1. Using the table (it is best that you confirm by calculator also) determine the t-score needed for constructing a 98% (not 95%) CI for population mean based on a sample of n = 4 the population scores follow a **normal** distribution whose mean and standard deviation are not known.

2. Refer to #1. Supposing that the sample scores are {2.33, 2.72, 2.74, 2.30} determine the CI in question.

3. Refer to #1 and #2. Which of the following statements are accurate if the appropriate t score is used and the population is perfectly normal distributed?

$P(\mu \text{ in } \overline{x} \pm t \frac{s}{\sqrt{n-1}}) \sim 0.98$

$P(\mu \text{ in } \overline{x} \pm t \frac{s}{\sqrt{n}}) \sim 0.98$

$P(\mu \text{ in } \overline{x} \pm t \frac{s}{\sqrt{n-1}}) = 0.98$ if perfect precision is extended to all calculations

$P(\mu \text{ in } \overline{x} \pm t \frac{s}{\sqrt{n}}) = 0.98$ if perfect precision is extended to all calculations

4. A 98% t-based CI is prepared from a sample of n = 4 from a normal population. It takes the form [2.21, 2.36]. Which are correct?

P(μ in [2.21, 2.36]) ~ 0.98

P(μ in [2.21, 2.36]) = 0.98

5. Verify that several entries of the book's chi-square table (you choose some) agree with those from the posted chi-square table. Use your calculator to obtain answers confirming the latter. Report your comparisons here.

The URL http://irapilgrim.mcn.org/men01.html links to a paper of R. A. Fisher in which you will find Fisher's views on aspects of Mendel's data.

6. Fisher gives an aggregate chi-square statistic for some of Mendel's experiments. The total DF is 64 followed by the aggregate chi-square statistic. The passage is immediately above Table VI. Locate the passage and read off the value of the aggregate chi-square statistic. Use the posted chi-square table to verify Fisher's claim that the P-value is ~ 1 by getting a good approximate answer from the table. Finish up by using your calculator to more accurately determine the P-value.

7. Refer to #6. What is the interpretation of P-value ~ 1? Did Mendel's data agree rather too well with the models he had for them or did the data disagree rather too strongly from Mendel's models?

8. Confirm Fisher's P-value for the combined experiments reported in Table IV.

9. Use the data of Table 26.2 of your textbook to prepare a chi-square test of the hypothesis that college (i.e. Ag, A&S, Eng., SS) is independent of outcome (i.e. empl, grad schl, other).

9a. Are the graduates classified in 26.2 really a random sample? What evidence is given for this?

9b. What is the population, or what are the populations being sampled?

9c. In view of 9a, 9b is this a good illustration of chi-square in your opinion?

9d. Does it seem to you that the row or column totals are fixed in advance?

9e. Leaving aside the above, if we formally prepare a chi-square statistic only to illustrate the workings of the method we need the table of "expected counts." Give that table.

9f. Are all expected counts at least 5?

9g. Are any expected counts close to 5 (or less than 5)? If so, they may be major players in whether the chi-square statistic will be "large". Check for this by determining the standardized residuals $(O-E)/\sqrt{E}$ for each of the six cells. Identify any cells with unusually small or large standardized residuals. You interpret them as z-scores. (See page 699).

9h. Determine which type of chi-square test of the hypothesis is being advanced by the book (its name).

9i. Determine the P-value. If the conditions had all been met for a proper application of the chis-square method to this data what would you be able to conclude?