TEST ITEM FILE

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BUSINESS STATISTICS A DECISION-MAKING APPROACH

TENTH EDITION, GLOBAL EDITION

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Business Statistics, 9e, GE (Groebner/Shannon/Fry)
Chapter 1 The Where, Why, and How of Data Collection

1) Statistics is a discipline that involves tools and techniques used to describe data and draw conclusions.
Answer: TRUE
Diff: 1
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

2) In this course, the term *business statistics* refers to the set of tools and techniques that are used to convert information into meaningful data.
Answer: FALSE
Diff: 1
Keywords: descriptive statistics and/or inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

3) Descriptive statistics allow a decision maker to reach a conclusion about a population based on a subset from the population.
Answer: FALSE
Diff: 2
Keywords: descriptive statistics and/or inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

4) An accountant has recently prepared a report for a client that contains a variety of graphs and charts. In doing so, she has used descriptive statistical methods.
Answer: TRUE
Diff: 1
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

5) Descriptive statistical tools include graphs, charts, and numerical measures.
Answer: TRUE
Diff: 1
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

6) A histogram is an example of a numerical measure.
Answer: FALSE
Diff: 1
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

7) Companies frequently use charts and graphs in their regular communications with stockholders and investors; this shows the use of descriptive statistics.
Answer: TRUE
Diff: 1
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

8) A manufacturing manager has developed a table that shows the average production volume each day for the past three weeks. The average production level is an example of a numerical measure.
Answer: TRUE
Diff: 1
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

9) An accountant who recently examined 200 accounts from a company's total of 4,000 accounts in an effort to estimate the percentage of all accounts that have incorrect journal entries is using descriptive statistical analysis to reach the conclusion.
Answer: FALSE
Diff: 2
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

10) The editor of a local newspaper is interested in determining the percentage of subscribers who read the paper's editorials. The statistical technique that he would use is called estimation.
Answer: TRUE
Diff: 2
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

11) Hypothesis testing and estimation are two statistical tools that are used to draw inferences about a large data set based on a subset of the data.
Answer: TRUE
Diff: 1
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

12) Another term for the arithmetic average is the mean.
Answer: TRUE
Diff: 1
Keywords: descriptive statistics, mean
Section: 1-1 What Is Business Statistics?
Outcome: none

13) Statistical inference would be used as the primary statistical tool by a quality control manager who wishes to estimate the average weight of her company's products.
Answer: TRUE
Diff: 2
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

14) A light bulb manufacturer wants to advertise the average life of its light bulbs so it tests a subset of light bulbs. This is an example of inferential statistics.
Answer: TRUE
Diff: 2
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

15) A sales manager has five salespeople. The following are the number of units sold by the five salespeople during the past week: {5, 13, 6, 2, 4}. Based on the data, the mean number of units sold was 6 units.
Answer: TRUE
Diff: 2
Keywords: descriptive statistics, mean
Section: 1-1 What Is Business Statistics?
Outcome: none

16) Some of the most common methods of collecting data include experiments, telephone surveys, mail questionnaires, direct observations, and personal interviews.
Answer: TRUE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

17) An experiment is a process that generates data as its outcome.
Answer: TRUE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

18) Experimental design is a plan for performing an experiment where the effects of one or more factors on the variable of interest are measured.
Answer: TRUE
Diff: 2
Keywords: data collection, experiments
Section: 1-2 Procedures for Collecting Data
Outcome: 1

19) Typically, it is possible to include a larger number of questions in a phone survey than in a mail survey since it takes less time to complete the survey over the phone.
Answer: FALSE
Diff: 2
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

20) An Internet-based or emailed survey is not an alternative method of data collection.
Answer: FALSE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

21) An open-end question requires respondents to choose from a short list of choices
Answer: FALSE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

22) A short survey with closed-end questions is likely to have a better response rate than a long survey with open-ended questions.
Answer: TRUE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

23) The Cranston Company recently met with a group of its customers to ask questions about the service and products provided by the company. The data collected in this process would be an example of data collected through direct observation.
Answer: FALSE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

24) The Georgia Company, a pharmaceutical company, recently conducted a study in which 20 people were given a new drug and 20 other people were given a placebo. The objective was to determine whether there was a difference in pain relief between those using the new drug versus those using the placebo. The data collection used here is an example of an experiment.
Answer: TRUE
Diff: 2
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

25) When comparing experiments, surveys, and direct observation as methods of data collection, the method that would typically be the least expensive is surveys.
Answer: TRUE
Diff: 2
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

26) Assuming that you are planning to collect data using an experiment, it will be very important to establish an appropriate survey design.
Answer: FALSE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

27) Mail questionnaires typically generate poor response rates.
Answer: TRUE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

28) In an unstructured interview the questions are scripted.
Answer: FALSE
Diff: 1
Keywords: data collection, interviews
Section: 1-2 Procedures for Collecting Data
Outcome: 1

29) One way to improve the response rate for a survey is to administer the surveys directly to the respondents.
Answer: TRUE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

30) On a survey, the questions pertaining to the background of the respondent (age, gender, etc.) are referred to as demographic questions.
Answer: TRUE
Diff: 2
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

31) When an interviewer asks a specified series of questions in the course of a personal interview, he/she is conducting an unstructured interview.
Answer: FALSE
Diff: 2
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

32) The marketing division of a company is interested in determining whether increased advertising will increase sales in three of its target cities. Three levels of advertising are used and the sales are recorded for the month immediately following the ads. In this case, the data are considered to have been collected using an experiment.
Answer: TRUE
Diff: 2
Keywords: data collection, survey
Section: 1-2 Procedures for Collecting Data
Outcome: 1

