify your answer.

$(x+6)(x-5)=0$

$x^2 + x - 30 = F$

NAME: Key

MAY 3- ALGEBRA 1 H WILL BE GRADED

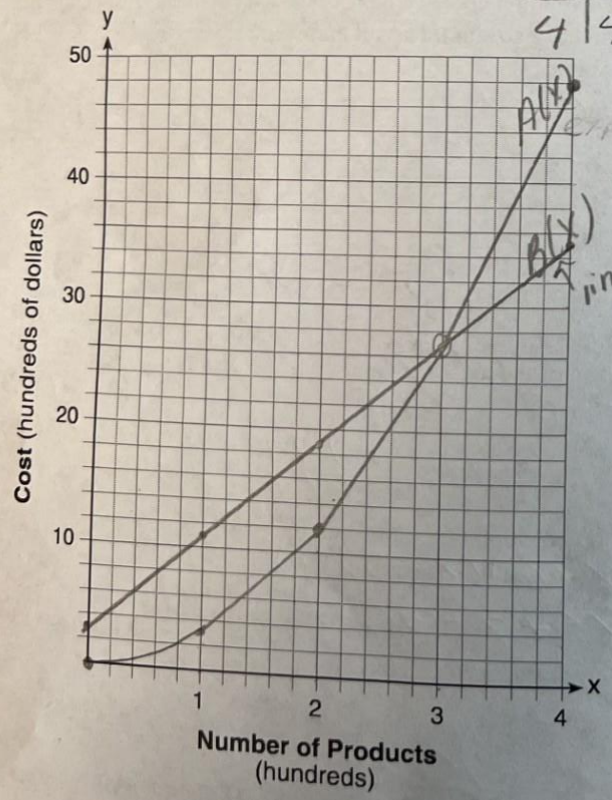
Directions:

Please use a highlighter to check your answers. Bring your questions to class or review sessions.

3. A company is considering building a manufacturing plant. They determine the weekly production cost at site A to be $A(x) = 3x^2$ while the production cost at site B is $B(x) = 8x + 3$, where x represents the number of products, *in hundreds,* and $A(x)$ and $B(x)$ are the production costs, *in hundreds of dollars*.

Graph the production cost functions on the set of axes below and label them site A and site B.

x	$A(x)$ y_1	$B(x)$ y_2
0	0	3
1	3	11
2	12	19
3	27	27
4	48	35



State the positive value(s) of x for which the production costs at the two sites are equal. Explain how you determined your answer.

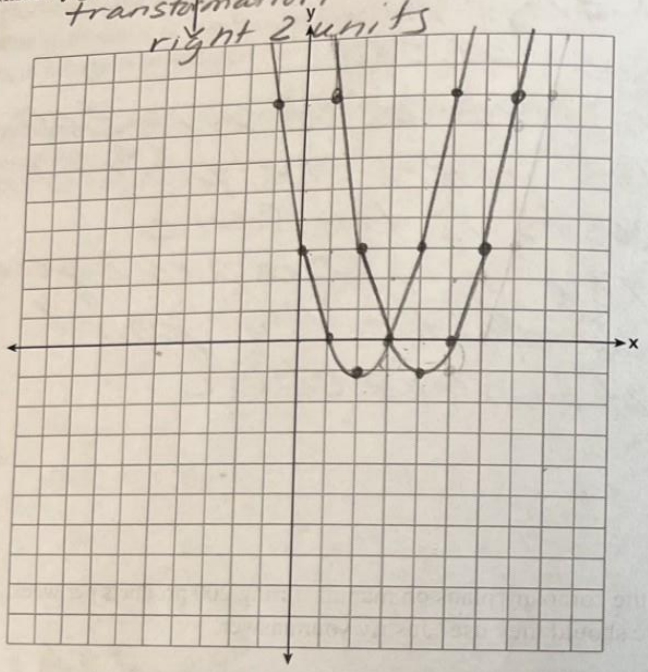
(3, 27)
↑ ↑
300 27,000
The value of x is 300 for when the production costs is the same. The y value are equal and it's the point of intersection.

If the company plans on manufacturing 200 products per week, which site should they use? Justify your answer.

Site B(x) because it is cheaper.

