Test Bank

# Chapter 1: Introduction to Statistics and Frequency Distributions

## Multiple Choice

1. After a statistics class, Dr. Johnson asked *all 51 of her students* the degree to which they felt statistics were going to be useful in their eventual career. She had *all of her students* respond to the following question, “Statistics will be very useful in my future profession,” using the following scale: 1 = *not at all useful* and 7 = *very useful*. She found that the average response was a 4.9. Given that the mean 4.9 was based on *all of her students,* the 4.9 would be called \_\_\_\_\_\_.

A. a statistic

B. a parameter

C. sampling error

Ans: B

Learning Objective: Terms parameter

2. After a statistics class, Dr. Johnson asked *all 51 of her students* the degree to which they felt statistics were going to be useful in their eventual career. She had *all of her students* respond to the following question, “Statistics will be very useful in my future profession,” using the following scale: 1 = *not at all useful* and 7 = *very useful*. She found that the average response was a 4.9. The purpose of Dr. Johnson’s survey is best described as \_\_\_\_\_\_.

A. sampling error

B. descriptive

C. inferential

Ans: B

Learning Objective: Terms descriptive statistics

3. A cognitive psychologist studying reading comprehension wanted to know what would happen if *all* college students were taught better reading strategies. She obtained a *sample* of 40 college students from the introductory psychology class and taught 20 of them effective reading strategies. The other 20 students were given a placebo treatment. She then gave all 40 students a standardized reading comprehension test. The mean score on the reading test for those taught the reading strategies was 49, with a standard deviation of 4. The mean score for those receiving the placebo treatment was 44, with a standard deviation of 3.8. The purpose of this study is best described as:

A. descriptive

B. inferential

Ans: B

Learning Objective: Terms inferential statistics

4. A cognitive psychologist studying reading comprehension wanted to know what would happen if *all* college students were taught better reading strategies. She obtained a *sample* of 40 college students from the introductory psychology class and taught 20 of them effective reading strategies. The other 20 students were given a placebo treatment. She then gave all 40 students a standardized reading comprehension test. The mean score on the reading test for those taught the reading strategies was 49, with a standard deviation of 4. The mean score for those receiving the placebo treatment was 44, with a standard deviation of 3.8.The sample of college students was intended to represent all college students, therefore the values of 49 and 44 would be called \_\_\_\_\_\_.

A. statistic

B. parameters

Ans: A

Learning Objective: Terms statistic

5. After their medical appointments with her, Dr. Jackson asked *all 42 of her patients* if they were satisfied with their medical appointment. She had *all of her patients* rate their overall satisfaction by answering the following question, “How satisfied are you with the medical appointment you just had?” 1 = *not at all satisfied*; 7 = *completely satisfied*. She found that the average response was a satisfaction score of 5.2. Given that the mean satisfaction score of 5.2 was based on *all of her patients*, the 5.2 would be called \_\_\_\_\_\_\_.

A. a statistic

B. a parameter

C. sampling error

Ans: B

Learning Objective: Terms parameter

6. After their medical appointments with her, Dr. Jackson asked *all 42 of her patients* if they were satisfied with their medical appointment. She had *all of her patients* rate their overall satisfaction by answering the following question, “How satisfied are you with the medical appointment you just had?” 1 = *not at all satisfied*; 7 = *completely satisfied*. She found that the average response was a satisfaction score of 5.2. The purpose of Dr. Jackson’s survey is best described as \_\_\_\_\_\_.

A. sampling error

B. descriptive

C. inferential

Ans: B

Learning Objective: Terms descriptive statistics

7. A U.S. Senator from Indiana wanted to know what *all* her constituents thought about the Clean Air Act that was coming up for a vote in the Senate. She sent a letter to a *sample* of 257 Indiana voters asking them if they supported the Clean Air Act even if it meant they would have to pay higher prices for gasoline. The results indicated that *39% of the sample* supported the Clean Air Act even if it meant higher gasoline prices. The purpose of this survey is best described as \_\_\_\_\_\_:

A. descriptive

B. inferential

C. sampling error

Ans: B

Learning Objective: Terms interential statistics

8. A U.S. Senator from Indiana wanted to know what *all* her constituents thought about the Clean Air Act that was coming up for a vote in the Senate. She sent a letter to a *sample* of 257 Indiana voters asking them if they supported the Clean Air Act even if it meant they would have to pay higher prices for gasoline. The results indicated that *39% of the sample* supported the Clean Air Act even if it meant higher gasoline prices. The sample of Indiana voters was intended to represent all Indiana voters, therefore the value of 39% would be called \_\_\_\_\_\_.