33) Data collected using open-end questions is generally easier to analyze than data collected from closed-end questions.
Answer: FALSE
Diff: 1
Keywords: data collection, survey
Section: 1-2 Procedures for Collecting Data
Outcome: 1

34) One of the advantages of data check sheets is that as the data are being recorded, they are also being displayed in a useful format.
Answer: TRUE
Diff: 2
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

35) The primary purpose of performing a pre-test when developing a telephone or mail survey is to make sure that the respondents can understand the questions and are able to provide meaningful responses.
Answer: TRUE
Diff: 2
Keywords: data collection, protest
Section: 1-2 Procedures for Collecting Data
Outcome: 1

36) Close-end questions provide the greatest opportunity to obtain ideas and thoughts on the part of those surveyed but the resulting data are more difficult to analyze.
Answer: FALSE
Diff: 1
Keywords: data collection, survey
Section: 1-2 Procedures for Collecting Data
Outcome: 1

37) Questions on a written survey dealing with the characteristics of the respondent (age, income, etc.) are referred to as categorical questions.
Answer: FALSE
Diff: 2
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

38) Open-end questions are typically included in a survey when the objective is to provide the maximum opportunity for the respondent to express his or her opinion.
Answer: TRUE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

39) The method of data collection called direct observation is always associated with gathering data from people.
Answer: FALSE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

40) Data gathered from a structured interview is generally easier to analyze than data collected from an unstructured interview.
Answer: TRUE
Diff: 1
Keywords: data collection, structured interview
Section: 1-2 Procedures for Collecting Data
Outcome: 1

41) When a survey is done you can always assume that non-respondents would have answered the same way as those who did respond.
Answer: FALSE
Diff: 2
Keywords: data collection, nonresponse bias
Section: 1-2 Procedures for Collecting Data
Outcome: 1

42) When a company scans the bar codes on its products in an effort to count the number of products that remain in inventory, the company is collecting data through experimentation.
Answer: FALSE
Diff: 2
Keywords: data collection, UPC
Section: 1-2 Procedures for Collecting Data
Outcome: 1

43) Data collected on the Internet can generally be considered accurate since the data must go through a screening process before they can be placed on the Internet.
Answer: FALSE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

44) It is possible for an interviewer to interject bias into the data collection project by the way he or she asks the questions.
Answer: TRUE
Diff: 1
Keywords: data collection, bias
Section: 1-2 Procedures for Collecting Data
Outcome: 1

45) When people fail to respond to a survey, the data collection process may suffer from nonresponse bias.
Answer: TRUE
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

46) Selection bias occurs when the respondent decides which of the questions on the survey to answer.
Answer: FALSE
Diff: 2
Keywords: data collection, bias
Section: 1-2 Procedures for Collecting Data
Outcome: 1

47) Recently, an analyst in a company's marketing department surveyed customers regarding how often they buy a particular product. One customer indicated that she purchased the product 17 times in the last six months, but the analyst recorded the response as 71 times. This is an example of observer bias.
Answer: FALSE
Diff: 2
Keywords: data collection, bias
Section: 1-2 Procedures for Collecting Data
Outcome: 1

48) When the United States conducts a census that counts all people in the country, this is an example of using a sample.
Answer: FALSE
Diff: 1
Keywords: population, sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 2

49) When the marketing manager for a large company surveys a portion of the total customers of his company, he is using a sample from the population.
Answer: TRUE
Diff: 1
Keywords: sample, population
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 2

50) A census is an enumeration of the entire sample of items selected from the population of interest.
Answer: FALSE
Diff: 2
Keywords: sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 2

51) A sample is selected from a population in cases where selecting data from the entire population is either very difficult or very expensive.
Answer: TRUE
Diff: 1
Keywords: sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 2

52) A parameter is the boundary on the population of interest.
Answer: FALSE
Diff: 1
Keywords: parameter, population
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

53) Population parameters are descriptive numerical measures, such as an average, that describe the entire population.
Answer: TRUE
Diff: 1
Keywords: parameter
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

54) Statistics are measures computed from the entire population of data.
Answer: FALSE
Diff: 1
Keywords: statistics
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 2

55) When the production manager selects a sample of items that have been produced on her production line and computes the proportion of those items that are defective, the proportion is referred to as a statistic.
Answer: TRUE
Diff: 2
Keywords: statistics, proportion
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

56) The First National Bank mailed out a survey to all 3,456 savings account customers. A total of 568 surveys were returned. Values computed from the returned surveys would constitute parameters since all 568 customers were surveyed.
Answer: FALSE
Diff: 2
Keywords: parameter, statistic
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

57) If an analyst computes statistics from a sample, the sample is by definition a statistical sample.
Answer: FALSE
Diff: 2
Keywords: sample, statistic
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

58) When university newspaper reporters take a poll of students by standing outside of the nearest pub to survey students about the university offering upgraded food options, the sampling method used is called a random sample.
Answer: FALSE
Diff: 2
Keywords: convenience sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

59) A pharmaceutical company conducts a study where 50 patients are given a drug. They find that 10 percent of patients experience nausea as a side effect. This 10 percent is an example of a parameter.
Answer: FALSE
Diff: 2
Keywords: parameter, statistic
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

60) It is possible for a nonstatistical sample to yield statistics that have values closer to the corresponding parameter than will a statistical sample.
Answer: TRUE
Diff: 3
Keywords: nonstatistical sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

61) One of the most common statistical sampling techniques is convenience sampling.
Answer: FALSE
Diff: 2
Keywords: convenience sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

62) Possibly the most frequently used nonstatistical sampling procedure is the simple random sample.
Answer: FALSE
Diff: 1
Keywords: simple random sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

63) A common underpinning of all statistical sampling techniques is the concept of random selection.
Answer: TRUE
Diff: 1
Keywords: random sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