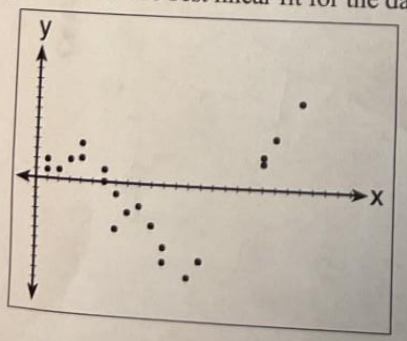
4. The vertex of the parabola represented by $f(x) = x^2 - 4x + 3$ has coordinates $(2, -1)$. Find the coordinates of the vertex of the parabola defined by $g(x) = f(x - 2)$. Explain how you arrived at your answer.

transformation
right 2 units



f(x)	
x	y
-1	
0	
1	
2	-1
3	
4	
5	

5. After performing analyses on a set of data, Chris examined the scatter plot of the residual values for each analysis. Does the scatter plot indicate the best linear fit for the data? Justify your answer.



no it does not b/c it has a curve pattern.

6. Robert is a furniture salesman. His weekly pay is \$300 plus 3.5% of his total sales for the week. Robert sells x dollars' worth of furniture during the week. Write a function, $p(x)$, which can be used to determine his pay for the week.

$p(x) = \$300 + 0.035x$ (let x = pay)

Use this function to determine Robert's pay to the *nearest cent* for a week when his sales total is \$8250.

$p(x) = \$300 + 0.035x$

$= 300 + 0.035(8250)$

$= \$588.75$

7. An animal shelter spends \$2.35 per day to care for each cat and \$5.50 per day to care for each dog. Jocelyn noticed that the shelter spent \$89.50 caring for cats and dogs on Wednesday.

Write an equation to represent the possible numbers of cats and dogs that could have been at the shelter on Wednesday.

$2.35c + 5.50d = 89.50$

Jocelyn said that there might have been 8 cats and 14 dogs at the shelter on Wednesday. Are Jocelyn's numbers possible? Use your equation to justify your answer.

$2.35(8) + 5.50(14) \stackrel{?}{=} 89.50$

$18.8 + 77 \stackrel{?}{=} 89.50$

$95.80 \neq 89.50$

not possible

22 - 12 = 10 cats

Later, Jocelyn found a record showing that there were a total of 22 cats and dogs at the shelter on Wednesday. How many cats were at the shelter on Wednesday?

$2.35c + 5.5d = 89.50$

$c + d = 22 \rightarrow 22 - d = c$

$2.35(22 - d) + 5.5d = 89.50$

$51.7 - 2.35d + 5.5d = 89.50$

$-51.7 \quad\quad -51.7$

$\frac{3.15d}{3.15} = \frac{37.8}{3.15}$

$d = 12$

8. The cost of belonging to a gym can be modeled by $C(m) = 50m + 79.50$, where $C(m)$ is the total cost for m months of membership. State the meaning of the slope and y-intercept of this function with respect to the costs associated with the gym membership.

slope $= \frac{50}{1}$ \$50 per month

y-int: 79.50 ← the initial payment

9. If $A = 3x^2 + 5x - 6$ and $B = -2x^2 - 6x + 7$, then $A - B$ equals

(1) $-5x^2 - 11x + 13$

(2) $5x^2 + 11x - 13$

(3) $-5x^2 - x + 1$

(4) $5x^2 - x + 1$

$3x^2 + 5x - 6$

$+2x^2 + 6x - 7$

$5x^2 + 11x - 13$

10. Rewrite the equation $x^2 - 7x + 6 = 0$ in vertex form. State the vertex. Then find the zeros.

$x = \frac{-b}{2a} = \frac{+7}{2(1)} = 3.5$ vertex $(3.5, -6.25)$

$0 = (x - 3.5)^2 - 6.25$

$+6.25 \quad\quad +6.25$

$\sqrt{6.25} = \sqrt{(x - 3.5)^2}$

$\pm 2.5 = x - 3.5$

$+3.5 \quad\quad +3.5$

$3.5 \pm 2.5 = x$

$3.5 + 2.5 \quad\quad 3.5 - 2.5$

6 1

zeros