

Please complete this assignment, showing your work. The assignment is due on Wednesday, January 27th at 9:00 am.

1. An journal article states that the correlation between research productivity of professors and students ratings of their teaching is close to zero. A newspaper reports this result as evidence that good teachers tend to be poor researchers and vice versa. Explain why this is wrong and write what the result really means in plain English (without using the word correlation!).
2. We often describe the emotional reaction to social rejection as painful. A study wanted to investigate whether social rejection is correlated with activity in parts of the brain known to be associated with physical pain. Subjects were first included and then deliberately excluded from some social activity. The change in blood flow to the brain was recorded. The subjects then completed a survey to measure how excluded they felt. Here are the results

Social Distress Level (x)	1.26	1.10	2.17	2.01	2.58	2.75	3.33	3.65
Brain Activity (y)	-5.5	-2.6	-1.7	2.1	2.7	6.4	7.7	12.4

- (a) Make a scatter plot.
 - (b) Find the correlation coefficient r . Is it a statistically significant correlation?
 - (c) Find the equation of the line of best fit.
 - (d) Use the equation of the line of best fit to estimate the brain activity of an individual show experiencing a stress level stress level of 1.6.
 - (e) What percentage of the variation in brain activity is explained by the variation in stress?
3. The mean height of married women in their early twenties in the US is 64.5 inches with a standard deviation of 2.5 inches. The mean height of men at the same age is 68.5 inches with a standard deviation of 2.7 inches. If the correlation between the heights of husbands and wives of couples in their early twenties is $r = 0.5$ find the equation of the least squares regression line. Predict the height of a women who has a 67 inch tall husband. Predict the height of a man who has a 67 inch tall wife.