64) Simple random sampling involves selecting members of the population in such a way that all members are equally likely to be chosen.
Answer: TRUE
Diff: 1
Keywords: sampling techniques
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

65) When stratified random sampling is employed, the population is divided into homogeneous subgroups called strata.
Answer: TRUE
Diff: 2
Keywords: stratified random sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

66) In election years, the polls that are conducted by such companies as Gallup and Harris typically employ stratified random sampling to reduce the number of people that will need to be surveyed.
Answer: TRUE
Diff: 2
Keywords: stratified random sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

67) If a state agency wishes to conduct on-site surveys of small businesses throughout the state, cluster sampling could potentially be used to reduce the geographical area over which the surveys would need to be conducted.
Answer: TRUE
Diff: 2
Keywords: cluster sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

68) Cluster sampling is the same thing as stratified random sampling.
Answer: FALSE
Diff: 1
Keywords: sampling techniques
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

69) When a small sample is used, a stratified random sample is more likely to provide the desired information than a simple random sample.
Answer: TRUE
Diff: 2
Keywords: sampling techniques
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

70) Suppose a professor collects survey data by passing out surveys in his/her classes, where the population of interest is defined as all students enrolled at that university. This is an example of nonstatistical sampling technique.
Answer: TRUE
Diff: 2
Keywords: sampling techniques
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

71) One of the reasons that managers prefer statistical sampling to nonstatistical sampling is that statistical sampling is generally easier to perform and less expensive.
Answer: FALSE
Diff: 2
Keywords: statistical sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

72) A market research firm that surveys customers in a shopping mall by asking various people to respond to a short survey about a new product is performing convenience sampling.
Answer: TRUE
Diff: 2
Keywords: convenience sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

73) If a population is very large, it may be better to select a sample from the population than to try to obtain a census in an effort to reduce measurement error.
Answer: TRUE
Diff: 2
Keywords: measurement error, data collection
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

74) The sales data for a company measured in the week following an increased ad campaign would be considered cross-sectional data.
Answer: TRUE
Diff: 1
Keywords: data type, cross-sectional
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

75) When students are asked to list their age and the percentage of their college expenses that they pay for themselves, the type of data being collected is quantitative.
Answer: TRUE
Diff: 2
Keywords: data type, quantitative
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

76) It is possible for the same survey questionnaire to yield both quantitative and qualitative data.
Answer: TRUE
Diff: 1
Keywords: data type, quantitative, qualitative
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

77) Sales data measured each week for the past twenty weeks are examples of time-series data.
Answer: TRUE
Diff: 1
Keywords: data type, time series
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

78) Recording vehicle type as sedan, minivan, pick-up truck, etc. is an example of qualitative data.
Answer: TRUE
Diff: 1
Keywords: data type
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

79) When customers return a product to a store and the store asks the customer to indicate the reason that the merchandise was returned, the resulting data are quantitative since multiple people will be providing the data.
Answer: FALSE
Diff: 2
Keywords: data type, qualitative
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

80) Nominal data is the highest level of data.
Answer: FALSE
Diff: 1
Keywords: measurement levels
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

81) At the end of the school term, students are asked to rate the course and instructor by indicating on a scale of 1-5 how well they liked the course. The data generated from this question are examples of ordinal data.
Answer: TRUE
Diff: 2
Keywords: data type, ordinal
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

82) On a survey, amount of education is recorded as some high school, high school graduate, some college, college graduate, etc. This is an example of ordinal data.
Answer: TRUE
Diff: 1
Keywords: measurement levels
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

83) A variable, i.e., the length of time it takes for an employee to complete an assembly procedure at an automotive plant, is a ratio level variable.
Answer: TRUE
Diff: 2
Keywords: levels of measurement, ratio
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

84) A variable that has all the properties of an interval variable, but also has a true zero, is a ratio level variable.
Answer: TRUE
Diff: 2
Keywords: levels of measurement, ratio
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

85) Cross-sectional data is a set of data values observed at successive points in time.
Answer: FALSE
Diff: 1
Keywords: data type, time series
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

86) Data collected on marital status (married, divorced, single, other) would be an ordinal level variable.
Answer: FALSE
Diff: 2
Keywords: data type, ordinal
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

87) Recently, a bank manager pulled a sample of customer accounts and recorded data for two variables, checking account balance and total number of transactions during the previous 30 days. The data collected would be considered time-series data.
Answer: FALSE
Diff: 2
Keywords: data type, time series
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

88) Flavors of ice cream (chocolate, vanilla, strawberry, etc.) are an example of nominal data.
Answer: TRUE
Diff: 1
Keywords: measurement levels
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

89) A major fast-food chain has installed a device that measures the temperature of the hamburgers on the grill. These data are stored in a computer file. If you were to analyze these data, you would be working with ordinal level data.
Answer: TRUE
Diff: 2
Keywords: levels of measurement, ordinal
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

90) The difference between interval data and ratio data is that interval data has a natural zero.
Answer: FALSE
Diff: 2
Keywords: measurement levels
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

91) If you have an ordinal variable, it is possible to precisely measure the magnitude of the difference between the possible values of the variable.
Answer: FALSE
Diff: 3
Keywords: levels of measurement, ordinal
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

92) A cell phone service provider has 14,000 customers. Recently, the sales department selected a random sample of 400 customer accounts and recorded the number of minutes of long distance time used during the previous billing period. The data for this variable is considered to be nominal since the values are based on sample data.
Answer: FALSE
Diff: 2
Keywords: levels of measurement, nominal
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

