

Name: _____ Date: _____

Scatter Plots and Line of Best Fit – TV Task

Students in Ms. Garth’s Algebra II class wanted to see if there are correlations between test scores and height and between test scores and time spent watching television. Before the students began collecting data, Ms. Garth asked them to predict what the data would reveal. Answer the following questions that Ms. Garth asked her class.

1. Make a prediction on which variables will be the most strongly related.
 - a. Do you think students’ heights will be correlated to their test grades? If you think a correlation will be found, will it be a positive or negative correlation? Will it be a strong or weak correlation?

 - b. Do you think the average number of hours students watch television per week will be correlated to their test grades? If you think a correlation will be found, will it be a positive or negative correlation? Will it be a strong or weak correlation?

2. The students then created a table in which they recorded each student’s height, average number of hours per week spent watching television (measured over a four-week period), and scores on two tests. Use the actual data collected by the students in Ms. Garth’s class, as shown in the table below, to answer the following questions.

Student	1	2	3	4	5	6	7	8	9	10	11	12	13
Height (in inches)	60	65	51	76	66	72	59	58	70	67	65	71	58
TV hrs/week (average)	30	12	30	20	10	20	15	12	15	11	16	20	19
Test 1	60	80	65	85	100	78	75	95	75	90	90	80	75

3. Use your calculator to do the linear regressions to fill in the chart below.

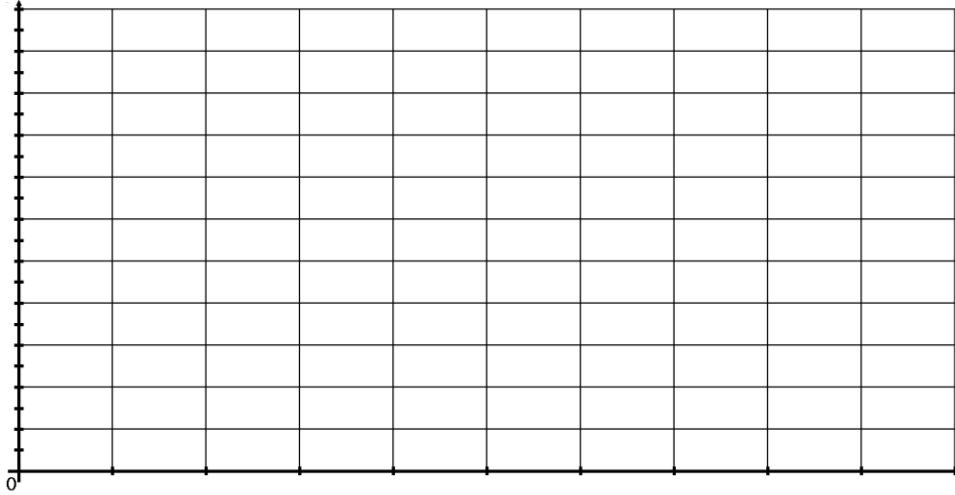
Comparing	a	b	Line of Best Fit (Linear Regression)	r	Description of Correlation
Height vs. Test 1					
TV vs. Test 1					

4. Using the table above, let us look at the data for the average hours a student watches television vs. their score on test 1.

a. What is the explanatory variable?

Response?

b. Plot the data



c. What was the equation for the line of best fit for the average hours a student spends watching television vs. their score on Test 1:

$y = \underline{\hspace{2cm}}$; $r = \underline{\hspace{2cm}}$.

d. How would you describe the correlation of these two variables?

e. What does the slope (a) mean in context?

f. What does the y-intercept (b) mean in context? Does this make sense?

g. What would you predict to be the test score of someone who watches TV for 5 hours per week?

h. What would you predict to be the test score of someone who watches TV for 10 hours per week?

- i. What would you predict to be the test score of someone who watches TV for 20 hours per week?

- j. What is the maximum average number of hours per week you would expect to be able to watch TV if you wanted an 80 on Test 1?

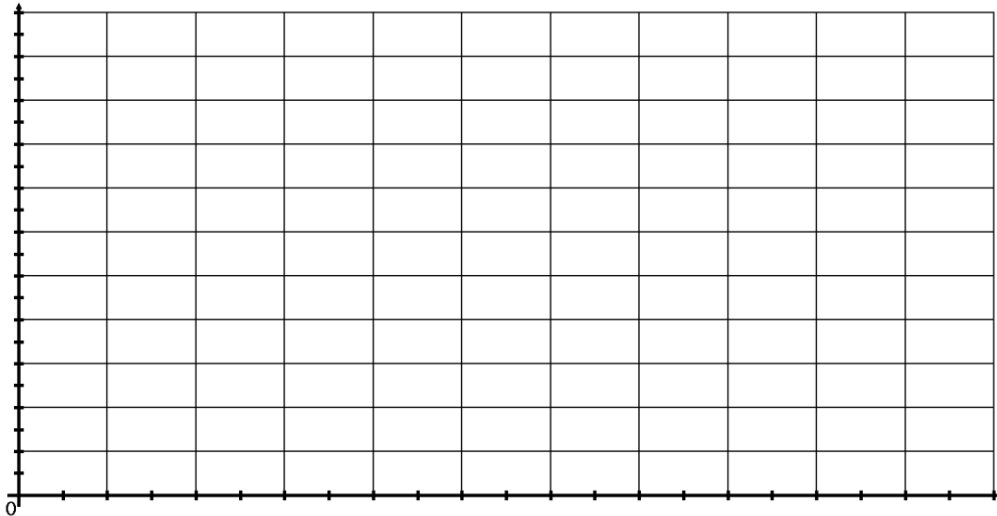
- k. On average, how many hours of TV per week would you expect a student to watch if they failed with a 65 on Test 1?

5. Using the data on page 1 and the table on page 2, let us look at the data for height vs. test 1 scores.

- a. What is the explanatory variable? Response?

- b. Would it be appropriate to assign one variable as explanatory and the other as response, or is this just a relationship between two variables? How do you know?

- c. Plot the data.



d. What was the equation for the line of best fit for the average height vs. their score on Test 1:

$y = \underline{\hspace{2cm}}; r = \underline{\hspace{2cm}}.$

e. How would you describe the correlation of these two variables?

f. What does the slope (a) mean in context?

g. What does the y-intercept (b) mean in context? Does this make sense?

h. What would you predict the test score to be of a person who is 66 inches tall?

i. What would you predict the height to be of a person who scored an 87 on their test?

j. What happens to the correlation if you switch the explanatory and response variables?

k. What would happen to the correlation if you measured height in centimeters instead of inches?

6. Using your prediction in question 1:

a. Did your findings from the task justify or contradict your prediction of the correlation of hours of television watched and test score? Explain.

b. Did your findings from the task justify or contradict your prediction of the correlation of height and test score? Explain.