A. a parameter

B. sampling error

C. a statistic

Ans: C

Learning Objective: Terms statistic

9. Researchers use samples to estimate population parameters because it is rarely feasible to obtain data from an entire population. Sample statistics estimate population parameters. The discrepancy between sample statistics and population parameters is called:

A. statistical power

B. Type I error

C. Type II error

D. sampling error

Ans: D

Learning Objective: Terms sampling error

10. What potential problem is created when researchers use samples of participants rather than entire populations in their research studies?

A. statistical power

B. Type I error

C. Type II error

D. sampling error

Ans: D

Learning Objective: Terms sampling error

11. Sampling error is created when:

A. a sample does not represent the population of interest very well.

B. a sample is too large.

C. a study does not have a well-defined dependent variable.

D. a study does not not have a well-defined independent variable.

Ans: A

Learning Objective: Terms sampling error

12. A cognitive psychologist studying reading comprehension wanted to know what would happen if *all* college students were taught better reading strategies. She obtained a *sample* of 40 college students from the introductory psychology class and taught 20 of them effective reading strategies. The other 20 students were given a placebo treatment. She then gave all 40 students a standardized reading comprehension test. The mean score on the reading test for those taught the reading strategies was 49, with a standard deviation of 4. The mean score for those receiving the placebo treatment was 44, with a standard deviation of 3.8. Identify the independent variable in this study.

A. scores on the reading comprehension test

B. the sample of 40 college students

C. the reading strategies class

D. the treatment group (placebo or reading strategies)

Ans: D

Learning Objective: Terms independent variable

13. A cognitive psychologist studying reading comprehension wanted to know what would happen if *all* college students were taught better reading strategies. She obtained a *sample* of 40 college students from the introductory psychology class and taught 20 of them effective reading strategies. The other 20 students were given a placebo treatment. She then gave all 40 students a standardized reading comprehension test. The mean score on the reading test for those taught the reading strategies was 49, with a standard deviation of 4. The mean score for those receiving the placebo treatment was 44, with a standard deviation of 3.8. Identify the dependent variable in this study.

A. scores on the reading comprehension test

B. the sample of 40 college students

C. the reading strategies class

D. the treatment group (placebo or reading strategies)

Ans: A

Learning Objective: Terms dependent variable

14. A psychologist examined the effect of physical exercise on a standardized memory test. One group of participants played a fun but competitive game of kick ball for 30 min. Another group of participants watched TV for 30 min. Then, both groups took a standardized memory test. What is the independent variable in this study?

A. participants score on the standardized memory test

B. type of activity (playing kickball or watching TV)

C. physical exercise

D. watching TV

Ans: B

Learning Objective: Terms independent variable

15. A psychologist examined the effect of physical exercise on a standardized memory test. One group of participants played a fun but competitive game of kick ball for 30 min. Another group of participants watched TV for 30 min. Then, both groups took a standardized memory test. What is the dependent variable in this study?

A. participants score on the standardized memory test

B. type of activity (playing kickball or watching TV)

C. physical exercise

D. watching TV

Ans: A

Learning Objective: Terms dependent variable

16. You ask students *their party of affiliation* (e.g., Democrat, Republican, Independent, etc.). Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: A

Learning Objective: Scales of measurement nominal

17. You ask the person who teaches your English class *their academic rank* (e.g., instructor, assistant professor, associate professor, full professor). Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: B

Learning Objective: Scales of measurement ordinal

18. A scout for a professional team records the *time in seconds* it takes a baseball player to run to first base. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: C

Learning Objective: Scales of measurement interval/ratio

19. An insurance application asks the *number of automobile accidents* you have been in in the last 5 years. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: C

Learning Objective: Scales of measurement interval/ratio

20. You record the *credit hours* each student in the class is taking this semester. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: C

Learning Objective: Scales of measurement interval/ratio

21. A survey asks what *type of car* you drive (e.g., Dodge, Chevy, Honda, etc.). Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: A