93) A cell phone service provider has 14,000 customers. Recently, the sales department selected a random sample of 400 customer accounts and recorded the number of minutes of long distance time used during the previous billing period. The company analyst used Excel to sort these values in order from high to low. She then assigned the highest value a rank of 1, the next highest value a rank of 2, and so forth. These ranks would be considered to be ordinal data.
Answer: TRUE
Diff: 2
Keywords: levels of measurement, ordinal
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

94) A survey conducted by a local real estate agency asked respondents to indicate whether they preferred natural gas, electric, or oil furnaces for heating their home. The data collected for this variable would be of ordinal level.
Answer: FALSE
Diff: 2
Keywords: levels of measurement, ordinal
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

95) A small engine repair shop tracks the number of customers who call each day. This variable is a time-series variable and also ratio level.
Answer: TRUE
Diff: 2
Keywords: levels of measurement, time series, ratio
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

96) The use of charts and graphs is an example of:
A) descriptive statistics.
B) inferential statistics.
C) estimation.
D) hypothesis testing.
Answer: A
Diff: 1
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

97) When an administrator at a local hospital prepares a series of charts and graphs pertaining to the patients that have stayed at the hospital during the past month, she is using which general category of statistical analysis?
A) Quantitative statistics
B) Inferential statistics
C) Descriptive statistics
D) Random sampling
Answer: C
Diff: 2
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

98) Which of the following is an example of graphs used to describe data?
A) Histograms
B) Bar charts
C) Both A and B are correct.
D) None of the above.
Answer: C
Diff: 1
Keywords: descriptive statistics, graphs
Section: 1-1 What Is Business Statistics?
Outcome: none

99) When a marketing manager surveys a few of the customers for the purpose of drawing a conclusion about the entire list of customers, she is applying:
A) inferential statistics.
B) descriptive statistics.
C) quantitative models.
D) numerical measures.
Answer: A
Diff: 1
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

100) When the park ranger at Yellowstone National Park reports the average length of time that visitors spend in the park, he is using:
A) graphical tools.
B) numerical measures.
C) statistical charts.
D) histograms or bar charts.
Answer: B
Diff: 2
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

101) A car manufacturer stated in its advertising that the gas mileage for its hybrids will be greater than 40 mpg on average. A consumer agency tested a sampling of the hybrids under a variety of conditions. Based on these tests, the agency concluded that the manufacturer was justified in making this claim. The process described is an example of:
A) descriptive statistics.
B) hypothesis testing.
C) statistical inference.
D) Both B and C are correct.
Answer: D
Diff: 2
Keywords: descriptive statistics, inferential statistics, hypothesis testing
Section: 1-1 What Is Business Statistics?
Outcome: none

102) A consumer products company is considering introducing a new product nationally. To help make the decision, it first conducts a test market by selling the product for a few months in one city. This is an example of:
A) descriptive statistics.
B) charts and graphs.
C) estimation.
D) hypothesis testing.
Answer: C
Diff: 2
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

103) The Biltmore Hotel manager is getting ready to make a presentation that she hopes will justify adding additional staff. As part of the presentation, she has constructed charts and graphs. The general type of statistical analysis she is using is:
A) hypothesis testing.
B) estimation.
C) inferential statistics.
D) descriptive statistics.
Answer: D
Diff: 2
Keywords: descriptive statistics, graphs
Section: 1-1 What Is Business Statistics?
Outcome: none

104) Estimation and hypothesis testing are categories of:
A) inferential statistics.
B) descriptive statistics.
C) numerical measurement.
D) statistical charts.
Answer: A
Diff: 1
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

105) A political poll that is used to indicate the percentage of voters who will vote for a particular candidate makes use of which of the following?
A) Hypothesis testing
B) Numerical analysis
C) Estimation
D) Both B and C
Answer: D
Diff: 2
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

106) The company that makes a new weight loss pill claims that people who use this pill according to instructions will lose an average of 20 pounds during a four-month period. They say the claim is based on a study of 300 people. Which of the following statistical methods was most likely used to arrive at the company's conclusion?
A) Estimation
B) Hypothesis testing
C) Histograms
D) Bar charts
Answer: B
Diff: 2
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

107) When the California Highway Patrol states that a study of drivers on a rural highway shows that the average speed is between 62.5 mph and 64.5 mph, they are most likely basing this statement on:
A) descriptive statistics.
B) estimation.
C) hypothesis testing.
D) graphical analysis.
Answer: B
Diff: 2
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

108) The summaries of data, which may be in forms of tabular, graphical, or numerical, are referred to as:
A) inferential statistics.
B) descriptive statistics.
C) statistical inference.
D) report generation.
Answer: B
Diff: 1
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

109) Based on a survey of 400 students in a university in which 20 percent indicated that they were business majors. The university student newspaper reported that "20 percent of all the students at the university are business majors." This report is an example of:
A) a sample.
B) a population.
C) statistical inference.
D) descriptive statistics.
Answer: C
Diff: 2
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

110) A company is interested in determining which of several advertising layouts is most effective at generating additional sales. The data collection tool that would most likely be used in this situation is:
A) telephone survey.
B) mail questionnaire.
C) experiment.
D) observation.
Answer: C
Diff: 2
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

111) A company conducted a survey of its employees to determine their level of satisfaction with various company policies. The data collected from this survey are:
A) primary data.
B) secondary data.
C) experimental data.
D) census data.
Answer: A
Diff: 2
Keywords: data collection, primary data
Section: 1-2 Procedures for Collecting Data
Outcome: 1

112) The Dalton Company has recently made a decision to build a new plant in Denver. In making this decision it used data supplied by the U.S. Census Bureau. For the Dalton Company, these data are examples of:
A) primary data.
B) secondary data.
C) reliable data.
D) experimental data.
Answer: B
Diff: 1
Keywords: data collection, secondary data
Section: 1-2 Procedures for Collecting Data
Outcome: 1

