**Statistics: 6.1 Quiz** **Name**_____

**Solve each problem. Show all work and box all final answers.**

1. The data set represents the amounts of time (in minutes) spent watching online videos each day for a random sample of 30 college students. Assume the population has a standard deviation of 2.4 minutes.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 5.0 | 6.25 | 8.0 | 5.5 | 4.75 | 4.5 | 7.2 | 6.6 | 5.8 | 5.5 |
| 4.2 | 5.4 | 6.75 | 9.8 | 8.2 | 6.4 | 7.8 | 6.5 | 5.5 | 6.0 |
| 3.8 | 6.75 | 9.25 | 10.0 | 9.6 | 7.2 | 6.4 | 6.8 | 9.8 | 10.2 |

   a. Find the point estimate of the population mean.

   b. Find the margin of error for a 95% confidence level.

   c. Construct a 95% confidence interval for the population mean.

2. You want to estimate the mean time college students spend watching online videos each day. The estimate must be within 1 minute of the population mean. Determine the minimum sample size required to construct a 99% confidence interval for the population mean. Use the population standard deviation from #1.

3. Use the confidence interval to find the margin of error and the sample mean.
   (1.71, 2.05)

4. 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 100 slices of bread and computes the sample mean to be 103 milligrams of sodium per slice.

   Construct a 90% confidence interval for the unknown mean sodium level assuming that the population standard deviation is 10 milligrams.

5. From a random sample of 48 days in a recent year, U.S. gas prices had a mean of $3.63. Assume the population has a standard deviation of $0.21. Use this information to construct the 95 % confidence interval for the population mean.

6. As the standard deviation increases, the margin of error _____.

7. When estimating a population mean, are you more likely to be correct when you use a point estimate or an interval estimate? Explain.