MCTC Intro Stats **8.1 Distribution of Sample Means Classwork**

1. Texas has roughly 225,000 farms, more than any other state in the United States. The actual mean farm size is $\mu = 582$ acres and the standard deviation is $\sigma = 150$ acres. What is the probability of selecting a random sample of 100 farms with a mean greater than 600 acres?

2. Suppose you know that the distribution of sample means for samples of 500 households concerning the people per household is normal with a mean of 2.64 and a standard deviation of 0.06. Suppose you select a random sample of $n = 500$ households and determine that the mean number of people per household for this sample is 2.55.

   How many standard deviations is the sample mean from the mean of the distribution of sample means?

   What is the probability that a second sample selected would have a mean less than 2.55?

3. **Assume that cans of Coke are filled so that the actual amounts have a mean of 12.00 ounces. A random sample of 36 cans has a mean amount of 12.19 ounces. The distribution of sample means of size 36 is normal with an assumed mean of 12.00 ounces, and those sample means have a standard deviation of 0.02 ounce.**

   a. How many standard deviations is the sample mean from the mean of the distribution of sample means?

   b. In general, what is the probability that a random sample of size 36 has a mean of at least 12.19 ounces?

   c. Does it appear that consumers are being cheated? Why or why not?

4. **The time that a technician requires to perform annual maintenance on an air-conditioning unit has an right skewed distribution. The mean time is $\mu = 1$ hour and the st. dev. is $\sigma = 1$ hour. Your company has a contract to maintain 70 units in an apartment building. What is the probability that their average maintenance time exceeds 50 minutes?**