

The data set for this exam can be found in the file *exam6data.xls*.

1) Answer true or false to each of the following:

- (a) ___ You should expect that the number of hours spent studying for this exam and your score on this exam will have a positive correlation.
- (b) ___ ANOVA tests are always right tailed tests.
- (c) ___ Goodness of fit tests are always right tailed tests.
- (d) ___ Tests of independence are always right tailed tests.
- (e) ___ Statistics has many, many, many, many, many, many real life applications.

2) In the file on sheet *number 2* you will find the neck measurements and weights of 54 bears.

(a) Sketch a scatter plot of the data with the best fit line.

(b) Find the value of the correlation coefficient, r

(c) Test to determine if the population correlation coefficient is positive, that is, there is a positive correlation between neck measurement and weight. Use $\alpha = 0.05$.

(d) Find the equation of the best fit line.

(e) Use the equation of the best fit line to estimate the weight of a bear who has a neck measurement of 25.

(f) Find a 95% confidence interval for the weight of a bear who has a neck measurement of 25.

(g) If a bear weighs 150 lbs, then use the equation of the line to estimate the neck measurement.

3) The personnel department of a large corporation recorded the weekdays during which individuals in a sample of 362 absentees were away over the past several months. Do these data suggest that absenteeism is higher on some days of the week than others? Use a 5% level of significance.

<i>Day of the week</i>	Monday	Tuesday	Wednesday	Thursday	Friday
<i>Number absent</i>	87	62	71	68	74

4) The following table shows the Myers-Briggs Personality preference and professions for a random sample of 2408 people on the listed professions (*Atlas of Type Tables*, by Macdiad, McCaulley, and Kainz). Test to determine if Occupation and Personality Preference Type are independent. Use $\alpha = 0.05$.

<i>Occupation</i>	<i>Personality Preference Type</i>	
	<i>Extroverted</i>	<i>Introverted</i>
Clergy	308	226
M.D	667	936
Lawyer	112	159

5) This semester, I am teaching 3 classes (2 sections of Statistics and 1 section of Linear Algebra). The current grades that I am giving all three sections are in sheet *number 5*. Test to determine if I am giving the same average grade to each of the 3 sections that I teach. Use $\alpha = 0.05$.

6) On the day that quiz #6 was given, there was a fire alarm during the 159-03 section. As a result, I had to give 159-03 the quiz as a take home and 159-02 had the quiz as an in class quiz. The quiz results for both are in sheet *number 6*. Use the Wilcoxon Rank Sum Test to determine if two set of data come from populations with the same median. Use $\alpha = 0.05$.

7) Last semester I taught a Differential Equations class where I gave a take home exam and the last question on the exam was "Grade this exam." The grades the students gave themselves and the grade that I gave them are stored in the file on sheet *number 7*. Use the Wilcoxon Signed Ranks Test to determine if there is a significant difference in the grades they gave and the grades I gave. Use $\alpha = 0.05$.