

**Lab Assignment #19**

This lab is due at 9:35 AM on Monday, 4/15 and is worth 6 points. This may be done individually, or in a group of 2 or 3 people.

1) Test the claim that the average number of chocolate chips in a Chips Galore cookie is equal to 17. Use the given data for the number of chocolate chips found in a sample of 30 cookies, and  $\alpha = 5\%$ .

13	18	13	14	13	18	14	14	13	17
19	17	16	18	15	15	14	15	15	18
12	12	11	13	17	16	16	16	18	14

- Explain why this problem will have a two-tailed alternative.
- Write the null and alternative hypotheses.
- Calculate the test statistic. (It's  $t$ .)
- Find bounds on the  $p$ -value. (The  $p$ -value equals two times the tail area for this problem.)
- State your conclusion.
- Write a 1-sentence summary.
- Check your answer  $t$  and  $p$  on your GC, if you have a GC.

2) At a Christmas tree farm, you measure the heights of sixteen 10-year-old Noble Fir trees. See data. Heights are measured in feet.

7.49 7.86 7.87 7.41 8.31 7.98 7.95 7.80  
8.48 8.07 8.32 8.01 8.15 7.77 8.03 7.89

Test the claim at  $\alpha = 2.5\%$  that the average height is less than 8 feet.

- a) Explain why this problem will have a one-tailed alternative. Is it left-tailed or right-tailed? Why?
- b) Write the null and alternative hypotheses.
- c) Calculate the test statistic. (It's  $t$ .)
- d) Check that your  $t$ -value has the correct sign. (What is the correct sign? Why?)
- e) Find bounds on the  $p$ -value. (The  $p$ -value equals the tail area for this problem.)
- f) State your conclusion.
- g) Write a 1-sentence summary.
- h) Check your answer  $t$  and  $p$  on your GC, if you have a GC.

3) There are 14,589 households in the Northeast Idaho Water District.

A sample of 35 households finds that the average water used per household on August 11 was 165.3 gallons, with a standard deviation of 102.5 gallons.

a) Find a 90% confidence interval for the average amount of water used by all households in the NEIWD for August 11.

b) Find a 90% confidence interval for the TOTAL amount of water used by the NEIWD for August 11.