Name_____ Date _____

Elementary Statistics

Period

Chapter 6 Quiz 2 REVIEW Sections 6.4-6.5

1. The sampling distribution of the sample mean...

a. _____ the population mean

b. forms what type of distribution ______

2. The sampling distribution of the sample variance...

a. _____ the population variance

b. forms what type of distribution ______

3. The sampling distribution of the sample proportion...

a. _____ the population proportion

b. forms what type of distribution ______

4. Which statistics are considered unbiased estimators? Why?

5. Which statistics are considered biased estimators? Why?

6. Give two reasons we should select samples with replacement rather than without replacement.

7. When should I use the central limit theorem?

8. What formula should be used to find a z-score when using the central limit theorem?

- 9. What are the symbols used for the notation of the following terms:
 - a. sample size
 - b. population mean
 - c. sample mean
 - d. population variance
 - e. sample variance
 - f. population proportion
 - g. sample proportion
 - h. standard error of the mean

10. You roll a standard die numbered 1-6 three times and get the following results: {2,3,5}. Use the set {2,3,5} as the population of numbers.

a. Complete the table to describe the sampling distribution of the sample mean, range, and proportion of even numbers for a sample size of 2 (with replacement).

<u>Sample</u>	<u>Probability</u>	<u>Sample mean</u>	Sample range	<u>Sample</u> proportion of
				<u>even numbers</u>

- b. Find the population mean.
- c. Find the population range.
- d. Find the population proportion of even numbers.
- e. Condense the sample means from the table on the last page into the following sampling distribution. Then find the mean of the sample means.

Sample Mean	<u>P(x)</u>	

f. Condense the sample ranges from the table on the last page into the following sampling distribution. Then find the mean of the sample ranges.

Sample Range	<u>P(x)</u>	

g. Condense the sample proportions of even numbers from the table on the last page into the following sampling distribution. Then find the mean of the sample proportions.

Sample Proportion	<u>P(x)</u>

h. Based on your answers to questions 10 a-g, which of the three statistics are unbiased estimators of the population parameters? Explain.

11. M&M plain candies have weights that are normally distributed with a mean of 0.8565 grams and a standard deviation of 0.0518 grams.

a. If 1 M&M plain candy is randomly selected, what is the probability that it weighs more than 0.8535 grams?

b. If 465 M&M plain candies are randomly selected, what is the probability that their mean weight is at least 0.8535 grams?

12. Women have head circumferences that are normally distributed with a mean of **22.65** inches and a standard deviation of **0.80** inches.

a. If a particular company makes hats so that they fit head circumferences between 21.00 inches and 25.00 inches. What percentage of women can fit into these hats?

b. If the company wants to produce hats to fit all women except for those with the smallest 2.5% and the largest 2.5% head circumferences, what head circumferences should be accommodated?

c. If 64 women are randomly selected, what is the probability that their mean head circumference is between 22.00 inches and 23.00 inches?