1. What information is provided by the numerical value of the Pearson correlation?

2. In the following data, there are three scores (X, Y, and Z) for each of the n= 5 individuals:

X Y Z

3 5 5

4 3 2

2 4 6

1 1 3

0 2 4

a.       Sketch a graph showing the relationship between X and Y. Compute the Pearson correlation between X and Y.

b.      Sketch a graph showing the relationship between Y and Z. Compute the Pearson correlation Between Y and Z.

c.       Given the results of parts a and b, what would you predict for the correlation between X and Z?

d.      Sketch a graph showing the relationship between X and Z. Compute the Pearson correlation for these data.

e.       What general conclusion can you make concerning relationships among correlations? If X is related to Y and Y is related to Z, does this necessarily mean that X is related to Z?

3. For each of the following, determine whether the sample provides enough evidence to conclude that there is a significant, nonzero correlation in the population. In each case, use a two-tailed test with x = .05.

1. A sample of n = 18 with r = -0.50
2. A sample of n = 15 with r = -.0.50.
3. A sample of n = 30 with r = 0.275
4. A sample of n = 25 with r = 0.375

4. A professor noticed that the representatives on the college student government consist of 31 males and only 9 females. The general college population, on the other hand, consists of 55% females and 45% males. Is the gender distribution for student from the distribution for the college population? Test at the .05 level of significance.

5. A researcher obtained a random sample of n = 60students to determine whether there were any significant preferences among three leading brands of colas. Each student tasted all three brands and then selected his or her favorite. The resulting frequency distribution is as follows:

Brand A Brand B Brand C

28 14 18

6. A social psychologist suspects that people who serve on juries tend to be much older than citizens in the general population. Jurors are selected from the list of registered voters, so the ages for jurors should have the same distribution as the ages for voters. The psychologist obtains voter registration records and finds that 20% of registered voters are between 18 and 29 years old, 45% are between 30 and 49 years old, and 35% are age 50 or older. The psychologist also monitors jury composition over several weeks and observes the following distribution of ages for actual juries:

Age Categories for Jurors

18-29 30-49 50 and over

12 36 32

Are the data sufficient to conclude that the age distribution for jurors is significantly different from the distribution for the population of registered voters?

Test with X = .05.