**Biometry Lab Assignment 4** (**10 points)**

**Due at start of lab next week. Make sure you do the problems both in Minitab and R**

1) A company that makes commemorative metal wrist bands can save money if they buy strips of metal that are 19 cm long. To see if that is cost effective (i.e., they can mostly use only one strip per band) most people should have wrists less than 19 cm to require only 1 strip to make a wrist band. So, they measured wrist diameters for a sample of 252 people. At a level of p < 0.05, is it likely that average wrist size will require only one band? Do the appropriate test both in MiniTab and R. Make sure you say the kind of test you are doing, state the Ha, Ho, and interpret the results of the test. The data file is *wristcsv.csv* (3 pts)

2) Elgar et al. (1996) measured the horizontal (width) and vertical (height) dimension of spider webs made in the dark and light. In the study, the dimensions of the webs made in the dark, and then in the light were compared for each spider. Do the appropriate test to see if there was a difference in the***vertical*** dimension of the webs made in dark and light at p< 0.05 in both MiniTab and R. Make sure you say the kind of test you are doing, state the Ha, Ho, and interpret the results of the test. The data file is *elgarcsv.csv* (3 pts)

3) a) In a study of a new potentially weight reducing medication, researchers gave 200 volunteers the medication and another group of 200 a placebo. They measured an obesity index for each person after 6 months. A lower score means less obese. Was there an effect of the medication (*was it more effective at reducing obesity compared to placebo*) at p < 0.05? Do the appropriate test in MiniTab and R. Make sure you say the kind of test you are doing, state the Ha, Ho, and interpret the results of the test. The data file is OI.DRUGcsv.csv (4 pts)

b) BONUS POINT. Use tapply() in R to get the sample variances for the medication group and the placebo group.

Note: For all problems R turn in both the code for the script file and the output on the console. You may have to change formatting to run in MiniTab vs. R.