Algebra I Agenda

4.1

				Stamp
Monday	1/4/2016	Objective:	No School	
		Assignment:	Parent Conferences	
Tuesday	1/5/2016	Objective:	Linear Regression	
		Assignment:	Practice #1-5	
Wednesday	1/6/2016	Objective:	Correlation Coefficient	
		Assignment:	Practice #1-6	
Thursday	1/7/2016	Objective:	Association vs. Causation	
		Assignment:	Practice #1-9	
Friday	1/8/2016	Objective:	Applications	
		Assignment:	HW 4.1 Due!	

Final Weekly HW Grade: _____

Bellwork

Name: _____

Period: _____

Week of _____ - _____

Monday

Thursday

Tuesday

Friday

Wednesday

Challenge

Student Practice—Using Linear Regression to Estimate Solutions and Make Predictions

Name _____   Date_____ Period _____

Read and answer the following questions. Round your answer to the nearest hundredth.

1. As a science experiment, Keith recorded the percent humidity and the number of stars he could see at 10:00 P.M. each evening.

Star Counting Experiment										
Humidity (%)	84	76	79	88	95	82	87	88	75	82
Number of Visible Stars	12	22	25	15	11	19	13	18	20	22

    a. Write the equation of the line of best fit_____

    b. Using the equation above, estimate the number of stars visible at 100% humidity.

    c. Using the equation above, estimate the humidity when Keith sees 40 stars.

2. Hummingbird wing beat rates are much higher than those in other birds. Estimates for various species are given in the table.

Hummingbird Wing Beats

Mass (g)	3.1	2.0	3.2	4.0	3.7	1.9	4.5
Wing Beats	60	85	50	45	55	90	40

    a. Write the equation of the line of best fit_____

    b. Using the equation above, estimate the wing beat rate of a 6.5 gram hummingbird.

    c. Predict the wing beat rate for a Giant Hummingbird with a mass of 9 grams. Does your answer make sense?

3. The table below represents the age of a person, x, and their normal systolic blood pressure, y.

Age	Systolic Blood Pressure
10	115
30	125
50	135
70	145

a. What equation could be used to determine a person's normal systolic blood pressure?

b. What is the age of a person when his Systolic Blood Pressure is 161?

4. As scuba divers descend, the pressure of the water increases. Scuba divers can determine their depth by the pressure. Pressure can be expressed in atmospheres. An atmosphere is equivalent to 14.7psi (pounds per square inch) of pressure. The table below shows the relationship between atmospheres of pressure and ocean depth.

Depth of Ocean (feet)	0	33	66	99	132
Pressure (atmosphere)	1	2	3	4	5

a. What equation could represent this situation?

b. What is the atmospheric pressure when the depth of the ocean is 500 feet?

5. The table below lists corresponding x-and y-values of a linear function.
What is the value of y when $x = 5$?

x	y
0	3
1	12
2	21
3	30

A   39
B   40
C   48
D   50

6. A science class recorded the weight of different bags of rocks. Their results are displayed in the scatterplot.

Total Number of Rocks
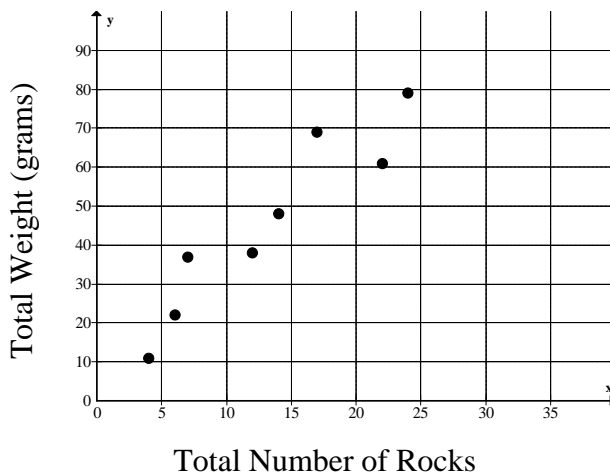
a. Write the equation of the line of best fit for this data and sketch it on the graph above.

b. If the bag had 45 rocks, what would be a reasonable estimate of its weight?

