

Name _____

Date _____

Elementary Statistics

Period _____

Chapter 6 Final Exam Review
Normal Probability Distributions

_____ 1. Which of the following is NOT a property of a standard normal distribution?

- a. The area under the density curve is one
- b. The standard deviation is always one
- c. The mean is always one
- d. The graph is bell-shaped

_____ 2. Which of the following statistics of a sampling distribution is considered to be a BIASED estimator of the population parameter?

- a. Proportion
- b. Mean
- c. Variance
- d. Standard deviation

_____ 3. Which of the following statements is FALSE regarding sampling with replacement rather than without replacement?

- a. When selecting a relatively small sample from a large population, it makes no significant difference whether we sample with or without replacement.
- b. Simpler formulas are used when sampling with replacement.
- c. Analyzing results of independent events is usually easier.
- d. Sampling with replacement results in dependent events that are affected by previous outcomes.

_____ 4. Use the continuity correction and describe the region of the normal curve that corresponds to the binomial probability of no more than 26 defective DVD's.

- a. the area to the left of 26
- b. the area to the right of 25.5
- c. the area to the left of 26.5
- d. the area to the right of 26.5

_____ 5. In which situation should the central limit theorem NOT be used?

- a. When the sample size is 60 and the original data is normally distributed
- b. When the sample size is 60 and the original data is skewed to the right
- c. When the sample size is 18 and the original data is skewed to the left
- d. When the sample size is 18 and the original data is normally distributed

_____ 6. If you have a binomial distribution where $n = 53$ and $p = 0.85$, would it be suitable to use the normal distribution as an approximation?

- a. Normal approximation is suitable
- b. Normal approximation is not suitable

7. Assume that the weight loss for the first month of a diet program varies between 7 pounds and 12 pounds, and is spread evenly over the range of possibilities, so that there is a uniform distribution. Find the probability of losing more than 10 pounds.

8. In a particular town, the police response time has a normal distribution with a mean of 8.4 minutes and a standard deviation of 1.7 minutes.

- a. What is the probability that the police response time is less than 5 minutes?
- b. What is the probability that the police response time is between 5 and 10 minutes?
- c. How many minutes separates the lower 70% of police response time from the upper 30%?

9. After many years of product testing, the company knows that the average life a Quick Start battery is normally distributed with a mean of 45 months and a standard deviation of 8 months. If a sample of 50 Quick Start batteries are randomly selected,

a. find the probability that their mean life between 36 and 42 months.

b. find the probability that their mean life exceeds 47 months.

10. The Denver Post stated that 80% of all new products introduced in grocery stores fail within 2 years. If a grocery store chain introduces 66 new products,

a. find the probability that fewer than 58 fail.

b. find the probability that 47 or more fail.