Table Number:_____   Group Name: _____

Group Members:_____   _____   _____

Estimating Word Lengths

To understand more about confidence intervals, we are going to return to the *Gettysburg Address* activity, in which we sampled words from the Gettysburg Address. We will use the Gettysburg Address as the population, and take random samples and construct confidence intervals so that we can see how they behave and how to interpret them.

Research Question: What is a good estimate for the *average* word length for *all of the words* in the Gettysburg Address?

Use the Gettysburg Address applet (located on the course website in the Chapter 9 folder or here) to take a random sample of 25 words. Set the sample size to 25 and number of samples to 1. This will draw a random sample of 25 words from the Gettysburg Address and give you the sample mean.   Write the sample mean here:

Mean: _____   and the sample standard deviation: _____

Now, find a 95% confidence interval to estimate the true mean word length for all of the words in the Gettysburg Address.

Write the correct *t* multiplier here (Use the *t*-Distribution Critical Values table on p. A-7 in your text.) _____

Margin of error: (Show work please!) _____

Interval: (Show work please!) _____

1. Provide an interpretation of the results. Remember that you will need to report the *interval estimate*, and the *level of confidence* in your interpretation.

2. Did the interval you found include the true mean word length of 4.29?

3. What percentage of all the intervals in the class would you expect to NOT overlap the population mean? Explain.

Repeat the above to find another 95% confidence interval to estimate the true mean word length for all of the words in the Gettysburg Address.

Use the Gettysburg Address applet (located on the course website in the Chapter 9 folder or here) to take another random sample of 25 words. Set the sample size to 25 and number of samples to 1.

Mean: _____   and the sample standard deviation: _____

Now, find the 95% confidence interval.

Write the correct *t* multiplier here (Use the *t*-Distribution Critical Values table on p. A-7 in your text.) _____

Margin of error: (Show work please!) _____

Interval: (Show work please!) _____

4. Provide an interpretation of the results. Remember that you will need to report the *interval estimate*, and the *level of confidence* in your interpretation.

5. Did the interval you found include the true mean word length of 4.29?

6. What percentage of all the intervals in the class would you expect to NOT overlap the population mean? Explain.

Repeat the above, except now find a 90% confidence interval to estimate the true mean word length for all of the words in the Gettysburg Address.

Use the Gettysburg Address applet (located on the course website in the Chapter 9 folder or here) to take another random sample of 25 words. Set the sample size to 25 and number of samples to 1.

Mean: _____ and the sample standard deviation: _____

Now, find the 90% confidence interval.

Write the correct *t* multiplier here (Use the *t*-Distribution Critical Values table on p. A-7 in your text.) _____

Margin of error: (Show work please!) _____

Interval: (Show work please!) _____

7. Provide an interpretation of the results. Remember that you will need to report the *interval estimate*, and the *level of confidence* in your interpretation.

8. Did the interval you found include the true mean word length of 4.29?

9. What percentage of all the intervals in the class would you expect to NOT overlap the population mean? Explain.

Reference

Garfield, J., & Zieffler, A. (2007). EPSY 3264 Course Packet, University of Minnesota, Minneapolis, MN.