STAT 400
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Discussion 11

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1. A random sample of size $n = 16$ from $N(\mu, \sigma^2 = 64)$ yielded $\bar{x} = 85$.
Construct the following confidence intervals for μ:

a) 95%. b) 90%. c) 80%.

2. What is the minimum sample size required for estimating μ for $N(\mu, \sigma^2 = 64)$ to within ± 3 with confidence level

a) 95%. b) 90%. c) 80%.

3. Suppose the overall (population) standard deviation of the bill amounts at a supermarket is $\sigma = \$13.75$.

a) Find the probability that the sample mean bill amount will be within \$2.00 of the overall mean bill amount for a random sample of 121 customers.

b) What is the minimum sample size required for estimating the overall mean bill amount to within \$2.00 with 95% confidence?

4. 3. (continued)
The supermarket selected a random sample of 121 customers, which showed the sample mean bill amount of \$78.80.

c) Construct a 95% confidence interval for the overall mean bill amount at this supermarket.

d) Suppose the supermarket puts Alex in charge of computing the confidence interval, and he gets the answer $(76.15, 81.45)$. Alex says that he used a different confidence level, but other than that did everything correctly. Find the confidence level used by Alex.