PSYC 610- Correlation and regression practice problems

1. An investigator has determined that the correlation between measures of anxiety and depression is +.45. There are 42 people in the sample. What number should the investigator use as an unbiased estimate of the correlation coefficient in the population? Are the investigators justified in saying that the correlation of +.45 is significantly different from zero? Please report the result of this test in APA format.

2. For the scenario described in question 1 above, the investigators know that the mean for the anxiety questionnaire is 15.0 and the standard deviation is 3.0. The mean for the depression questionnaire is 30 and the standard deviation is 4.0.
    a. Please provide the regression equation to predict scores on depression from scores on anxiety.
    b. Please calculate the standard error of estimate for this example. What does this number tell you about the predicted scores for depression.
    c. You know that three clients have scores of 8.3, 16.1, and 20.4, respectively, on the anxiety questionnaire. What are their predicted scores for depression.

3. An investigator obtains scores for job satisfaction and blood pressure from each of 10 employees. Higher scores for job satisfaction reflect higher levels of job satisfaction. The mean for job satisfaction is 35.0 and the standard deviation is 14.61. The mean for systolic blood pressure is 136.30 and the standard deviation is 19.25. The Pearson correlation coefficient between job satisfaction and systolic blood pressure is -.848. Is the correlation significantly different from zero? Please report the results for this test in APA format. Based on this information was conclusion are you entitled draw about the relationship between the two variables? What is the adjusted correlation coefficient?

Job Satisfaction	Systolic BP
34	124
23	128
19	157
43	133
56	116
47	125
32	147
16	167
55	110
25	156

4. Using the data provided in (3) please use SPSS to obtain the regression equation for predicting scores on systolic blood pressure from scores on job satisfaction. If one knows that a subject in the future has a score on job satisfaction of 15, what is their systolic blood pressure predicted to be? What is the standard error of estimate? Does job satisfaction account for a significant amount of the variance in systolic blood pressure (conduct an F-test to address this question)?

5. An investigator is interested in the relationship between levels of stress at work and self-reports of overall health. The researcher conducts a study with 102 participants and determines that the Pearson correlation coefficient between self-reported levels of job stress and self-reports of overall heath is +.41.

    a. Are the investigators justified in saying that there is a significant relationship between these two variables? Please report the result of this test in APA format.
    b. What is the adjusted correlation coefficient?

The investigator funds that the mean score for stress is 14.3. The standard deviation for stress is 3.5. The mean score for health is 4.3. The standard deviation for stress is 1.3.

d. Please provide the regression equation to predict scores for health from scores for stress.
e. What is the regression equation to predict standard scores for health from standard scores for stress? (what are the slope and y-intercept for this equation when you're working in standard score units)
f. Please calculate the standard error of estimate for this example. What does this number tell you about the predicted scores for health.
g. You know that three clients have scores of 9.1, 14.0, and 17.3, respectively, on the measure of stress. What are their predicted scores for health.

6. An investigator is interested in predicting scores for a measure of cognitive function from the number of hours of sleep a person gets on average. She obtains scores for both the number of hours of sleep and cognitive function from 12 people. Higher scores for cognitive function reflect higher levels of performance.

Hours of Sleep	Cognitive Function
8.1	100
5.4	79
6.1	72
7.4	62
9.0	122
8.5	89
6.4	76
9.4	131
8.7	110
7.6	92
9.3	101
9.2	115

Please use SPSS to address the following questions:

1. What is the correlation coefficient between the number of hours of sleep and scores on the measure of cognitive function?
2. Is the correlation coefficient significantly different from zero? What is the significance level for this test? What conclusion should the investigator draw on the basis of this test?
3. What is the regression equation used to obtain predicted scores for cognitive function from the number of hours of sleep? Using the regression equation, what will the predicted score for cognitive function be if a person reports that they get 6.7 hours of sleep? What are the standardized regression coefficients?
4. Does the amount of sleep account for a significant amount of variability in scores for cognitive function? Report the results for this question in APA format.
5. What is the standard error of estimate? What information does this number provide about the use of the regression equation for this data set?
6. Please provide a scatterplot with the number of hours of sleep on the X-axis and scores for cognitive function on the Y-axis. Please have SPSS display the regression line within this scatterplot.