113) An Internet service provider wants to determine its level of customer satisfaction. The best data collection method to obtain the results most quickly is:
A) experiment.
B) telephone survey.
C) mailed survey.
D) personal interview.
Answer: B
Diff: 2
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

114) A tire manufacturing company is interested in obtaining data on stopping distances for each of the three main tread types made by the company. The data collection method that would be most likely used in this case would be:
A) telephone survey.
B) written questionnaire.
C) demographic surveying.
D) experiments.
Answer: D
Diff: 2
Keywords: data collection, experimental
Section: 1-2 Procedures for Collecting Data
Outcome: 1

115) Which of the following data collection methods is most likely to generate the largest nonresponse?
A) Mail surveys
B) Direct observation
C) Telephone surveys
D) Personal interviews
Answer: A
Diff: 2
Keywords: data collection, mail surveys
Section: 1-2 Procedures for Collecting Data
Outcome: 1

116) In developing and conducting a survey, what is the purpose of the pre-test phase?
A) To make sure that the cost of developing the survey instrument is not too great
B) To generate initial data for analysis
C) To catch any problems with the questionnaire before it is fully administered
D) To make sure that the respondents like the issues being addressed by the survey
Answer: C
Diff: 2
Keywords: data collection, survey pre-test
Section: 1-2 Procedures for Collecting Data
Outcome: 1

117) For which data collection method is it most important to have a polished-looking survey form?
A) Telephone survey
B) Written questionnaire
C) Experimental design
D) Personal interview
Answer: B
Diff: 1
Keywords: data collection, questionnaire
Section: 1-2 Procedures for Collecting Data
Outcome: 1

118) Which of the following types of questions provide the respondent with the greatest choice in responding to a question?
A) Open-end questions
B) Close-end questions
C) Multiple choice questions
D) True/false questions
Answer: A
Diff: 1
Keywords: data collection, open-ended
Section: 1-2 Procedures for Collecting Data
Outcome: 1

119) A consumer products company wants to interview customers regarding a new product. If it wishes to adhere to a predetermined pattern of questions in the interview, which of the following would likely be used?
A) Structured interview
B) Open-end questioning
C) Unstructured interview
D) Written questionnaire
Answer: A
Diff: 2
Keywords: data collection, structured interview
Section: 1-2 Procedures for Collecting Data
Outcome: 1

120) A marketing researcher decides to perform in-depth interviews for ten individuals chosen from a group of twenty five consumers who taste tasted some new food products. In conducting a personal interview, what problem can result if the interviewer is arbitrarily decides who will be interviewed?
A) Nonresponses
B) Missing data
C) Bias
D) Poor response rate
Answer: C
Diff: 2
Keywords: data collection, bias
Section: 1-2 Procedures for Collecting Data
Outcome: 1

121) One of the major challenges for developing a good written questionnaire or telephone survey instrument is that:
A) nonresponses are too high.
B) there will always be missed data.
C) bias cannot be controlled.
D) wording can influence responses.
Answer: D
Diff: 3
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

122) When an accounting auditor randomly selects 20 accounts from all the accounts to check for accuracy, she has selected:
A) a personal observation.
B) a sample from the population.
C) a census.
D) a convenience sample.
Answer: B
Diff: 1
Keywords: data collection, sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 2

123) An Internet service provider has the capability of tracking the time that each of its customers spends connected to the Internet during a month. These data would constitute:
A) a simple random sample.
B) a convenience sample.
C) a cluster sample.
D) a population.
Answer: D
Diff: 2
Keywords: data collection, population
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 2

124) A professor hands out survey forms during her classes, where the population is all students attending the college. This is an example of:
A) a convenience sample.
B) a simple random sample.
C) a stratified sample.
D) a cluster sample.
Answer: A
Diff: 1
Keywords: convenience sampling
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

125) Another term used for statistical sampling is:
A) probability sampling.
B) convenience sampling.
C) ratio sampling.
D) numerical sampling.
Answer: A
Diff: 1
Keywords: probability sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

126) A retail store is interested in determining what its customers are looking for specifically when they go to the store. To collect the necessary data, interviewers stand near the store's entrance and survey every 10^{th} customer. This type of sampling is called:
A) systematic random sampling.
B) ratio sampling.
C) convenience sampling.
D) stratified sampling.
Answer: A
Diff: 2
Keywords: systematic random sampling
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

127) The Polson Pole and Fence Company recently did a quality check on the length of fence posts. To do this, each of the 400 posts in inventory was numbered. Numbers from 1 to 400 were placed in a bowl. Twenty numbers were selected from the bowl without looking. These 20 poles were the ones selected for the study. This type of sampling is called:
A) cluster sampling.
B) simple random sampling.
C) nonstatistical.
D) convenience sampling.
Answer: B
Diff: 2
Keywords: simple random samples
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

128) In order to determine a parameter (such as a mean) of a population you would need to conduct a:
A) population.
B) random sample.
C) census.
D) statistic.
Answer: C
Diff: 2
Keywords: population, parameter
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

129) If a systematic random sample is to be selected of size 100 from a population with 5,000 items, the first item selected from the ordered population will be:
A) randomly selected between 1 and 100.
B) randomly selected between 1 and 50.
C) any randomly selected value between 1 and 5,000.
D) item 50.
Answer: B
Diff: 2
Keywords: systematic sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

130) If a stratified random sample is to be conducted, which of the following is true?
A) The population will be broken down into subgroups called strata.
B) Each subgroup should contain items that are homogeneous with respect to the characteristic of interest.
C) If effective, the total required sample size should be less than that which would be needed if a simple random sample were selected.
D) All of the above.
Answer: D
Diff: 2
Keywords: stratified sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

