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## Practice Questions

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**Directions:** Each of the questions or incomplete statements below is followed by five suggested answers or completions. Select the one that is best in each case.

1. Psychologists generally prefer the experimental method to other research methods because
  - (A) experiments are more likely to support psychologists' hypotheses.
  - (B) experiments can show cause-effect relationships.
  - (C) it is easier to obtain a random sample for an experiment.
  - (D) double-blind designs are unnecessary in an experiment.
  - (E) experiments are more likely to result in statistically significant findings.
2. Theoretically, random assignment should eliminate
  - (A) sampling error.
  - (B) the need to use statistics.
  - (C) concerns over validity.
  - (D) many confounding variables.
  - (E) the need for a representative sample.
3. Karthik and Sue are lab partners assigned to research who is friendlier, girls or boys. After conversing with their first 10 participants, they find that their friendliness ratings often differ. With which of the following should they be most concerned?

(A) reliability	(C) ethics	(E) assignment
(B) confounding variables	(D) validity	
4. Which of the following hypotheses would be most difficult to test experimentally?
  - (A) People exposed to the color red will be more aggressive than those exposed to the color blue.
  - (B) Exercise improves mood.
  - (C) Exposure to violent television increases aggression.
  - (D) Studying leads to better grades.
  - (E) Divorce makes children more independent.

5. Professor Ma wants to design a project studying emotional response to date rape. He advertises for participants in the school newspaper, informs them about the nature of the study, gets their consent, conducts an interview, and debriefs them about the results when the experiment is over. If you were on the IRB, which ethical consideration would you most likely have the most concern about in Professor Ma's study?
- (A) coercion (D) anonymity  
(B) deception (E) clear scientific purpose  
(C) confounding variables
6. Some psychologists consider Stanley Milgram's obedience studies to be unethical because of which ethical consideration?
- (A) improper sampling procedure  
(B) risk of long-term harm  
(C) clear scientific purpose  
(D) debriefing  
(E) anonymity
7. One of the principal differences between the ethical guidelines for human and animal research is:
- (A) Human subjects can be deceived for experimental purposes and animals cannot.  
(B) Animal subjects can be placed at much greater physical risk than human subjects can.  
(C) Human subjects must be chosen much more carefully than animal subjects.  
(D) If humans might physically suffer because of the study, the suffering must be minimal, in contrast to animal studies where any amount of suffering is ethical if it helps to further a clear scientific purpose.  
(E) Environmental conditions for human studies must be monitored much more closely than they are in an animal study.
8. Tamar scored 145 on an IQ test with a mean of 100 and a standard deviation of 15. What is her  $z$  score?
- (A) -3  
(B) -1.5  
(C) +0.67  
(D) 1.5  
(E) +3

9. What is the median of the following distribution: 6, 2, 9, 4, 7, 3?
- (A) 4
  - (B) 5
  - (C) 5.5
  - (D) 6
  - (E) 6.5
10. Sandy scores a perfect 100 on a test that everyone else fails. If we were to graph this distribution, it would be
- (A) symmetrical.
  - (B) normal.
  - (C) positively skewed.
  - (D) negatively skewed.
  - (E) a straight line.
11. Jose hypothesizes that a new drug he has just invented will enhance mice's memories. He feeds the drug to the experimental group and gives the control group a placebo. He then times the mice as they learn to run through a maze. In order to know whether his hypothesis has been supported, Jose would need to use
- (A) scatter plots.
  - (B) descriptive statistics.
  - (C) histograms.
  - (D) inferential statistics.
  - (E) means-end analysis.
12. Which of the following is an example of random sampling?
- I. Picking out of a hat to assign each of three classes to an experimental condition.
  - II. Having a computer generate a random list of 100 high school students.
  - III. Approaching any 50 students during sixth-period lunch.
- (A) I only
  - (B) II only
  - (C) III only
  - (D) I and II
  - (E) I, II, and III
13. Vincenzo conducts an experiment to see whether fear makes mice run through mazes faster. He first selected a sample of 60 mice and then divided them into a control group and an experimental group. Which cannot be a confounding variable?
- (A) How fast the mice are at the start.
  - (B) When the mice run the maze.
  - (C) The population from which he selected his subjects.
  - (D) How frightened the mice are before the experiment.
  - (E) Where the mice run the maze.

14. Charlotte, a nursery school student, hypothesizes that boys have fights with the finger paints more than girls do. She tests her hypothesis by casually watching the finger-painting table for three days of nursery school. What method is she using?
- (A) field experiment
  - (B) informal survey
  - (C) case study
  - (D) naturalistic observation
  - (E) ethnography
15. Jen collects survey data that indicates that students who spend more time preparing for the AP test tend to score better than other students. Jen can now conclude that
- (A) studying improves exam grades.
  - (B) a relationship exists between studying and exam grades.
  - (C) a significant correlation exists between studying and exam grades.
  - (D) anyone who does not study will do poorly on the exam.
  - (E) better students tend to study more.

