

Name:

Elementary Statistics

HW 6.4 part 1

1. In a recent year, the U.S. Mint in Denver manufactured 270 million quarters. Assume that on each day of production, a sample of 50 quarters is randomly selected and the mean weight is obtained.
 - a. Given that the population of quarters has a mean weight of 5.67 g, what do you know about the sample means?
 - b. What do you know about the shape of the distribution of sample means?
 - c. The population of quarters has a mean of 5.67 g, but the weights of individual quarters vary. For each sample of 50 quarters, consider the proportion of quarters that weigh less than 5.67 g. What do you know about the shape of the distribution of the sample proportions?
2. Data set 20 in Appendix B includes a sample of weights of 100 M&M candies. If we explore this sample of 100 weights by constructing a histogram and finding the mean and standard deviation, do those results describe the sampling distribution of the mean? Why or why not?
3. For the population of all college students currently taking a statistics course, you want to estimate the proportion who are women. You obtain a simple random sample of statistics students at Broward College in Florida. Is the resulting sample proportion a good estimator of the population proportion of all college statistics students? Why or why not?

4. Many states have a Pick 3 lottery in which three digits are randomly selected each day. Winning requires that you select the same three digits in the same order that they are drawn. Assume that you compute the mean of each set of three selected digits.
 - a. What is the approximate shape of the distribution of the sample means (uniform, normal, skewed, or other)?
 - b. What value do the sample means target? That is, what is the mean of all such sample means?