Chapter 1—Introduction

MULTIPLE CHOICE QUESTIONS

1.1 To understand an example, you need to understand the logic behind the experiment that serves as the example. Morphine tolerance in the example in Chapter 1 would be shown when

a) \*paw-lick latencies decrease over time with repeated injections of morphine.

b) paw-lick latencies increase over time with repeated injections of morphine.

c) paw-lick latency do not vary as a function of time.

d) short latencies indicate reduced pain sensitivity.

1.2 The effect of context on morphine tolerance would most likely be seen by differences in

a) \*the averages of paw-lick latencies in the same and different contexts.

b) the variability of paw-lick latencies within the same and different contexts.

c) number of mice tested under each context.

d) both a and b

1.3 + If you want to study the effect of hormonal changes in adolescent boys, your population would be

a) all people in the world.

b) all males.

c) all adolescents.

d) \*all adolescent males.

1.4 If you want to study the effect of hormonal changes as boys reach adolescence, your sample would most likely include

a) \*pre-adolescent and post-adolescent boys.

b) adolescent boys.

c) pre-adolescent and post-adolescent girls.

d) adult men.

1.5 You would need the largest sample if you wanted to obtain a fairly accurate estimate of

a) the average allowance of high school sophomores in Burlington High School.

b) the average income of college students in the United States.

c) \*the average family income in California.

d) the average starting salary of graduating history majors.

1.6 + Which of the following is most likely to be measured categorically?

a) weight gain in first year college students

b) level of authoritarianism in a sample of public accountants

c) \*species of dogs appearing in the Sunday comics

d) deterioration in driving performance under the influence of alcohol

1.7 Another name for measurement data is \_\_\_\_\_\_\_ data.

a) frequency

b) categorical

c) \*quantitative

d) numerical

1.8 To produce good estimates of population parameters we need to have a \_\_\_\_\_\_\_ sample.

a) normal

b) independent

c) \*random

d) systematic

1.9 + Which of the following is the appropriate pairing?

a) Population: Statistic ; Sample: Parameter

b) \*Population: Parameter ; Sample : Statistic

c) Population: Statistic ; Statistic : Sample

d) Parameter: Statistic ; Sample : Population

1.10 Suppose that you dumped out a bag of M&MsTM and found 48 blues, 35 greens, 30 reds, and 15 browns. Which of the following seems like the most reasonable conclusion to draw?

a) The manufacturer produces the same proportion of each color.

b) \*The manufacturer produces more blue M&Ms than any other color.

c) It is impossible to tell what the manufacturer is doing.

d) The manufacturer produces exactly 48/128 = 37.5% blue M&Ms.

1.11 The important thing in estimating the proportion of blue M&Ms that the manufacturer produces is

a) the randomness of the sample.

b) the size of the sample

c) the variability from bag to bag.

d) \*all of the above

1.12 + Which of the following is least likely to be a factor in selecting among statistical procedures?

a) the type of data we have collected

b) \*how many observations we have

c) whether we are looking at relationships or differences

d) how many groups or variables we have

1.13 The branch of statistics dealing with making comparisons between two different conditions in which subjects were tested is called

a) descriptive statistics.

b) test statistics.

c) correlational statistics

d) \*inferential statistics.

1.14 Inferential statistics are primarily concerned with

a) \*making inferences about a population from a sample.

b) describing what the data look like.

c) relationships rather than differences.

d) none of the above

1.15 + Which of the following best illustrates the conclusions that statisticians draw from experiments?

a) *Y* = 12*X*2 + 3*X* – 7

b) The average of the sample is 12.4.

c) \*Male teenage delinquents show higher levels of testosterone on average than do male non-delinquents.

d) The Gross National Product increased 2 points last year.

1.16 One of the most important skills that students learn in statistics courses is

a) the ability to memorize complex mathematical formulae.

b) \*the ability to logically interpret data.

c) the ability to perform multiple regressions on a calculator.

d) nothing important is learned in statistics courses.

1.17 + When given a cup of coffee before a race, a sample of runners were found to run the race faster than without coffee. If we then conclude that on average runners run faster after drinking coffee, this would be an example of

a) an illogical inference.

b) an inferential inference.

c) \*a statistical inference.

d) a descriptive inference.

