

2. A team of cognitive psychologists conducted a study of the effects of sleep deprivation on short-term memory decay. Eight participants stay in a lab for 2 days. Four of the participants are randomly assigned to a condition in which they are not permitted to sleep during that period, and the other four are allowed to sleep when they want to. At the end of the two days, the participants complete a short-term memory task. Here are the data.

mean number of letters remembered	
sleep deprived	normal sleep
6	9
8	7
4	11
9	8

- a. What is the non-directional research hypothesis and the null hypothesis for this experiment?
- b. What are the characteristics of the sampling distribution?
- c. What is the critical (cutoff) value (use the .05 level, two-tailed)?
- d. Calculate the appropriate test statistic.
- e. Write a summary statement such as you would find in a research journal. Does sleep deprivation affect short-term memory?
- f. Figure the 95% confidence interval.

3. An organizational psychologist working at a particular company believes that workers' health would improve if they were given extra days off. In this company, all workers take a standard physical exam twice a year and are given an overall health rating (higher scores mean better health). Thus, the psychologist selected five workers at random, arranged to have them receive an additional 2 days off every month over the period between health exams, and then compared the health scores on the two exams.

Worker	health rating before and after period of extra days off	
	before	After
A	67	77
B	75	74
C	44	46
D	83	86
E	89	89

- a. What is the directional research hypothesis and the null hypothesis for this experiment?

- b. What are the characteristics of the sampling distribution?

- c. What is the critical (cutoff) value (use the .05 level, one-tailed)?

- d. Calculate the appropriate test statistic.

- e. Write a summary statement such as you would find in a research journal. Do the scores in the experiment support the notion that extra days off improves health?

45. A researcher conducted a study of the relation between income and generosity. The researcher observed the amount of money given to a panhandler and the wealth of the person being asked (wealth was measured by a rating of the clothing worn). The results for the first four people observed were as follows:

Wealth of Giver	Dollars Given
4	0
6	1
8	3
2	0
Mean = 5 SD = 2.24	Mean = 1 SD = 1.22

- Make a scatter diagram of the raw scores.
- Describe the general pattern of the scores **in words**.
- Calculate the correlation coefficient.
- Calculate the regression equation predicting wealth from dollars given
- Using the regression predict the wealth of someone who donated 10 dollars
- Calculate the r^2 **and** explain what it means in terms of these two variables.

SECTION IV– SHORT ANSWERS

Write your answers in the space provided.

1. Explain how sample size affects power.

2. What is the t test? What exactly does it “test”?

2. A sample result is statistically significant at the .05 level. What does this mean?
What does it not mean?

