

Problem Set 6 for Math 17

Date Due: March 25, 2011

January 21, 2011

Problems:

Chapter 22 - 26, 28, 40

Chapter 23 - 2, 14, 40 (you can enter this data into Rcmdr)

Be sure to follow all steps when performing hypothesis tests and to check your assumptions for both CIs and hypothesis tests, unless specified not to or it was done as a previous part in the same problem.

Additional Questions:

The data set fish.txt contains information on 7 different fish species, including basic measurements. We will treat the data set as a random sample of the fish. We will consider overall patterns in the fish before focusing on differences between species later (perhaps). For reference, some of the variables in the data set are:

L2: Length from the nose to the notch of the tail (in cm)

L3: Length from the nose to the end of the tail (in cm)

Width%: Maximal width as % of Length3

Some analysis of the data set has been performed and can be found in the related Word document. Use the analysis to address the following questions.

1. Suppose we are interested in determining if average L2 is greater than 25 cm.
 - a. What hypotheses should you test?
 - b. What are the conditions that need to hold and do they check out?
 - c. Report the test statistic and p-value.
 - d. Is there sufficient evidence to conclude that the average L2 value for the fish is larger than 25 cm? Use a .01 significance level, and provide your decision and conclusion.

2. We now turn our attention to Width, which is recorded in an interesting fashion, as a percentage of L3. Suppose we want to construct a 98 percent CI for Width.
 - a. What are the conditions that need to hold and do they check out?
 - b. Report the CI.
 - c. Interpret your CI.
 - d. Interpret the confidence level.
 - e. Oops. We really just wanted to know if there was significant evidence that Width was less than 14.5 percent of L3 on average. Use your CI to give a conclusion for the related hypothesis test and state what significance level you can use for the test.