Homework for Chapter 6

***Hypothesis Test*** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. State the question.

2. Define the population, variable, and parameter you will use.

3. State the hypotheses. State the level of significance. (alpha = .05 or .01)

4. Name the test.

5. Conduct the test giving statistics, the test statistic and the P-value. ( Show your work )

6. Write a conclusion that answers the question.

7. Find the 95% confidence interval.

8. What type of error could we have made in our conclusion?

***Hypothesis Test #1*** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Question. A company has developed a new deluxe AAA battery that is supposed to last longer than its regular AAA battery. However, these new batteries are more expensive to produce, so the company would like to be convinced that they really do last longer. Based on years of experience, the company knows that its regular AAA batteries last for 30 hours of continuous use, on average with a standard deviation of 4.2 hours. The company selected an SRS of 35 new batteries and uses them continuously until they are completely drained. The sample average is 34 hours. Use an alpha level of .05.

2. Define the population, variable, and parameter you will use.

Population- AAA Batteries

Variable-

Parameter

3. State the hypotheses. State the level of significance.

Is the sample average true? Alpha .05

4. Name the test.

H =30

H >30

5. Conduct the test giving statistics, the test statistic and the P-value. (Show your work)

Z=(34-30/.05/ 35)

6. Write a conclusion that answers the question.

7. Find a 90% confidence interval.

8. What type of error could we have made in our conclusion?

***Hypothesis Test #2*** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Question: The diameter of a spindle in a small motor is supposed to be 5 millimeters with a st.dev. of 0.04 mm. If the spindle is either too small or too large, the motor will not perform properly. The manufacturer measures the diameter in a sample of 10 motors and finds the average to be 5.04 mm. Does the manufacturer have significant evidence ( alpha = .01) that the shipment of motors is defective?

2. Define the population, variable, and parameter you will use.

3. State the hypotheses. State the level of significance.

4. Name the test.

5. Conduct the test giving statistics, the test statistic and the P-value. ( Show your work )

6. Write a conclusion that answers the question.

7. Find a 95% confidence interval.

8. What type of error could we have made in our conclusion?

***Hypothesis Test #3*** *Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

1. Question: In 2005, Congress passed the Bankruptcy Abuse Prevention and Consumer Protection Act. This act made significant changes to the administration of bankruptcy relief. The Government Accountability Office ( GAO ) was commissioned to study the effects of the bankruptcy reform law on consumers. Attorney fees in consumer bankruptcy cases were studied by the GAO and reported in their 2008 Bankruptcy Reform report. In the period of Feb. to March 2007, there were 71,106 Chapter 7 consumer bankruptcy cases. A Consumer rights group claimed the attorney fees for such cases were significantly higher that the average of $975.

To estimate legal fees for Chapter 7 consumer bankruptcy cases, the GAO conducted a nationwide random sample of Chapter 7 bankruptcy filings. Business bankruptcy cases and cases not involving attorneys were excluded. In the end, the GAO had *n = 292* consumer cases with attorney involvement. The mean attorney fee in the sample is $1078 and the std. dev. is $592. Use an alpha level of .01.

2. Define the population, variable, and parameter you will use.

3. State the hypothesis. State the level of significance.

4. Name the test.

5. Conduct the test giving statistics, the test statistic and the P-value.

6. Write a conclusion that answers the question.

7. Find a 99% confidence interval.

8. What type of error could we have made in our conclusion?