

A.P. Statistics
Assignment 7.3

Remember to show your thinking through your work.

Be sure to explicitly state what you are entering into the calculator.

- 1) The 2000 census "long form" asked the total 1999 income of the householder, the person in whose name the dwelling unit was owned or rented. This census form was sent to a random sample of 17% of the nation's households. Suppose that the households that returned the long form are an SRS of the population of all households in each district. In Middletown, a city of 40,000 persons, 2621 householders reported their income. The mean of the responses was $\bar{x} = \$33,453$, and the standard deviation was $s = \$8721$. The sample standard deviation for so large a sample will be very close to the population standard deviation σ . Use these facts to give an approximate 99% confidence interval for the 1999 mean income of Middletown householders who reported income.

- 2) A study of the career paths of hotel general managers sent questionnaires to an SRS of 160 hotels belonging to major U.S. hotel chains. There were 114 responses. The average time these 114 general managers had spent with their current company was 11.78 years. Give a 99% confidence interval for the mean number of years general managers of major-chain hotels have spent with their current company. (Take it as known that the standard deviation of time with the company for all general managers is 3.2 years.)

- 3) A radio talk show invites listeners to enter a dispute about a proposed pay increase for city council members. "What yearly pay do you think council members should get? Call us with your number." In all, 958 people call. The mean pay they suggest is $\bar{x} = \$9740$ per year, and the standard deviation of the responses is $s = \$1125$. For a large sample such as this, s is very close to the unknown population. The station calculates the 95% confidence interval for the mean pay that all citizens would propose for council members to be \$9669 to \$9811. Is this result trustworthy? Explain your answer.