131) A food warehouse manager plans to conduct a check on damaged packages. The warehouse covers a large area and products are spread out over the entire building. Assuming that no products are more likely to have damaged packages than any other, what statistical sampling method would be used to reduce the time and effort required to do the study?
A) Convenience sampling
B) Stratified random sampling
C) Cluster random sampling
D) Systematic random sampling
Answer: C
Diff: 3
Keywords: cluster sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

132) Some stores and restaurants have "tell us what you think" cards available for customers. Assuming that angry customers are more likely to take the time to fill these out, this is an example of:
A) simple random sampling.
B) stratified sampling.
C) cluster sampling.
D) nonstatistical sampling.
Answer: D
Diff: 2
Keywords: sampling methods
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

133) The mayor of a large U.S. city is interested in addressing complaints from many property owners regarding recent property assessments. Many people feel that they are being overtaxed and that their assessments are too high. To study this issue, the mayor plans to hire consultants to randomly select homes in the city and have these homes independently assessed for value. However, she is concerned that the cost of sampling will be very high since the city is spread out over a wide geographical area. To potentially reduce the cost of sampling, which of the following statistical sampling techniques should be applied?
A) Cluster sampling
B) Ratio sampling
C) Simple random sampling
D) Stratified random sampling
Answer: A
Diff: 3
Keywords: sampling methods
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

134) The human resources department at a major high tech company plans to conduct an employee satisfaction study by sampling 100 employees from the 3,000 total employees. They plan to use systematic random sampling since the employee file is in alphabetic order. The first employee selected in the study should be:
A) the 30th employee.
B) employee 1 to 30 randomly selected.
C) employee 1 to 100 randomly selected.
D) the first employee.
Answer: B
Diff: 2
Keywords: systematic random sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

135) A value computed from a population is called:
A) a statistic.
B) a real number.
C) a parameter.
D) a point estimate.
Answer: C
Diff: 1
Keywords: statistic
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 2

136) Which of the following statements is true?
A) Random samples are easier to select than nonstatistical samples.
B) Nonstatistical samples can provide useful data.
C) Stratified random sampling involves breaking the population down into geographic subgroups.
D) Systematic sampling is an example of nonstatistical sampling.
Answer: B
Diff: 2
Keywords: nonstatistical sampling
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

137) In Excel, what procedure is used to select random numbers?
A) The random numbers function
B) Click on the Data tab, then click on Data Analysis, then click on Sampling
C) Click on the Data tab, then click on Data Analysis, then click on Random Number Generation
D) Random numbers are not available in Excel.
Answer: C
Diff: 2
Keywords: Excel, random number generation
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

138) A sampling plan that requires a person to interview 100 people as they exit a department store would most likely be:
A) a simple random sample.
B) a convenience sample.
C) a systematic random sample.
D) a stratified sample.
Answer: B
Diff: 2
Keywords: convenience samples
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

139) Which one of the following is NOT statistical sampling?
A) Simple random sample
B) Stratified random sampling
C) Cluster sampling
D) Convenience sampling
Answer: D
Diff: 3
Keywords: statistical and nonstatistical sampling
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

140) When a survey uses the responses strongly disagree, disagree, neutral, agree, strongly agree, this is an example of:
A) nominal data.
B) ordinal data.
C) interval data.
D) ratio data.
Answer: B
Diff: 2
Keywords: measurement levels
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

141) General Electric Corporation tracks employee turnover annually. It currently has a data set that contains turnover for the past 20 years. What type of data does it have?
A) Time-series data
B) Cross-sectional data
C) Nominal data
D) Ordinal data
Answer: A
Diff: 2
Keywords: data types, time series
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

142) The human resources department at a major high tech company recently conducted an employee satisfaction survey of 100 of its 3,000 employees. Data were collected on such variables as age, gender, marital status, current salary, level of overall satisfaction on a scale from 1 to 5, number of years with the company, and job title. Which of the following best describes the overall data set that was generated from the study?
A) Cross-sectional data
B) Time-series data
C) Nominal data
D) Quantitative data
Answer: A
Diff: 2
Keywords: data types, cross-sectional
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

143) The human resources department at a major high tech company recently conducted an employee satisfaction survey of 100 of its 3,000 employees. Data were collected on such variables as age, gender, marital status, current salary, level of overall satisfaction on a scale from 1 to 5, number of years with the company, and job title. Considering the age variable where employees were asked to list their age at their last birthday, which of the following best describes the level of data measurement for that variable?
A) Interval level
B) Nominal level
C) Ratio level
D) Cross-sectional data
Answer: C
Diff: 2
Keywords: data measurement levels, ratio
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

144) The high temperature is recorded each day for a period of 1 year. This is an example of:
A) nominal data.
B) ordinal data.
C) time-series data.
D) cross-sectional data.
Answer: C
Diff: 1
Keywords: data type, time series
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

145) The human resources department at a major high tech company recently conducted an employee satisfaction survey of 100 of its 3000 employees. Data were collected on such variables as age, gender, marital status, current salary, level of overall satisfaction on a scale from 1 to 5, number of years with the company, and job title. Which of the variables listed are considered to be ratio level data?
A) Age and years with the company
B) Gender and marital status
C) Job title
D) None of the variables is ratio level.
Answer: A
Diff: 2
Keywords: data measurement levels, ratio
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

146) The human resources department at a major high tech company recently conducted an employee satisfaction survey of 100 of its 3,000 employees. Data were collected on such variables as age, gender, marital status, current salary, level of overall satisfaction on a scale from 1 to 5, number of years with the company, and job title. Which of the variables would be classified as nominal level data?
A) Age and years with the company
B) Overall satisfaction
C) Gender, marital status, and job title
D) Age and gender
Answer: C
Diff: 2
Keywords: data measurement levels, nominal
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

