

1. Define the following terms, with each definition being no longer than 1 sentence of reasonable length: (a) criterion variable (dependent variable), (b) predictor variable (independent variable), (c) slope, (d) intercept, and (e) regression. Next, tell us which part of the following equation represents each of these concepts (a through e):

$$\hat{Y}_p = a + bX_p$$

2. Height and Armspan:
 - a. Using the in-class survey dataset, tell us what the correlation is between height and armspan? (Use SPSS and show and interpret your output). Using SPSS, please graph the scatterplot and best-fitting line.
 - b. Based on the in-class survey dataset, tell us what we should predict a person's armspan to be (in cm) if the person's height is 180 cm. (Use SPSS and show and interpret your output).
 - c. Write out the equation that you are using to make this prediction, and label the equation using the terms in question 1, above. Using SPSS, please graph the scatterplot and best-fitting (regression) line. How does this illustration compare to what you graphed for the correlation in 2a, above?
 - d. Is the prediction equation for armspan consistent with your correlation coefficient? Why or why not? (Hint: Look at your standardized beta (β) regression coefficient.)
 - e. If we did not know the person's height (or anything else about this person other than that s/he is in one of the lab sections), then what should we predict this person's armspan to be, and why?
3. A testing company wants us to figure out how well one can use IQ to predict scores on its math test. So, for a representative group of people, we first measure IQs and then performance on the math test. Unfortunately, our lab floods a week later, and we lose most of our data. We recall that the covariance between the sets of scores is 147.34 and that the correlation between the sets of scores is 0.88. We remember also that the standard deviation of the math test scores is 11.49 and that the average scores for IQ and the math test were 101.53 and 81.8, respectively. What regression equation should we give to the testing company? Please show all of your work.

BONUS QUESTION:

4. For 5 points: Chi-Square Problem 19.11 on page 490 of your textbook. Please do this problem by hand and in SPSS, and show all of your work and SPSS output. For SPSS, interpret the results for the Pearson Chi-Square Test and Fisher's Exact Test. Furthermore, calculate, compare, and explain the risk ratios and odds ratios for the variables. Again, show all work.