

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**LINEAR REGRESSION ON THE CALCULATOR**  
**COMMON CORE ALGEBRA I HOMEWORK**

1. We are now going to revisit our data from the homework yesterday, but with our calculator. A survey was done at Ketcham High School to determine the effect of time spent on studying and grade point average. The table below shows the results for 10 students randomly selected.

Study time (Hours per week)	2	4	5	7	10	12	14	17	19	20
GPA (out of 100)	64	71	69	74	81	86	84	94	91	96

- (a) Enter the data in your calculator and use it to generate the equation for the line of best fit. Round your slope to the nearest tenth and round your  $y$ -intercept to the nearest integer.
- (b) According to the linear regression model from part (a), what GPA, to the nearest integer, would result from studying for 15 hours in a given week? Justify your answer.
- (c) A passing average is defined as a 65% or above. Does the model predict a passing average if the student spends no time studying in a given week? Justify your answer.
- (d) For each additional hour that a student studies per week, how many points does the model predict a GPA will rise? Explain how you arrived at your answer.
- (e) Create a scatter plot of this data on your calculator. State the WINDOW that you used below. Compare this scatter plot to the one that you created by hand on the previous homework.

WINDOW:  $x_{\min} =$        $x_{\max} =$        $y_{\min} =$        $y_{\max} =$



2. The mean annual temperature of a location generally depends on its elevation above sea level. A collection of nine locations in Nevada were chosen and had their elevation and mean annual temperature recorded. The data is shown below.

Elevation (feet)	1200	4125	6230	2378	5625	6328	4375	1864	3160
Mean Temperature (°F)	62	45	36	51	48	32	40	58	49

- (a) Use your calculator to determine the equation for the line of best fit. Round your slope to the nearest *thousandth*. Note that it will be a small number. Round your *y*-intercept to the nearest integer.
- (b) What does the *y*-intercept tell you about the temperature in Nevada?
- (c) Using correct units, give an interpretation of the slope of this line.
- (d) Using your model from part (a), what would be the predicted mean temperature at an elevation of 3000 feet above sea level?
- (e) Would you characterize this correlation as being positive or negative? How can you tell this from the equation itself?
- (f) Create a scatter plot of the data and graph the line of best fit on it as well. Are there any data points from the table above that are significantly “missed” by the model? If so, which data point?

