**8.3 Confidence Interval For Means Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Choose an SRS of size n from a population having unknown mean µ and known standard deviation σ. As long as the Normal and Independent conditions are met, a level C confidence interval for µ is**



1. As marketing director of TXU Electric you are concerned about the average household consumption of electricity each month. You take a sample of 49 households and determine a mean consumption of 1,834 KWH per month. Previously you have determined that the standard deviation of consumption for all households to be 175 KWH.
   1. Calculate a 90% confidence interval.
   2. For a sample of size 100 with the same mean calculate a 90% confidence interval.
   3. What sample size is required to reduce the margin of error to 20?

1. A random sample of 61 children with working mothers showed that the children were absent an average of 5.3 days per term. The standard deviation for all children with working mothers is 1.8 days. Provide a 99% confidence interval for the average number of days absent per term for all the children. Explain the meaning of the confidence interval.
2. To estimate the mean expenditure of customers at a local Sonic, students in a marketing research class sample 200 customers and find a mean expenditure of $5.67. The standard deviation for all meal expenditures is believed to be $1.10. Develop a 95% confidence interval for the mean expenditure for all customers. Interpret the results.
3. Jose has a thriving business in Acapulco selling authentic plastic Inca relics to tourists. To complete a formal business plan in order to get financing to expand his business, he must estimate his true daily profit. Overall, daily profit has a standard deviation of $100. How many days does Jose need to include in his sample to have a margin of error of $25 for his true daily mean profit with extreme confidence (99%)?