Name _____   Date _____

Short answers:

1) Dr. Cohen, and Dr. Keith are not fashion kings. They each wear two styles of shirts (V-neck and Crew neck) in 5 colors (Black, gray, blue, green, and burgundy). Each shirt style and color choice are randomly chosen each day (as is evidenced by their often "creative" use of color matching).
   a) What is the probability that they will wear the same style and color shirt on a particular day?
   b) What is the probability that they would wear the same color shirt on a particular day?
   c) If you see Dr. Cohen wearing a blue shirt, what is the probability that Dr. Keith will be wearing the same color shirt?

2) I read the other day that 26% of the American public refuse drink milk from a straw (CNN poll, N = far too many to count). But I also say that only 18 % of children under the age of 10 refused to drink milk from a straw (ABC poll, N = 100).
   a) Do children under the age of ten have the same milk/straw drinking preferences as the American public?
   b) What is the probability of a percent at least as extreme as the American publics occurring from the population of children under the age of ten?

3) Alpha (one-tailed) = .1, Beta = .4, what is the standardized difference between the means of the two groups?

4) The verbal portion of the GREs has a mean of 400 and a SD of 100.
   a) What percent of the scores are greater than 550?
   b) What percent of the scores fall between 500 and 600?
   c) What percent of the scores are at least 200 points away from the mean?
   d) What is the 95% confidence interval around the mean?

Statistical Problem:

I have a theory that those who prefer football to baseball are happier and more extroverted than those who prefer baseball are (BTW, never end a sentence in a preposition). I also believe that the number of hot wings that a person eats while watching a game is a good indicator of how happy that person is (more wings indicate a happier person; please note that I am NOT a clinician). Thus, I have run an experiment where I have 2 groups of subjects, those who like football and those who like baseball. I test each subject individually. I have them watch their preferred game with large bowl of hot wings in front of

them. I measure the number of wings that they eat during the first hour of the game.

Please use the data set provided for the following questions, (adopt a two-tailed alpha = .05):

1) Please create a two-sided stem and leaf plot comparing the two groups on number of wings eaten.
2) Please create side by side boxplots comparing the two groups' wings eaten.
3) Please give the mean, median, and mode, variance, standard deviation, and SE of the DV for each group.
4) Have the two groups eaten the same number of wings? Assume that the variances are equal.
5) What was your probability of a Type I and II error for the test in (4)?
6) What was your power for each of the tests in (4)?
7) What conclusions can you make about the two groups' happiness, based on the tests that you just performed? Was the power adequate for the tests? Why?

Essays (Please answer 3 of 5):

1) I argue that 98% of psychological dependent variables should be "ordinal." Why?
2) What can we conclude when we fail to reject the Null Hypothesis? Why?
3) Why should we always look at the data before we run any tests? What about the data are we looking for? Why?
4) What type of information do we get from standardizing a variable? What is the mean and SD of a standardized variable? What does the new standardized score tell us?
5) Please describe and explain the three ways that we can increase the power of an experiment. What are the advantages and disadvantages of each?