Name: _____ Date: _____

1. **Reading** A sample of normally distributed scores of forty eighth-grade students has a mean of 82 and a standard deviation of 15. Find the 95% confidence interval for the mean of all the reading scores.

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2. **Cholesterol** The serum cholesterol level was collected for a group of 525 college women. The mean of the same was 191.7 milligrams per 100 milliliters with a standard deviation of 41.

   a. Construct a 90% confidence level for the mean serum cholesterol level.

   b. Construct a 95% confidence level for the mean serum cholesterol level.

   c. Suppose you hear a claim that the mean serum cholesterol level for women in college is 200. What would your reaction based on your answers to parts **a** and **b**? Why?

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3. The two intervals (114.4, 115.6) and (114.1, 115.9) are confidence intervals for μ = true average resonance frequency (in hertz) for all tennis rackets of a certain type.

   a. What is the value of the sample mean resonance frequency?

   b. The confidence level for one of the intervals is 90% and for the other it is 99%. Which is which and how can you tell?

4. When people smoke, the nicotine they absorb is converted to cotinine, which can be measured. A sample of 30 smokers has a mean cotinine level of 172.5. Assuming that sigma is known to be 119.5, find a 90% confidence interval estimate of the mean cotinine level of all smokers.

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5. The number of days with temperatures above freezing for a sample of 35 cities had a mean of 190.7 days and a sample standard deviation of 54.2 days.

    a. Find the 95% confidence interval for the mean number of days with temperatures above freezing.

    b. Find the 98% confidence interval for the mean number of days with temperatures above freezing.

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6. **Intelligence Quotient** Suppose managers of a corporation want to estimate the IQ score for their employees. How many employees must be randomly selected for IQ tests if the managers want to be 95% confident that the mean is within 2 IQ points of the population mean? They know from previous studies that the standard deviation is 15 points.

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7. During TV commercial breaks, the time between uses of the remote control by males: 90% confidence; $n = 25$, $\bar{x} = 5.24$ seconds, the population is normally distributed, and $\sigma = 2.5$ seconds.

    a. Find the margin of error

    b. Find a confidence interval for estimating the population mean

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