1.18 Why is it appropriate to assess the number of ears college sophomores have by counting one sophomore’s ears, but it is not appropriate to assess how intelligent professors are by giving one professor an IQ test?

a) \*There is less variability in number of ears for sophomores than intelligence for professors.

b) There is more variability in number of ears for sophomores than intelligence for professors.

c) It is appropriate to only give one professor the IQ test.

d) College sophomores are harder to assess than professors.

1.19 + Which of the following is false?

a) The average score on an example for a class is a descriptive statistic.

b) A sample refers to the observations drawn from a population.

c) Categorical data is also known as frequency data.

d) \*We usually collect data from an entire population.

1.20 + Which of the following is what we mean by “statistics”?

a) average of the heights of college basketball teams

b) a set of procedures for handling data

c) the batting averages of the local baseball team’s starting players

d) \*All of the above are examples of statistics.

1.21 + In order for a researcher to be able to estimate accurately the parameters of a population from his or her sample, the sample must be

a) very large.

b) racially diverse.

c) low in variability.

d) \*random.

1.22 Descriptive and inferential are forms of statistics, while \_\_\_\_\_\_\_ are forms of data.

a) \*measurement and categorical

b) parameters and statistics

c) populations and samples

d) random and nonrandom

1.23 Why is the study of mice injected with morphine useful to humans?

a) Mice cannot overdose on morphine.

b) \*Mice display tolerance to morphine, just as addicts develop tolerance to heroin (a derivative of morphine).

c) Mice do not show effects of context in their tolerance to morphine.

d) The study of mice cannot be related to human drug addicts.

1.24 + Which of the following would come closest to recruiting a random sample of college students?

a) \*drawing 50 telephone numbers from a hat containing the phone numbers of all students

b) advertising for 50 volunteers with posters in the dining halls

c) asking 50 people in the library on Saturday morning to participate

d) calling the first 50 names from an alphabetical list of all students

1.25 Which of the following is a logical, as opposed to a statistical, conclusion?

a) If a sample of mice overdoses on morphine in novel contexts, the population of mice will also overdose.

b) \*If mice overdose on morphine in novel contexts, human beings may also overdose in novel contexts.

c) If a relationship is present, there is also a difference.

d) If one child is left-handed, then all children are left-handed.

1.26 In deciding on which statistical procedure to employ for a set of data, which of the following questions is least important?

a) Are the data measurement or categorical?

b) Are we looking for differences or relationships?

c) \*How many participants contributed to the data set?

d) How many groups and variables are involved?

1.27 + Which of the following is NOT a potential contextual cue in the study of mice injected with morphine?

a) \*the morphine dose injected

b) the room the injection occurs in

c) the color of the cage the injection occurs in

d) the size of the cage the injection occurs in

1.28 + A researcher obtained attractiveness ratings on a scale from 1 to 100. She then classified people into “attractive” and “unattractive” groups on the basis of these scores. In this example, the researcher used \_\_\_\_\_\_\_ data to create \_\_\_\_\_\_\_ data.

a) descriptive; inferential

b) inferential; logical

c) categorical; measurement

d) \*measurement; categorical

1.29 If you were interested in finding out how learning increases with increases in studying, what statistical question would you be asking?

a) \*Is there a relationship?

b) Is there a difference?

c) Is there a variable?

d) A decision tree is needed to answer this question.

1.30 When is it most important to know the exact calculational formulae used to calculate a statistic?

a) when it is frequently used

b) when it is very complex

c) when it deals with more than two groups

d) \*when the formula is important in defining the concept

1.31 An example of a statistical inference is

a) \*generalizing data from a sample of girls to a population of girls.

b) generalizing data from a sample of girls to a population of people.

c) categorical data.

d) the relationship between height and weight.

1.32 + Without a random sample, we cannot

a) calculate statistics.

b) collect quantitative data.

c) \*accurately estimate the parameters of a population.

d) consult a decision tree to decide on an appropriate statistical procedure.

1.33 + The amount of time it takes you to open a child-proof container is an example of

a) frequency data.

b) \*measurement data.

c) count data.

d) categorical data.