## ANSWERS TO PRACTICE QUESTIONS

1. **(B)** Psychologists generally prefer the experimental method to other research methods because experiments can show cause-effect relationships. The hallmarks of an experiment are the ability to manipulate the independent variable, randomly assign subjects to conditions, and eliminate (control for) differences between the conditions. When these steps are taken, disparities between the experimental and control groups can be attributed to the independent variable, the only thing that differed between the groups. No other research method allows for the control necessary to make such an attribution. None of the other statements are true.
2. **(D)** Random assignment should eliminate subject-relevant confounding variables (e.g., conscientiousness, IQ, hair color). Since it would be impossible to match participants on every possible dimension, many psychologists use random assignment. By taking advantage of the laws of probability, random assignment makes it likely that participants in the different conditions of an experiment will be equivalent. Random assignment does not relate to sampling or validity and has no impact on the need for statistics.
3. **(A)** Karthik and Sue's way of measuring friendliness is not reliable. Reliability refers to the consistency of a measure. Since they disagree so often, their measure is not consistent. In all likelihood, they need to operationalize their dependent variable more clearly. Reliability is sometimes confused with validity. Validity refers to the accuracy of a measure, which in this case is whether they are actually measuring friendliness.

4. **(E)** It would be extremely difficult to test whether parental divorce causes children to become more independent because it is essentially impossible to manipulate the independent variable, divorce. If we tried to recruit parents to be in our experiment and told them that half would be assigned to divorce and the other half to stay married, it is unlikely that any would consent to participate. If you wanted to compare children whose parents had divorced with children from intact families, you could conduct a quasi-experiment. In a quasi-experiment, the researcher is unable to manipulate the independent variable but tries to control as many other factors as possible. The other four examples are relatively easy to study experimentally as the independent variables (color, exercise, exposure to violent television, and studying) are not difficult to manipulate.
5. **(D)** Professor Ma would need to be particularly careful to ensure the participants' anonymity in this study since it deals with a controversial and possibly embarrassing subject. There is no indication that Professor Ma coerced the participants or deceived them in any way. Confounding variables are a concern for the validity of the study but not an ethical consideration. The study does have a clear scientific purpose.
6. **(B)** Milgram's experiments involved considerable risk of long-lasting stress and anxiety for his subjects. The scientific purpose of Milgram's study is not disputed, and he debriefed participants and provided for anonymity of individual results.
7. **(B)** Within the limits imposed by the guidelines, researchers can physically harm animals if the harm is justified by the nature of the experiments. Deception is obviously not an issue applicable to animal research. Researchers must keep suffering to a minimum, so "any amount" is not an appropriate response (choice D). Animal subjects must be chosen carefully (from accredited commercial sources) and their environment must follow strict guidelines, so choices C and E are also incorrect.
8. **(E)** Tamar's  $z$  score is  $+3$ .  $Z$  scores measure the distance of a score from the mean in units of standard deviation. Since the mean is 100 and the standard deviation is 15, Tamar's score is 3 standard deviations above the mean.
9. **(B)** The median of the distribution is 5. The problem is easier if you put the scores in order: 2, 3, 4, 6, 7, 9. Since the distribution has an even number of scores, there is no middle score and you must average the two middle scores, 4 and 6.
10. **(C)** Sandy's perfect score is an outlier and will therefore skew the distribution. Since it is a high score in a distribution of low scores, the distribution will be positively skewed.

11. (D) Jose needs to compare the performances of the two groups using inferential statistics to determine whether or not the experimental group's performance was significantly better. Scatter plots are used to graph correlations. Jose would certainly be interested in descriptive statistics as well, but he would not know whether or not his hypothesis had been supported until he used inferential statistics. Histograms are bar graphs, and means-end analysis is a problem-solving technique.
12. (B) Of the three methods presented, only having a computer generate a random list of names is an example of random sampling. The first example illustrates random assignment and not random sampling. Sampling is the process of choosing a group of participants from a population. Once sampling has been completed, one might assign the participants to conditions as described in I. Finally, approaching 50 students during a lunch period does not constitute random sampling even if the person who picks the people tries to do so randomly. Remember that the word *random* has a very specific meaning in the context of research. Random sampling means that all members of the population had an equal chance of being selected, and people are unable to be so scrupulously unbiased.
13. (C) A confounding variable is anything that differs between the control and experimental group besides the independent variable. How fast and frightened the mice are at the onset of the experiment are potential participant-relevant confounding variables. When and where the experiment takes place are possible situation-relevant confounding variables. However, the population from which Vincenzo selected his mice is not a confounding variable; they all came from the same population. True, the population can be flawed. For instance, it can be very homogeneous and thus fail to reflect how other mice would perform under similar conditions. However, such a flaw is not a confounding variable.
14. (D) Charlotte is using naturalistic observation. As a student herself, she can observe the finger-painting table unobtrusively. She does not interact with the finger painters; she merely observes. Since Charlotte does not manipulate an independent variable nor attempt to control any aspect of her study, she is not using any kind of experiment. She did not ask the participants questions as she would have if she were conducting a survey. She did not focus on a single participant or a small group of participants as she would have if she had been interested in putting together a case study. Finally, Charlotte has not conducted ethnographic research. Ethnography is a type of research in which the researcher immerses himself or herself in another culture and then describes it. Ethnography is a method most commonly employed by anthropologists.

15. **(B)** Jen has established a relationship, or correlation, between the two variables she is studying. However, since she has not conducted an experiment, Jen does not know whether a cause-and-effect relationship occurs between studying and earning high grades on the exam. Therefore, Jen does not know if studying improves exam grades. Although Jen has found a correlation between studying and exam grades, whether or not that correlation is significant can be determined only through the use of inferential statistics. Even if the correlation were significant, it would not guarantee that if someone did not study, he or she would do poorly on the test. Finally, Jen's correlation does not tell us that better students study more. In fact, it tells us nothing about better students, not even what is meant by that term.