Worksheet: Confidence Intervals Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**YOU MUST SHOW HOW YOU SET UP ALL FORMULAS!!!**  
1) A researcher wishes to estimate, within $25, the true average amount of postage a community college spends each year. If she wishes to be 90% confident, how large a sample is necessary? The population standard deviation is known to be $80.

2) The United States Golf Association (USGA) tests all new brands of golf balls to assure that they meet USGA specifications. One test conducted measures the distance traveled by a golf ball that is hit by a particular machine, called “Iron Bryon.” Suppose USGA wishes to estimate the mean distance for a new brand with a 95% confidence interval within 1 yard. Assume that past tests indicate a standard deviation of 10 yards. How many golf balls should be hit by the machine so that the desired accuracy is achieved?

3) A sample of 15 private-duty nurses showed an average weekly wage of $480.75. The standard deviation of the sample was $56. Find the 98% confidence interval of the true mean.

4) A random sample of 21 American adult males who jog at least 15 miles per week had a mean pulse rate of 52.6 beats per minute and a standard deviation of 3.22 beats per minute. Find a 95% confidence interval for the mean pulse rate of all American adult males who jog at least 15 miles per week.

5) As an aid in the establishment of personnel requirements, the director of a hospital wishes to estimate the mean number of people who are admitted to the emergency room during a 24-hour period. The director randomly selects 64 different 24-hour periods and determines the number of admissions for each. For this sample, the mean is 19.8. The population standard deviation is known to be 5. Find a 99% confidence interval for estimating the mean number of admissions per 24-hour period.

1. A company that produces white bread is concerned about the distribution of the amount of sodium in its bread. The company takes a simple random sample of 75 slices of bread and computes the sample mean to be 103 milligrams of sodium per slice.
2. Construct a 99% confidence interval for the unknown mean sodium level assuming that the population standard deviation is 10 milligrams.
3. Construct a 99% confidence interval if the standard deviation of 10 milligrams was from the sample and not the population.