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## **CHAPTER 2 SECTION 1: GRAPHICAL DESCRIPTIVE TECHNIQUES I**

### **TRUE/FALSE**

1. Your age group (1-9; 10-19; 20-29; 30-39; etc.) is an interval variable.

ANS: F            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

2. Your gender is a nominal variable.

ANS: T            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

3. Your final grade in a course (A, B, C, D, E) is a nominal variable.

ANS: F            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

4. Your age is an interval variable.

ANS: T            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

5. Interval data may be treated as ordinal or nominal.

ANS: T            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

6. Whether or not you are over the age of 21 is a nominal variable.

ANS: T            PTS: 1            REF: SECTION 2.1

NAT: Analytic; Descriptive Statistics

7. The values of quantitative data are categories.

ANS: F            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

8. Interval data, such as heights, weights, and incomes, are also referred to as quantitative or numerical data.

ANS: T            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

9. All calculations are permitted on interval data.

ANS: T            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

10. Nominal data are also called qualitative or categorical data.

ANS: T            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

11. A variable is some characteristic of a population or sample.

ANS: T            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

12. With nominal data, there is one and only one way the possible values can be ordered.

ANS: F            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

13. You cannot calculate and interpret differences between numbers assigned to nominal data.

ANS: T            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

## MULTIPLE CHOICE

14. The classification of student major (accounting, economics, management, marketing, other) is an example of a(n)  
a. nominal random variable.  
b. interval random variable.  
c. continuous random variable.  
d. parameter.

ANS: A            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

15. The classification of student class designation (freshman, sophomore, junior, senior) is an example of a(n)  
a. nominal random variable.  
b. interval random variable.  
c. ordinal random variable.  
d. a parameter.

ANS: C            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

16. A researcher wishes to estimate the textbook costs of first-year students at Barry University. To do so, he recorded the textbook cost of 300 first-year students and found that their average textbook cost was \$195 per semester. The variable of interest to the researcher is  
a. textbook cost.  
b. class rank.  
c. number of students.  
d. name of university.

ANS: A            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

17. All calculations are permitted on what type of data?

a. Interval data  
b. Nominal data

- c. Ordinal data
- d.** All of these choices are true.

ANS: A            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

18. Values must represent ordered rankings for what type of data?
- a. Interval data
  - b. Nominal data
  - c. Ordinal data
  - d.** None of these choices.

ANS: C            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

19. For what type of data are frequencies the only calculations that can be done?
- a. Interval data
  - b. Nominal data
  - c. Ordinal data
  - d.** None of these choices.

ANS: B            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

20. For which type of data are the values arbitrary numbers?
- a. Interval data
  - b. Nominal data
  - c. Ordinal data
  - d.** None of these choices.

ANS: B            PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

## COMPLETION

21. The Chief of Police conducted a survey of the officers on his squad. An officer's shooting score at target practice is an example of a(n) \_\_\_\_\_ variable.

ANS:  
interval  
quantitative  
numerical

PTS: 1            REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

22. The Dean of Students conducted a survey on campus. The gender of each student is an example of a(n) \_\_\_\_\_ variable.

ANS:  
nominal  
categorical  
qualitative

PTS: 1 REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

23. The Dean of Students conducted a survey on campus. Class rank (Freshman, Sophomore, Junior, and Senior) is an example of a(n) \_\_\_\_\_ variable.

ANS: ordinal

PTS: 1 REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

24. The final grade received in a Literature course (A, B, C, D, or F) is an example of a(n) \_\_\_\_\_ variable.

ANS:

nominal  
categorical  
qualitative

PTS: 1 REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

25. In purchasing a used computer, there are a number of variables to consider. The age of the computer is an example of a(n) \_\_\_\_\_ variable.

ANS:

interval  
quantitative  
numerical

PTS: 1 REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

26. In purchasing an automobile, there are a number of variables to consider. The body style of the car (sedan, coupe, wagon, etc.) is an example of a(n) \_\_\_\_\_ variable.