Student Practice – Correlation Coefficient, *r*

Name _____ Date_____ Period _____

Go to this link to discover more about correlation coefficients. **http://tinyurl.com/qjrqsvs**

Read and answer the following questions. Round answers to the nearest hundredth.

1. Below is a table showing the number of gold medals won by the United States at the Winter Olympics during various years.

Year	1992	1994	1998	2002	2006	2010
Gold Medals	5	6	6	10	9	9

    a. Use a graphing calculator to write an equation for the best-fit line for that data._____

    b. Calculate the correlation coefficient. *r*=_____. Describe the strength of its measure.

2. Below is a table showing the U.S. Federal Reserve's prime interest rate on January   1st of various years.

Year	2006	2007	2008	2009	2010
Prime Rate (percent)	7.25	8.25	7.25	3.25	3.25

    a. Use a graphing calculator to write an equation for the best-fit line for that data._____

    c. Calculate the correlation coefficient. *r*=_____. Describe the strength of its measure.

3. The table shows the price of a gallon of regular gasoline at a station in Los Angeles, California on January 1 of various years.

Year	2005	2006	2007	2008	2009	2010
Average Price	$1.47	$1.82	$2.15	$2.49	$2.83	$3.04

    a. Use a graphing calculator to write an equation for the best-fit line for that data._____

    b. Calculate the correlation coefficient. *r*=_____. Describe the strength of its measure.

    c. What is the estimated price of gas in 2015?

4. A math club decided to buy T-shirts for its members. A clothing company quoted the following prices for the T-shirts. Which equations best describes the relationship between the total cost, *c*, and the number of T-shirts, *s*?

Math Club T-Shirts

Number of T-Shirts	Total Cost (dollars)
10	75
15	105
20	135

A $c = 6.75s$
B $c = 7.00s$
C $c = 2s - 20$
D $c = 15 + 6s$

5. The manager of a band has kept track of the price of tickets and the attendance at the band's recent concerts.

Concert Attendance by Ticket Price									
Price ($)	6	5	8.50	8	10	5.50	7	7.50	8
Attendance	213	256	155	194	160	267	258	210	235

a. Write the equation of the line of best fit that represents this data.

b. Predict the attendance at a concert where the price of tickets is $9.

6. A photographer hiked through the Grand Canyon. Each day she filled a photo memory card with images. When she returned from the trip, she deleted some photos, saving only the best. The table shows the number of photos she kept from all those taken for each memory card.

Grand Canyon Photos	
Photos Taken	Photos Kept
117	25
128	31
140	39
157	52
110	21
188	45
170	42

a. Write the equation of the line of best fit.

b. Predict the number of photos this photographer will keep if she takes 200 photos.

Practice – Association and Causation

Name _____   Date _____   Pd. _____

1. The table below shows a relationship between the per capital consumption of cheese and the number of people who died by becoming tangled in their bedsheets.

Per capita cheese consumption	Number of people who died by becoming tangled in their bedsheets
327	29.8
456	30.1
509	30.5
497	30.6
596	31.3
573	31.7
661	32.6
741	33.1
809	32.7
717	32.8

A. Write a linear function that provides a reasonable fit to the data in the graph.

B. Is there an association between this set of data? Explain your reasoning.

C. Do you think there is there causation in this situation? Explain your reasoning.

In each situation, tell whether an association/correlation is likely. If it is, tell whether it also reflects causation. List reasons why or why not.

2. The amount of time you study for a test and the score that you receive.

3. The shoe size and the salary of a teacher

4. The price of hamburger at a grocery store and the amount of hamburger sold.

5. A person's height and the number of letters in a person's name.

Determine whether each situation illustrates association or causation. Explain your reasoning, including other factors that might be involved.

6. A survey shows that sleeping with the light on was positively associated with nearsightedness.

7. A controlled experiment showed a positive correlation between the number of cigarettes smoked and the probability of developing lung cancer.

8. A random sample of students found that owning a cell phone had a negative correlation with riding the bus to school.

9. A controlled experiment showed a positive correlation between the number of hours using headphones when listening to music and the level of hearing loss.