

1. A hardware manufacturer produces bolts used to assemble various machines. Assume that the diameter of bolts produced by this manufacturer has an unknown population mean  $\mu$  and the standard deviation is 0.1 mm. The average diameter of a simple random sample of 50 bolts is 5.11 mm. Calculate the 90% confidence interval.
2. If the sample of 50 bolts from problem #1 had a mean diameter of 5.08, calculate the 95% confidence interval.
3. You want to rent an unfurnished one-bedroom apartment in Boston next year. The mean monthly rent for a simple random sample of 32 apartments advertised in the local newspaper is \$1,400. Assume that the standard deviation is known to be \$220. Find a 92% confidence interval for the mean monthly rent for unfurnished one-bedroom apartments available for rent in this community.
4. Suppose you were to change the confidence level in problem #3 to 95% using the same sample. Describe how the confidence interval would change?
5. What does a 95% confidence interval mean?