ANS:

nominal  
categorical  
qualitative

PTS: 1 REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

## SHORT ANSWER

27. At the end of a safari, the tour guide asks the vacationers to respond to the questions listed below. For each question, determine whether the possible responses are interval, nominal, or ordinal.
- How many safaris have you taken prior to this one?
  - Do you feel that your tour safari lasted sufficiently long (yes/no)?
  - Which of the following features of the accommodations did you find most attractive: location, facilities, room size, service, or price?

- d. What is the maximum number of hours per day that you would like to spend traveling?
- e. Is your overall rating of this safari: excellent, good, fair, or poor?

ANS:

- a. Interval
- b. Nominal
- c. Nominal
- d. Interval
- e. Ordinal

PTS: 1 REF: SECTION 2.1

NAT: Analytic; Descriptive Statistics

28. Before leaving a particular restaurant, customers are asked to respond to the questions listed below. For each question, determine whether the possible responses are interval, nominal, or ordinal.
- a. What is the approximate distance (in miles) between this restaurant and your residence?
  - b. Have you ever eaten at this restaurant before?
  - c. On how many occasions have you eaten at the restaurant before?
  - d. Which of the following attributes of this restaurant do you find most attractive: service, prices, quality of the food, or the menu?
  - e. What is your overall rating of the restaurant: excellent, good, fair, or poor?

ANS:

- a. Interval
- b. Nominal
- c. Interval
- d. Nominal
- e. Ordinal

PTS: 1 REF: SECTION 2.1

NAT: Analytic; Descriptive Statistics

29. For each of the following examples, identify the data type as nominal, ordinal, or interval.
- a. The final grade received by a student in a neuro-science class.
  - b. The number of students in a Physics course.
  - c. The starting salary of a PhD graduate.
  - d. The size of an order of fries (small, medium, large, super-size) purchased by a Burger King customer.
  - e. The college you are enrolled in (Arts and Sciences, Business, Education, etc.).

ANS:

- a. Ordinal
- b. Interval
- c. Interval
- d. Ordinal
- e. Nominal

PTS: 1

REF: SECTION 2.1

NAT: Analytic; Descriptive Statistics

30. For each of the following, indicate whether the variable of interest is nominal or interval.

- a. Your marital status.
- b. Whether you are a U.S. citizen.
- c. Sally's travel time from her dorm to the student union on campus.
- d. The amount of time you spent last week on your homework.
- e. The number of cars parked in a certain parking lot at any given time.
- f. Kate's favorite brand of sneakers.

ANS:

- a. Nominal
- b. Nominal
- c. Interval
- d. Interval
- e. Interval
- f. Nominal

PTS: 1                  REF: SECTION 2.1

NAT: Analytic; Descriptive Statistics

31. Provide one example of ordinal data; one example of nominal data; and one example of interval data.

ANS:

Ordinal data example: Response to a market research survey question measured on the Likert scale using the code: 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, and 5 = strongly disagree.

Nominal data example: Voters' political party affiliation for using the code: 1 = Democrat, 2 = Republican, and 3 = Independent.

Interval data example: The temperature on a golf course during the U.S. Master's Tournament. (degrees Fahrenheit).

PTS: 1                  REF: SECTION 2.1

NAT: Analytic; Descriptive Statistics

32. Explain why religious preference is not an ordinal variable.

ANS:

The values of religious preference cannot be ranked in order in any way.

PTS: 1                  REF: SECTION 2.1

NAT: Analytic; Descriptive Statistics

33. Explain the difference between ordinal data and interval data.

ANS:

The critical difference between them is that the intervals or differences between values of interval data are consistent and meaningful. That is, we can calculate the difference and interpret the results. Because the codes representing ordinal data are arbitrarily assigned except for the order, we cannot calculate and interpret differences.

PTS: 1                  REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics

34. Give an example of interval data that can also be treated as ordinal data and nominal data.

ANS:

Example: Your actual age is interval data; your age group (1-17; 18-24; 25-30; etc) is ordinal data; and whether or not you are over age 25 is nominal data.

PTS: 1                  REF: SECTION 2.1  
NAT: Analytic; Descriptive Statistics