Review Exercise 4

Stat 145

Chapters 3 & 6 .5 point extra credit

Use the following description to answer question 1.

A research study examining short-term memory asked 100 randomly selected UNM students to memorize a list of twenty words (names of animals). Students were randomly assigned to one of 10 groups which differed in the amount of time to recall the list of words. The amount of time to recall for each group varied from 5 minutes to 50 minutes. The data below represent the time to recall (x-variable) (in minutes) and the average number of words correctly recalled (y-variable) (out of 20 words).

(X) Time to Recall	(Y) Average Number of Words Correctly Recalled
5 Mins	15
10 Mins	13
15 Mins	13
20 Mins	9
25 Mins	11
30 Mins	9
35 Mins	7
40 Mins	5
45 Mins	4
50 Mins	4

1. Use the description above to answer the following questions:
   a. What question(s) is the researcher trying to answer?
   b. What is the *null hypothesis* for this problem?
   c. Using Excel, obtain the value of the sample correlation coefficient r?
   d. Is the value of r statistically significant (test at the .05 level)? BE SURE TO PROPERLY STATE YOUR STATISTICAL CONCLUSION.
   e. Provide an interpretation of your answer in part D.
   f. What is the value of the coefficient of determination or r^2?
   g. Provide an interpretation of your answer in part F.
   h. Using Excel, obtain the regression equation and associated scatterplot. Be sure that your scatterplot contains the regression equation and coefficient of determination as well as the regression line.
   i. What is the predicted average words recalled for the group that is tested after 30 minutes?

2. (A) What are *z scores*? (B) Why are z scores useful?

3. A math teacher asked each of her students how far he or she lived from campus. The data collected are given below. Use Excel to calculate all requested statistics.

Miles from campus
2
5
2
7
1
3

A. What is being measured in the data given above?
B. Using Excel, obtain the three measures of central tendency.
C. Using Excel, obtain the two measures of dispersion.
D. Provide an interpretation for the sample standard deviation obtained in part C.
E. Obtain the z-scores from the original scores.
F. What percentage of original scores are expected to be in the range 2 to 5?
G. What percentage of z-scores are expected to be in the range 0 to +1.70?
H. What percentage of z-scores are expected to be in the range -.50 to +1.70?