147) The human resources department at a major high tech company recently conducted an employee satisfaction survey of 100 of its 3,000 employees. Data were collected on such variables as age, gender, marital status, current salary, level of overall satisfaction on a scale from 1 to 5, number of years with the company, and job title. Which of the variables would be considered to be qualitative data?
A) Gender, marital status, job satisfaction, and job title
B) Age
C) Years with the company
D) All variables listed are qualitative.
Answer: A
Diff: 2
Keywords: data types, qualitative data
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

148) Weekly sales for Amazon.com would be classified as which of the following?
A) Cross-sectional data
B) Time-series data
C) Nominal data
D) Ordinal data
Answer: B
Diff: 1
Keywords: data types, time series
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

149) A college data base includes the number of people who are enrolled in each class the college offers. This is an example of:
A) nominal data.
B) ordinal data.
C) interval data.
D) ratio data.
Answer: D
Diff: 2
Keywords: measurement levels
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

150) When data are organized into levels, the highest data level is:
A) interval level data.
B) nominal level data.
C) ordinal level data.
D) ratio level data.
Answer: D
Diff: 1
Keywords: data measurement levels, ratio
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

151) Data collected at a fixed point in time are:
A) time-series data.
B) approximate time-series data.
C) cross-sectional data.
D) panel data.
Answer: C
Diff: 2
Keywords: time-series data, cross-sectional data
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

152) What is meant by the term *statistical inference*?
Answer: A statistical inference is a conclusion reached about a population value (parameter) based upon an analysis of data in a statistical sample from the population. The idea is that we can study the sample data and then draw a conclusion (inference) about what the entire population looks like with respect to the measure of interest. There are two main categories of statistical inference: estimation and hypothesis testing.
Diff: 2
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

153) Discuss the differences and similarities between statistical estimation and statistical hypothesis testing.
Answer: Both estimation and hypothesis testing fall under the main category of statistical procedures called inferential statistics. In both cases, we are attempting to better understand the population of interest by examining the data in a sample from the population. With estimation, we begin with a goal of estimating a population value such as a population mean. We don't have a preconception about what that value is. Instead, we look at a corresponding value for the sample (i.e., sample mean) and use that as our "best" guide to what the population value is. With hypothesis testing, we begin with a claim or idea (hypothesis) about what the population value is and then we use the corresponding sample value to either support or refute the claim or idea.
Diff: 2
Keywords: inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

154) Explain what an experimental design is.
Answer: When an experiment is conducted with an experimental design the factors that may affect the variable of interest are controlled so their effect can be observed. Each factor has several predefined levels and the combinations of the various factor levels are tested.
Diff: 2
Keywords: data collection, experimental design
Section: 1-2 Procedures for Collecting Data
Outcome: 1

155) Discuss the steps involved in developing and carrying out a written survey.
Answer: While there are several possible approaches to developing and conducting a written survey, there are several steps that most approaches would include. These are:

Define the issue — You need a clear understanding of what it is that you wish to learn from the survey.

Define the population of interest — You must determine who the people are that are to be surveyed. You need to be specific about this since those surveyed will hopefully represent the views of the entire population.

Design the survey instrument — You need to develop the questions that will get at the answers to your research questions. A written survey must be a reasonable length and the questions need to be well-written and clear. You need to be careful not to interject bias in the way the question is written. The survey design should be clear and easy for the respondents to use.

Pre-test — You should always pre-test the survey with a small subgroup from the population. Use their feedback to make constructive improvements in the survey and to make sure that you have included the right questions given your original objective.

Determine the sample size and sampling method — Whenever possible you want to survey a large number of people, but your sampling budget will limit you. It will be necessary to determine how many are needed for statistical validity and for meeting objectives. You also need to specify how the sample is to be selected from the population—statistical or nonstatistical—and specifically what sampling method to use.

Select the sample and administer the survey — The survey can be administered in several ways—through the mail, on the Internet, or in person.
Diff: 2
Keywords: data collection, survey
Section: 1-2 Procedures for Collecting Data
Outcome: 1

156) What are the advantages and disadvantages of open-end questions in either a written survey or a personal interview?
Answer: Open-end questions allow the respondent to provide a broad range of input and not be restricted to a defined set of response options. This is an advantage since it is possible to tap into the true feelings of the respondent and to obtain responses that might not have been anticipated when the survey was developed. The disadvantage is that analysis of the responses to open-end questions is difficult. The analyst must somehow code the potentially broad range of responses into categories. This takes time and often requires interpretation that might interject bias into the analysis.
Diff: 2
Keywords: data collection, survey, interview
Section: 1-2 Procedures for Collecting Data
Outcome: 1

157) Discuss the two major types of descriptive statistics.
Answer: Descriptive statistics includes methods for summarizing a data set. The two major types of descriptive statistics are (1) charts and graphs, and (2) summary numerical measures. Charts and graphs include "picture" type tools such as histograms, bar charts and pie charts that visually summarize a data set. Numerical summary measures are numbers such as the average that describe a characteristic of the data set.
Diff: 1
Keywords: descriptive statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

158) Is there ever a reason why we might prefer to work with a sample rather than with an entire population? Discuss.
Answer: A sample is a subset of a population and might not be a perfect representation of the population. As a result, it is possible that when our objective is to know characteristics of the population, the values we get from the sample might be misleading. Thus, in the general case, we would prefer to have access to all the data in the population. However, there are reasons why we might be better off with a sample in some instances. For example, if the population is very large, the time and cost of collecting data from the entire population might make the project unfeasible. In addition, when a great number of measurements are required for a large population, measurement and/or coding errors could be introduced that would give us incorrect information about the population. In addition, if the measurement process requires that we destroy, or otherwise modify, the population values, it would not make sense to deal with the entire population. In these cases, a sample might well be preferable to a census of the population.
Diff: 2
Keywords: sample, population
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 2

