

Chapter 1 Test A—Multiple Choice

Section 1.1 (Defining and characterizing data)

1. [Objective: Understanding data] Which of the following is not an example of data?
 - a. A list of receipt totals from one day at a national department store.
 - b. A list of the number of cars that are stopped at stop sign at a busy intersection. The number of cars waiting is recorded every 15 minutes for 8 hours.
 - c. A chart showing the number of goals scored per game for a NHL hockey team during one whole season.
 - d. All of the above are examples of data.

2. [Objective: Understanding variation] Which of the following measurements is likely to have the **least** variation?
 - a. The individual weights in ounces of oranges in a randomly selected five-pound bag of oranges at the market.
 - b. The individual mass measured in grams of quarters in a randomly selected ten dollar roll of quarters.
 - c. The individual heights of children, measured in inches, in a randomly selected class of sixth grade students .

3. [Objective: Understanding the language of statistics] Choose the best answer to complete the statement: “In a statistical context, the term *variable* is used...”
 - a. because it is too difficult to get certain information from each member of a population.”
 - b. because there is variability in the information gathered from the members of a sample or population.”
 - c. because, like algebra, a statistical variable stands in for some unknown numerical value.”
 - d. because it describes a characteristic of the population which is never known.”

Section 1.2 (Classifying and storing data)

4. [Objective: Distinguish between numerical and categorical variables] The average gas mileage of the top selling mini-vans for each U. S. car manufacturer is an example of what type of variable?
 - a. Numerical variable
 - b. Categorical variable
 - c. Neither

5. [Objective: Distinguish between numerical and categorical variables] A state senator’s comments about the dangers of global warming are an example of what type of variable?
 - a. Numerical variable
 - b. Categorical variable
 - c. Neither

6. [Objective: Distinguish between numerical and categorical variables] Marital status of each member of a randomly selected group of adults is an example of what type of variable?
 - a. Numerical variable
 - b. Categorical variable
 - c. Neither

7. [Objective: Display meaning of coded categorical data] In a survey, married couples were asked, “Do you have children?” The response was electronically recorded as a “1” for yes and a “0” for no. This is an example of _____.
 - a. Coded categorical data
 - b. Unstacked numerical data
 - c. Random sample
 - d. None of the above

8. [Objective: Identify a population from a sample] Researches want to find out which U. S. movie has the most positive audience reaction for the current week. As they exited a randomly selected movie theater, movie-goers were asked to give the movie they had just viewed a letter grade of A, B, C, D, or F. In this scenario, the movie-goers are an example of a _____.
 - a. Sample
 - b. Population
 - c. Variable

Section 1.3 (Organizing Categorical Data)

9. [Objective: Choose the appropriate tool to organize categorical data] A two-way table is useful for summarizing and comparing what?
 - a. A numerical variable and categorical variable that may be related.
 - b. Two numerical variables that may be related.
 - c. Two categorical variables that may be related.

Consider the following for questions (10) and (11): In a study of 900 adults, 45 out of the 325 men in the study said that they preferred to rent a movie on DVD rather than going out to a movie theater.

10. [Objective: Understand calculations involving percentages or rates] What is the approximate percentage of men in this study who prefer to rent a movie on DVD?
 - a. 13.8%
 - b. 36%
 - c. 5%

11. [Objective: Understand calculations involving percentages or rates] What is the approximate percentage of women who participated in this study?
 - a. 41%
 - b. 63.9%
 - c. 7.8%
 - d. Not enough information available

Consider the following table for questions (12) and (13): The two-way table below shows teenage driver gender and whether or not the respondent had texted at least once while driving during the last thirty days.

	Teenage driver- Male	Teenage driver- Female
Texted at least once while driving during past 30 days.	5	7
Had not texted at least once while driving during the past 30 days.	11	9

12. [Objective: Perform percentage or rate calculations given data that is organized in a two-way table] What percentage of the sample had texted at least once while driving in the past thirty days?
- 62.5%
 - 37.5%
 - 50%
 - 43.75%
13. [Objective: Perform percentage or rate calculations given data that is organized in a two-way table] What percentage of the sample were female drivers?
- 62.5%
 - 50%
 - 78%
 - 28.3%
14. [Objective: Show understanding of percentages] In a sample of 800 first-year college students, 72% said that they check their Facebook page at least three times a day. How many students is this?
- 72
 - 576
 - 224
 - Not enough information available.

Section 1.4 (Collecting Data to Understand Causality)

For (15)-(17) Indicate whether the study described is an observational study or a controlled experiment.

15. [Objective: Distinguish between an observational study and a controlled experiment] The obesity rates of elementary age children living in urban areas are compared to those living in rural areas to see whether children in urban settings have higher obesity rates.
- Observational study
 - Controlled experiment
16. [Objective: Distinguish between an observational study and a controlled experiment] “People with diabetes are at higher risk for certain cancers than those without the blood sugar disease, suggests a new study based on a telephone survey of nearly 400,000 adults.”
- Observational study
 - Controlled experiment

17. [Objective: Distinguish between an observational study and a controlled experiment] A group of students is divided into two groups. One group is given a new chewable vitamin and the other group is given a placebo. After six months they are asked to fill out a questionnaire and given a health exam to see whether the new vitamin has health benefits that are better than a placebo.
- Observational study
 - Controlled experiment
18. [Objective: Understand the correlation vs. causation error and other common statistical argument errors] Consider the following statement, “Babies who breastfeed are less likely to grow into children with behavioral problems by the time they reach age 5 than those who receive formula milk.” Which of the following is a plausible confounding variable in this study?
- The quality of the formula milk
 - Mothers social-economic status
 - The age at which breastfeeding ends
 - All of the above
 - None of the above
19. [Objective: Understand the correlation vs. causation error and other common statistical argument errors] Consider the following statement: “Researcher conducted a large observational study and determined that children who participated in school music programs scored higher on math exams in later grades than those who did not.” Suppose that upon hearing this a politician states that all children should participate in school music programs. What is wrong with the politician’s statement?
- There was a placebo effect.
 - This study exhibits bias.
 - The controlled experiment was not double-blinded.
 - The politician confused correlation with causation.
20. [Objective: Understand difference between treatment and outcome variables] A group of adults was given a new high protein breakfast bar then asked to record their level of alertness just before lunchtime. In this example, _____ is the treatment variable and _____ is the outcome variable.
- Alertness level; the breakfast bar
 - The breakfast bar; alertness level
 - The group of adults; alertness level
 - The breakfast bar; lunchtime