1.34 Because it is impossible to make an unlimited number of observations, researchers often collect data from \_\_\_\_\_\_\_ instead of from \_\_\_\_\_\_\_.

a) \*samples; populations

b) parameters; populations

c) statistics; samples

d) parameters; statistics

1.35 Statistics are

a) only useful in analyzing experimental research in psychology.

b) \*useful in teaching a logical approach to data (information).

c) impossible to calculate without a background in calculus.

d) all the data in a population.

1.36 Which of the following is not a descriptive statistic?

a) mean

b) standard deviation

c) \*t-statistic

d) median

1.37 A psychologist was interested in relating the number of times a young adult had been arrested to that person’s attendance in high school. The number of arrests is

a) the independent variable.

b) \*the dependent variables.

c) the covariate.

d) a parameter.

1.38 In the preceding question the dependent variable will most likely be *treated* as

a) a categorical variable.

b) a discrete variable.

c) \*a continuous variable.

d) a qualitative variable.

1.39 The mean number of arrests for those who rarely attended high school would be

a) \*a statistic.

b) a parameter.

c) a parametric test.

d) an inference.

1.40 Which of the following do NOT go together?

a) categorical data, frequency data

b) measurement data, quantitative data

c) \*quantitative data, frequency data

d) frequency data, count data

1.41 In which of the following experiments could we NOT use random assignment?

a) a comparison of groups receiving three different levels of a drug

b) a comparison of driving errors with and without consuming alcohol

c) \*the comparison of people from several religious groups in terms of acceptance of others' beliefs

d) None of the above could use random assignment.

TRUE/FALSE QUESTIONS

1.42 [TRUE] The number of males and females in this class is an example of categorical data rather than measurement data.

1.43 [FALSE] Grade point average is an example of categorical data rather than measurement data.

1.44 [TRUE] When deciding which statistical procedure to use, the number of groups or variables is an important factor.

1.45 [FALSE] The type of data, categorical or measurement is not an important consideration when selecting a statistical procedure.

1.46 [TRUE] The grade point average of all freshmen at a particular university is a parameter.

1.47 [TRUE] The grade point average of a random sample of students surveyed in a dining hall is a statistic.

1.48 [TRUE] Comparing the grade point average of students who took a study skills course to the grade point average of students who did not is an example of inferential statistics rather than descriptive statistics.

1.49 [FALSE] Comparing the grade point average of students who took a study skills course to the grade point average of students who did not is an example of testing a relationship.

1.50 [TRUE] The students who took the study skills course are a sample rather than a population.

1.51 [TRUE] Testing if increases in hours of sleep are associated with increases in grade point average is an example of testing a relationship rather than a difference.

OPEN-ENDED QUESTIONS

1.52 A drug company is interested in testing the effectiveness of a new treatment for clinical depression by comparing the depressive symptoms of patients using the new drug to the depressive symptoms of patients using a drug that is already on the market. Is the drug company interested in relationships or differences?

1.53 The drug company claims that only 6% of all patients experience severe side effects when using the new medication. An independent researcher reported that 10% of patients in his study of 300 patients using the new medication experienced severe side effects.

a) Does the drug company consider 6% to be a parameter or a statistic?

b) Is 10% a parameter or a statistic?

c) What inference might be drawn from these data?

1.54 A non-profit organization is interested in identifying the need for subsidized childcare in a low-income neighborhood. They conduct phone interviews with 100 families who live there and find out that 25% of them need childcare.

a) What is the population of interest?

b) What is the sample?

c) Is their sampling technique a good way to represent the population of interest? Explain.

d) Is 25% a statistic or a parameter?

1.55 Indicate whether the following are examples of testing relationships or differences.

a) Increased smoking during pregnancy is associated with lower birth weight of infants.

b) Males tend to engage in more physical aggression than females.

c) Students in the study skills course had higher grades than students who were not in the study skills course.

1.56 Indicate whether the following examples are of descriptive statistics or inferential statistics.

a) 40% of the students in this class are male.

b) Determine if students in the Advanced Calculus Class have higher scores on the Math portion of the SAT than the average student on campus.

c) The average grade on the first statistics exam.

1.57 Name three types of measurement data.

1.58 Name three types of categorical data.

1.59 Name three samples that could be drawn from the population of all Olympic athletes from the 2006 Winter Games.

1.60 Describe a process to obtain a random sample of Olympic athletes from the 2006 Winter Games.

1.61 Briefly describe the importance of random samples in statistics.