159) What is the underlying common element of all statistical sampling techniques?
Answer: The basis for all statistical sampling techniques is that the items selected in the sample are chosen at random from the population. This provides the potential to perform an objective analysis of the data and reach objective conclusions about the population based on the sample.
Diff: 1
Keywords: random sampling
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

160) Explain the difference between stratified random sampling and cluster random sampling.
Answer: Both techniques are considered statistical sampling techniques since the elements to be included in the sample are randomly selected. Likewise, both techniques have as their objective reducing the cost of sampling as compared to a simple random sample. However, the two techniques are fundamentally different. With stratified random sampling, the population is divided into homogeneous subgroups (strata) with the intent of having the elements in a particular subgroup be as much alike as possible, thereby making it possible to know about all items in the subgroup by examining only a few of the subgroup items. Thus, the overall sample size, which is the sum of the samples from each stratum, could be smaller than the sample size needed if the sampling was done using a simple random sampling approach. Cluster sampling is used when the population values are spread out over a relatively wide geographical area and data collection would be costly due to movement among the population values. With cluster sampling, the population is divided into groups called clusters that are usually defined by geographical boundaries. Each cluster is intended to be as heterogeneous as the population as a whole. Then a random selection of clusters is selected and the sampled items are all selected from only those clusters. This potentially reduces the travel costs.
Diff: 3
Keywords: sampling methods, stratified, cluster
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

161) Open the data file provided with the text called *AirlinePassengers*. Indicate the level of data measurement for each variable in the data set.
Answer: Airline - nominal
Day of Week - ordinal
Time of Day - nominal
Male/Female - nominal
Business/Pleasure - nominal
Length of Trip- - ordinal
Hours to Destination - ratio
Children < 10 years - nominal
Pieces of Luggage - ratio
Pieces Carried On - ratio
Times Flown - ratio
Diff: 2
Keywords: data measurement levels
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

162) Open the data file provided with the text called *Computer Use.* Indicate the level of data measurement for each variable in the data set.
Answer: Major - nominal
Comp. Use - ordinal
Comp. Hours - ratio
Labs - ordinal
Benefit - nominal
Higher Tuition - nominal
Enrollment Decision - nominal
Price to Pay - ratio
Diff: 2
Keywords: data measurement levels
Section: 1-4 Data Types and Data Measurement Levels
Outcome: 4

163) Of the following techniques for collecting data, which one is generally considered the least costly to implement: experiments, telephone surveys, mail questionnaires, direct observation, personal interview?
Answer: In most instances, the mail questionnaire is the least costly method for data collection. Even though response rates are notoriously low, the cost of sending surveys in the mail is very low on a per item basis. However, there are many instances where mail surveys can't be used to collect the required data. For instance, if we are interested in the impact of greater drying heat in the press when plywood is manufactured, we can't very well send a survey to a piece of plywood asking for information about its strength and quality! An experiment would be required. In other instances, we need to use observation to get accurate data since people might be tempted to reply with the desired response rather than the truth. For instance, a question like, "Do you wear your seatbelt when driving in your car?" might not provide accurate data in a written survey. Observation might provide better data on driver behavior.
Diff: 1
Keywords: data collection
Section: 1-2 Procedures for Collecting Data
Outcome: 1

164) What are the major categories of statistical tools that will be covered in this course?
Answer: Business statistics can be divided into two main categories: descriptive statistics and inferential statistics. Probability is a link between the two and is a major part of the statistical inference section.
Diff: 1
Keywords: descriptive, inferential statistics
Section: 1-1 What Is Business Statistics?
Outcome: none

165) In a survey, what is meant by demographic questions and why might we want to include demographic questions in survey?
Answer: Demographic questions are questions that pertain to the respondent such as age, gender, education level, etc. The purpose of demographic questions is to be able to group responses to the central survey questions by category of the demographic questions. For instance, we might group responses to a question about product satisfaction by male/female to see whether males and females have different views about the product.
Diff: 2
Keywords: data collection, demographics
Section: 1-2 Procedures for Collecting Data
Outcome: 1

166) As a member of the student council at your university, you have been assigned the task of conducting a phone survey of undergraduate students to determine satisfaction with the campus food service. Explain how you would go about selecting a simple random sample.
Answer: We need to obtain a frame (list) of the population that might be available through the registrar's office. We would assign each student a number from 1 through the number of students. Assuming that this list contains a contact phone number for each student, we could select a simple random sample by using Excel (or a random numbers table) to select the desired sample size. We would probably select extra students since some would be unreachable or not use campus food service. We should establish a call-back procedure to reduce sampling bias.
Diff: 2
Keywords: simple, random, sample, bias
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3

167) Explain the difference between a stratified random sample and cluster random sample.
Answer: First, both sampling techniques are examples of statistical sampling procedures. However, they are very different in purpose. In stratified random sampling, the population is broken down into homogeneous groups called strata. The idea is that the elements in each strata are as much alike as possible so that the required sample size from each strata is reduced. Then the total sample size selected from all strata will hopefully be less than the required sample size that would be needed if stratification were not used. In cluster sampling, the population is divided into geographical subgroups. The hope is that each subgroup is a mirror image of the population as a whole. Then a few of the clusters are randomly selected and all sampling of individual items is taken from only the selected clusters. The objective is to reduce the cost of sampling by reducing the physical area that must be covered in the sample.
Diff: 3
Keywords: stratified, random, cluster, sample
Section: 1-3 Populations, Samples and Sampling Techniques
Outcome: 3