STAT 202 Name:_____
Lab #2 – Inference for the mean

For the two problems that follow you are to conduct a complete analysis of the study data presented. Write-up your analyses in a Word document and email it to me at the end of class. THESE DO NOT HAVE TO BE LONG BUT THEY SHOULD BE COMPLETE! Include any relevant plots and summaries from StatCrunch that you feel support your conclusions. Be sure to include in your write-up: (1) a careful statement of the population parameter of interest in the study, (2) a careful statement of the hypotheses being tested, (3) a check of the assumptions of the procedures and whether or not they are met, (4) relevant summary information from the testing procedure (mean, standard error, test statistic, p-value, etc.), and (5) a brief summary of the results of the procedure and the conclusions you draw.

Note that StatCrunch commands are on the back of this sheet.

Problem 1

A recent study compared different psychological therapies for teenage girls suffering from anorexia, an eating disorder that can cause them to become dangerously underweight. Each girl's weight was measured before and after a period of cognitive behavioral therapy. This form of psychotherapy stressed identifying the thinking that causes the undesirable behavior and replacing it with thoughts designed to help to improve this behavior. The table below shows the data which are stored on Blackboard in an Excel file called *lab10.data.xls*. The therapy is considered beneficial if the girl gains **any** amount of weight.

Is therapy beneficial for treating anorexia? Support your conclusions using a hypothesis test and a confidence interval. Explain why this is a one-sample problem and not a two-sample problem. Be sure to check the assumptions of the procedure used.

	Weight				Weight	
Girl	Before	After		Girl	Before	After
1	80.5	82.2		16	80.4	71.3
2	84.9	85.6		17	83.3	85.4
3	81.5	81.4		18	83	81.6
4	82.6	81.9		19	87.7	89.1
5	79.9	76.4		20	84.2	83.9
6	88.7	103.6		21	86.4	82.7
7	94.9	98.4		22	76.5	75.7
8	76.3	93.4		23	80.2	82.6
9	81	73.4		24	87.8	100.4
10	80.5	82.1		25	83.3	85.2
11	85	96.7		26	79.7	83.6
12	89.2	95.3		27	84.5	84.6
13	81.3	82.4		28	80.8	96.2
14	76.5	72.5		29	87.4	86.7
15	70	90.9				

Problem 2

David E. Brown is an expert in wildlife conservation. In his book *The Wolf of the Southwest: The Making of an Endangered Species* (University of Arizona Press), he records the following weights of adult grey wolves from two regions in Old Mexico:

Chihuahu region (in pounds):

86	75	91	70	79
80	68	71	74	64

Durango region (in pounds):

68	72	79	68	77	89	62	55	68
68	59	63	66	58	54	71	59	67

Is there a significant difference in the weights of the two populations of wolves? Give support for your answers. Be sure to check the assumptions of the procedure used.

Confidence Intervals and Hypothesis Tests for the one-sample t-procedure:

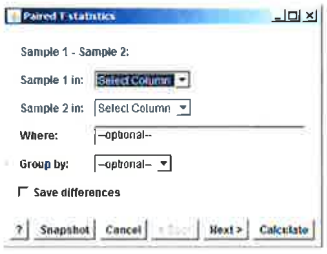
1. Got to the STAT menu.
2. Select T STATISTICS.
3. Select ONE SAMPLE.
4. Select WITH DATA.
5. Select the variable of interest and hit NEXT.
6. For a hypothesis test, enter the appropriate NULL MEAN value and choose the correct ALTERNATIVE hypothesis. Click on CALCULATE.
7. For a confidence interval, click CONFIDENCE INTERVAL and enter the correct confidence level. Click on CALCULATE.

Confidence Intervals and Hypothesis Tests for a matched pairs sample (this is still the one-sample t-procedure):

1. Take the difference between column 1 variable and column 2 variable and conduct the above analysis on this difference.

OR,

1. Got to the STAT menu.
2. Select T STATISTICS.
3. Select PAIRED.
4. Select the first variable of interest for SAMPLE 1 and the second variable of interest for SAMPLE 2.
5. Hit NEXT.
6. For a hypothesis test, leave the NULL MEAN value at 0 and choose the correct ALTERNATIVE hypothesis. Click on CALCULATE.
7. For a confidence interval, click CONFIDENCE INTERVAL and enter the correct confidence level. Click on CALCULATE.



Confidence Intervals and Hypothesis Tests for the two-sample t-procedure:

1. Got to the STAT menu.
2. Select T STATISTICS.
3. Select TWO SAMPLE.
4. Select WITH DATA.
5. Select the sample from the first population for SAMPLE 1 and from the second for SAMPLE 2.
6. Hit NEXT. (For now, make sure POOL VARIANCE has a check mark. You can also uncheck it and see what happens.)
7. For a hypothesis test, leave the NULL MEAN value at 0 and choose the correct ALTERNATIVE hypothesis. Click on CALCULATE.
8. For a confidence interval, click CONFIDENCE INTERVAL and enter the correct confidence level. Click on CALCULATE.