Statistics 13V, Fall 2006   NAME:_____

Quiz 1 KEY   Last six digits of Student ID#:_____

NOTE: Your quiz may have had the answers in a different order. Correct answer is in bold italics.

1. If a difference seen in sample results is "statistically significant" it means that
    A. There is an important difference in the sample results.
    B. There is an important difference in the population.
    C. ***The difference observed in the sample was unlikely to have occurred if there is no difference in the population.***
    D. There is an important difference in the population that wasn't reflected in the sample results.

2. A company has 500 employees and would like to select a simple random sample of 25 of them for a study. Of the following, only one fits the definition of a simple random sample. Which one is it?
    A. Randomly choose one person whose last name begins with A, one with B, and so on, omitting X because it's least common.
    B. Randomly choose 25 pages from the employee directory, then choose the first person listed on each of those pages.
    C. Number the employees from 1 to 500 based on seniority and randomly choose one person from the first 20 names on the list, one from the next 20, and so on.
    D. ***Number the employees from 1 to 500 in random order and choose the first 25 names on the list.***

3. Below is a "screenshot" of the interactivity in CyberStats, Unit A3, Uses 1. If the "Randomize" button were to be clicked again, which of the following would definitely *not* change?
    A. The mean age for the participants in Treatment 1, shown here as 22.1.
    B. ***The ages, shown here as 20 for Morgan, 29 for Smith, etc.***
    C. The treatment assignments, shown here as 1 for Morgan, 2 for Smith, etc.
    D. The fact that the mean age for Treatment 1 (shown here as 22.1) is lower than the mean age for Treatment 2 (shown here as 26.1).

Random Assignment to Two Methods					
Randomize					
Participants, Ages and Treatment Assignments					
Morgan, 20	1	Becker, 18	1	Wolfe, 27	1
Smith, 29	2	Perry, 19	2	Chen, 18	1
Lopez, 20	1	Jones, 30	1	Davis, 28	2
Garcia, 26	2	Hubka, 22	1	Selig, 34	2
Torres, 23	2	Brooks, 24	2		
Mean Ages Treat 1	22.1	Treat 2	26.1		

4. Which one of the following statements is always true about a randomized experiment? (CS, A3)
    A. A placebo is always used.
    B. Treatment groups are certain to have the same characteristics.
    C. ***The participants are randomly divided into treatment groups or treatment order is randomized.***
    D. The sample is a simple random sample from the population.

5. A randomly selected sample of 1,000 college students was asked whether they had ever used the drug Ecstasy. Sixteen percent (16% or 0.16) of the 1,000 students surveyed said they had. Which one of the following statements about the number, 0.16 is correct?
   A. ***It is a sample proportion.***
   B. It is a population proportion.
   C. It is a margin of error.
   D. It is a conservative margin of error.

Questions 6 to 10: Researchers would like to compare meditation and exercise to see which is more effective for reducing blood pressure. One hundred people who suffer from high blood pressure volunteer to participate in a study for ten weeks. Participants will either be given a 10-week course in meditation or will participate in a 10-week exercise program. Change in blood pressure over the 10 weeks will be measured. The researchers must decide whether to randomly assign the volunteers to the two programs, or allow them to choose.

6. Which of the following is the main advantage of randomly assigning participants to the two programs rather than allowing them to choose?
   A. The participants are more likely to stick with the program for the full 10 weeks.
   B. ***Confounding variables, such as past practice of meditation, should be approximately equal for the two groups.***
   C. Random assignment ensures that the two sample sizes are equal and that requirement is necessary in studies like this one.
   D. Random assignment will allow the results to be extended to the population of all adults.

7. Which of the following is an advantage of allowing participants to choose the program in which to participate?
   A. ***Allowing them to choose will increase the ecological validity of the study because in the real world people choose their own programs.***
   B. Confounding variables, such as past practice of meditation, should be approximately equal for the two groups.
   C. Allowing participants to choose will allow the results to be extended to the population of all adults.
   D. If participants are allowed to choose then a cause and effect conclusion can be made.

8. Suppose participants are randomly assigned to the two programs and a physician measures their blood pressure before and after the 10-week program, without being told who is in which program. This experiment would be
   A. Single blind as long as the participants are not told the results of the blood pressure measurements.
   B. ***Single blind because the physician doesn't know who is in which program, but the participants do know.***
   C. Double blind as long as the participants are not told the results of the blood pressure measurements.
   D. Neither single nor double blind.

9. What is the explanatory variable for this study?

   Whether the person participates in the meditation program or the exercise program.

10. What is the response variable for this study?

   Change in blood pressure over the 10 weeks.