1. You notice that your car seems to run better when you use Brand A of gasoline than when you use Brand B. Can you conclude that Brand A is better than Brand B for your car?

2. A new headache remedy is given to a group of 25 patients who suffer severe headaches. Of these, 20 report that the remedy is very helpful in treating their headaches. From this information you conclude

3. A student organization wants to assess the attitudes of students toward a proposed change in the hours that the library is open. They randomly select 50 freshmen, 50 sophomores, 50 juniors and 50 seniors. The situation described is

4. In a study of the effects of acid rain, a random sample of 100 trees from a particular forest are examined. Forty percent of these show some signs

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of damage. Which of the following statements are correct?

5. Refer to the previous exercise. Which of the following statements are correct?

6. A randomly selected student is asked to respond yes, no or maybe to the question: "Do you intend to vote in the next presidential election?" The sample space is { yes, no, maybe }. Which of the following represent a legitimate assignment of probabilities for this sample space?

7. In a population of students, the number of calculators owned is a random variable X with $P(X = 0) = .2$, $P(X = 1) = .6$, and $P(X = 2) = .2$. The mean of this probability distribution is

8. Refer to the previous problem. The variance for this probability distribution is

9. You play tennis regularly with a friend and from past experience you believe that the outcome of each match is independent. For any given match you have a probability of .6 of winning. The probability that you win the next two matches is

10. The number of calories is a one ounce serving of a certain breakfast cereal is a random variable with mean 110. The number of calories in a full cup of whole milk is a random variable with mean 140. For breakfast you eat one ounce of the cereal with 1/2 cup of whole milk. Let Z be the random variable that represents the total number of calories in this breakfast. The mean of Z is

11. In a large population of college students, 20% of the students have experienced feelings of math anxiety. If you take a random sample of 10 students from this population, the probability that exactly 2 students have experienced math anxiety is

12. Refer to the previous problem. The standard deviation of the sample proportion of students who have experienced math anxiety is

13. If a population has a standard deviation σ, then the standard deviation of mean of 100 randomly selected items from this population is

14. The central limit theorem states that

15. An opinion poll asks a random sample of voters, "Do you think elected government officials are underpaid?" Suppose 25% of the population would respond "yes." If the sample size is 400, the probability that at least 90 respond "yes" is approximately