**MAT 150.5 Statistics Assignment #14**

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1. A company that produces bread is concerned about the distribution of the amount of sodium in its bread. The company takes a simple random sample of 100 slices of bread and computes the sample mean to be 103 milligrams of sodium per slice. Assume that the population standard deviation is 10 milligrams.

a) Construct a 95% confidence interval estimate for the mean sodium level.

b) Construct a 99% confidence interval estimate for the mean sodium level.

1. Fill in the blanks with on of the following: *increases, decreases,* or *stays the same* where .
2. As the sample size (n) increases, the margin of error (E) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. As the confidence level (C) increases, the margin of error (E) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. As the standard deviation () increases, the margin of error (E) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. The teachers union is concerned about the amount of time teachers spend each week doing schoolwork at home. A simple random sample of 56 teachers had a mean of 8.0 hours per week working at home after school. Assume that the population standard deviation is 1.5 hours per week.
6. Construct a 95% confidence interval estimate for the mean number of hours per week a teacher spends working at home.
7. Does the confidence interval support that teachers work at home after school more than 10 hours a week? Why or why not?
8. A survey of 85 randomly selected homeowners finds that they spend a mean of $67 per month on internet. Assume that the population standard deviation is $14 per month.
9. Construct and interpret a 99% confidence interval estimate for the mean amount of money spent per month on internet by all homeowners.
10. Does the confidence interval support that internet costs more than $60 per month? Why or why not?
11. The actual time it takes to cook a ten-pound turkey is a normally distributed. Suppose that a random sample of 20 ten pound turkeys is taken with a sample mean of 2.9 hours and a sample standard deviation of 0.24 hours. Calculate a 95% confidence interval for the average cooking time of a ten pound turkey.
* A very special thanks to Dr. Nasar Audrey for this worksheet