Chapter 5 Practice Multiple Choice

You want to know the opinions of American school teachers about establishing a national test for high school graduation. You obtain a list of the members of the National Education Association (the largest teachers' union) and mail a questionnaire to 2500 teachers chosen at random from this list. In all 1347 teachers return the questionnaire. (answer questions 1 and 2 based on this situation)

1. The *sampling frame* is
A.   the 1347 teachers who mail back the questionnaire.
B.   the 2500 teachers to whom you mailed the questionnaire.
C.   all members of the National Education Association.
D.   all American school teachers.
E.   all American school students.

2. The *sample* is
A.   the 1347 teachers who mail back the questionnaire.
B.   the 2500 teachers to whom you mailed the questionnaire.
C.   all members of the National Education Association.
D.   all American school teachers.
E.   all American school students.

3. Simple random sampling
A.   reduces bias resulting from poorly worded questions.
B.   offsets bias resulting from undercoverage and nonresponse.
C.   reduces bias resulting from the behavior of the interviewer.
D.   reduces variability.
E.   None of the above.

4. An example of a nonsampling error that can reduce the accuracy of a sample survey is
A.   using voluntary response to choose the sample.
B.   using the telephone directory as the sampling frame.
C.   interviewing people at shopping malls to obtain a sample.
D.   variation due to chance in choosing a sample at random.
E.   many members of the sample cannot be contacted.

5. You want to take an SRS of 50 of the 816 students who live in a dormitory on campus. You label the students 001 to 816 in alphabetical order. In the table of random digits you read the entries.

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95592    94007    69769    33547    72450    16632    81194    14873
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The first three students in your sample have labels
A. 955, 929, 400.   B. 400, 769, 769.   C. 559, 294, 007.   D. 929, 400, 769.
E. 400, 769, 335.

6. A public opinion poll in Ohio wants to determine whether or not registered voters in the state approve of a measure to ban smoking in all public areas. They select a simple random sample of fifty registered voters from each county in the state and ask whether they approve or disapprove of the measure. This is an example of a
A.   systematic random sample.   B.   stratified random sample.
C.   multistage sample.   D.   simple random sample.
E.   cluster sample.

7. A stratified random sample addresses the same issues as which of the following experimental designs?
A.   A block design.   B.   A double-blind experiment.
C.   An experiment with a placebo.   D.   A matched pairs design.
E.   A confounded, nonrandomized study.

8. Frequently, telephone poll-takers call near dinner time—between 6 pm and 7 pm—because most people are at home them. This is an effort to avoid
A.   voluntary response bias.
B.   calling people after they have gone to bed.
C.   a convenience sample.
D.   nonresponse.
E.   response bias.

9. The **Bradley effect** is a theory proposed to explain observed discrepancies between voter opinion polls and election outcomes in some elections where a white candidate and a non-white candidate run against each other. The theory proposes that some voters tend to tell pollsters that they are undecided or likely to vote for a non-white candidate, and yet, on election day, vote for the white opponent. This is an example of
A.   voluntary response bias.   B.   bias resulting from question wording.
C.   undercoverage.   D.   nonresponse.
E.   response bias.

10. The most important advantage of experiments over observational studies is that
A.   experiments are usually easier to carry out.
B.   experiments can give better evidence of causation.
C.   confounding cannot happen in experiments.
D.   an observational study cannot have a response variable.
E.   observational studies cannot use random samples.

Does caffeine improve exam performance? Suppose all students in the 8:30 section of a course are given a "treatment" (two cups of coffee) and all students in the 9:30 section are not permitted to have any caffeine before a mid-term exam. (Answer questions 11 and 12)
11. Unfortunately, any systematic difference between the two sections on the exam might be due to the fact that the 8:30 and 9:30 classes have different instructors. This is an example of
A. placebo effect.   B. bias.   C. confounding.   D. observational study.
E. stratification.

12. The response variable in this study is
A. two cups of coffee.   B. the time the class is held.   C. class attendance.
D. teacher's performance.   E. exam performance.

13. Suppose half of the 8:30 students are randomly allocated to the treatment group (two cups of coffee), the other half to the control group (two cups of decaf). In addition, half of the 9:30 students are randomly allocated to the treatment group, the other half to the control group. This is an example of a
A.   voluntary response study.   B.   stratified sampling procedure.
C.   matched pairs design.   D.   completely randomized design.
E.   block design.

14. An experiment was conducted by some students to explore the nature of the relationship between a person's heart rate (measured in beats per minute) and the frequency at which that person stepped up and down on steps of various heights. Three rates of stepping and two different step heights were used. A subject performed the activity (stepping at one of the three stepping rates at one of the two possible heights) for three minutes. Heart rate was then measured at the end of this period. The variables "stepping rate" and "step height" are the
A. factors.   B. levels.   C. controls.   D. units.   E. response variables.

15. A study of elementary school children, ages 6 to 11, finds a high positive correlation between shoe size x and score y on a test of reading comprehension. The observed correlation is most likely due to
A.   the effect of a lurking variable, such as age.
B.   a mistake, since the correlation must be negative.
C.   cause and effect (larger shoe size causes higher reading comprehension).
D.   "reverse" cause and effect (higher reading comprehension causes larger shoe size.
E.   several outliers in the data set.

16. If changes in a response variable are due to the effects of the explanatory variable as well as the effects of lurking variables, and we cannot distinguish between these effects, we are said to have
A.   a cause-and-effect relation between the explanatory and response variable.
B.   a placebo effect.
C.   confounding.
D.   correlation.
E.   extrapolated.

17. The principle reason for the use of *random assignment* in designing experiments is that it
A.   distinguishes a treatment effect from the effects of confounding variables.
B.   allows double-blinding.
C.   reduces sampling variability.
D.   creates approximately equal groups for comparison.
E.   eliminates the placebo effect.

18. The principle reason for the use of *controls* in designing experiments is that it
A.   distinguishes a treatment effect from the effects of confounding variables.
B.   allows double-blinding.
C.   reduces sampling variability.
D.   creates approximately equal groups for comparison.
E.   eliminates the placebo effect.

19. The principle reason for *replication* in designing experiments is that it
A.   distinguishes a treatment effect from the effects of confounding variables.
B.   allows double-blinding.
C.   reduces sampling variability.
D.   creates approximately equal groups for comparison.
E.   eliminates the placebo effect.

20. Are dogs better at tracking the movements of brightly colored objects? Fifteen experienced "disk dogs" who have been trained to catch flying disks in mid-air are given the chance to catch a bright red disk or a plain white disk. Each disk is thrown 10 times for each dog, with the sequence of disks (red or white) determined randomly. The proportion of red disks caught to the proportion of white disks caught is compared for each dog. This is an example of a
A.   simple random sample.
B.   stratified random sample.
C.   completely randomized design.
D.   matched pairs design.
E.   double-blind design.