

Lab Assignment 8.1

Name: _____ Date: _____ Row: _____

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1. Among various ethnic groups, the standard deviation of heights is known to be approximately three inches. We wish to construct a 95% confidence interval for the mean height of male Swedes. Forty-eight male Swedes are surveyed. The sample mean is 71 inches. The sample standard deviation is 2.8 inches.

1. \bar{x} = _____ σ = _____ n = _____
2. Construct a 95% confidence interval for the population mean height of male Swedes.
3. State the confidence interval in words.
4. Find the point estimate for mean height of male Swedes
5. Calculate the error bound (E).
6. Express the confidence interval in $\bar{x} \pm E$ form.
7. Sketch the graph.

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2. Suppose that an accounting firm does a study to determine the time needed to complete one person's tax forms. It randomly surveys 100 people. The sample mean is 23.6 hours. There is a known standard deviation of 7.0 hours. The population distribution is assumed to be normal.

1. \bar{x} = _____ σ = _____ n = _____
2. Construct a 90% confidence interval for the population mean time to complete the tax forms.
3. State the confidence interval in words.
4. Sketch the graph.

3. The American Community Survey (ACS), part of the United States Census Bureau, conducts a yearly census similar to the one taken every ten years, but with a smaller percentage of participants. The most recent survey estimates with 90% confidence that the mean household income in the U.S. falls between \$69,720 and \$69,922.

1. Find the point estimate for mean U.S. household income.
2. Find the error bound for mean U.S. household income.
4. Find the critical value, $Z_{\alpha/2}$ corresponding to a 88% confidence level.

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5. The cost of homes in the area are listed below. The standard deviation for this data to the nearest hundred is $\sigma = \$100,000$.

\$589,000; \$610,000; \$765,000; \$750,000; \$657,000; \$475,000; \$599,000; \$799,950; \$499,000;
\$629,950

1. Create a 95% confidence interval for the mean cost of homes in the area.
2. Interpret the confidence interval in the context of the problem.
6. The average height of young adult males has a normal distribution with standard deviation of 2.5 inches. You want to estimate the mean height of students at your college or university to within one inch with 90% confidence. How many male students must you measure? Write an interpretation.
7. The population standard deviation for the height of high school basketball players is three inches. If we want to be 95% confident that the sample mean height is within one inch of the true population mean height, how many randomly selected students must be surveyed? Write an interpretation.

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