Learning Objective: Scales of measurement nominal

22. A website lists the *order of finish* in a marathon. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: B

Learning Objective: Scales of measurement ordinal

23. A Physical Education teacher divides his class into *four groups based on general athletic ability* (e.g., *superior*, *above average*, *average*, or *below average*). Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: B

Learning Objective: Scales of measurement ordinal

24. You ask couples *how many children* they have. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/Ratio

Ans: C

Learning Objective: Scales of measurement interval/ratio

25. An educational psychologist assessed the *reading speed of 6th graders in words per minute*. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: C

Learning Objective: Scales of measurement interval/ratio

26. A political psychologist records *whether or not people voted for Proposition 12* using the categories of “yes,” “no,” or “I did not vote.” Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: A

Learning Objective: Scales of measurement nominal

27. You ask people *which team will win the next Super Bowl.* Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: A

Learning Objective: Scales of measurement nominal

28. A psychologist records *how long it takes to press a key on a keyboard* after seeing a stimulus. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: C

Learning Objective: Scales of measurement interval/ratio

29. An admissions counselor records the *ACT scores* of incoming Freshmen. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: C

Learning Objective: Scales of measurement interval/ratio

30. Three groups in an experiment get *different drug treatments,* either Drug A, Drug B, or Drug C. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: A

Learning Objective: Scales of measurement nominal

31. You ask teachers *how many students* they have in their math classes. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: C

Learning Objective: Scales of measurement interval/ratio

32. You record the *kind of vegetable* that people think is most healthy to eat. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: A

Learning Objective: Scales of measurement nominal

33. You record the *economic status* of households (e.g., over 20K in debt, between 20K and 10K in debt, between 10K and 0K in debt, or not in debt). Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: B

Learning Objective: Scales of measurement ordinal

34. You record the *credit hours* each student in the class is taking this semester. Identify the scale of measurement for the underlined variable.

A. nominal

B. ordinal

C. interval/ratio

Ans: C

Learning Objective: Scales of measurement interval/ratio

35. How many pounds someone gained over the holidays. Is this variable continuous or discrete?

A. continuous

B. discrete

Ans: A

Learning Objective: Continuous/discrete

36. How many people are on an airplane. Is this variable continuous or discrete?

A. continuous

B. discrete

Ans: B

Learning Objective: Continuous/discrete

37. A survey question asks students how many textbooks they purchased last year. Is this variable continuous or discrete?

A. continuous

B. discrete

Ans: B

Learning Objective: Continuous/Discrete

38. Is the number of seconds it takes to press the brake pedal of a car continuous or discrete?

A. continuous

B. discrete

Ans: A

Learning Objective: Continuous/discrete

39. Is the number of students registered for a Statistics course continuous or discrete?

A. continuous

B. discrete

Ans: B

Learning Objective: Continuous/discrete

40. Is the number of papers you were assigned to write last semester continuous or discrete?

A. continuous

B. discrete

Ans: B

Learning Objective: Continuous/discrete

41. The data in the frequency table below came from the question, “What is your age?” How many people were older than 22?



A. 7

B. 12

C. 185

D. 190

Ans: A

Learning Objective: Frequency table

42. The data in the frequency table below came from the question, “What is your age?” What *percentage* of people had an age older than 22?



A. 3.6

B. 13.2

C. 93.9

D. 86.8

Ans: A

Learning Objective: Frequency table

43. Use the following frequency table to answer the following questions. The data came from the question, “On a scale of 1–6 (1 = *not at all* and 6 = *a lot*), how much do you like eating yogurt for breakfast?” What score is the MODE of this distribution?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***X*** | ***f*** | **Proportion** | **Percent** | **Cumulative Frequencies** | **Cumulative Percentages** |
| 6 | 3 | .3 | 30 | 10 | 100 |
| 5 | 4 | .4 | 40 | 7 | 70 |
| 4 | 2 | .2 | 20 | 3 | 30 |
| 3 | 1 | .1 | 10 | 1 | 10 |
| 2 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 0 |

A. 1

B. 2

C. 3

D. 4

E. 5

F. 6

Ans: E

Learning Objective: Frequency table

44.Use the following frequency table to answer the following questions. The data came from the question, “On a scale of 1–6 (1 = *not at all* and 6 = *a lot*), how much do you like eating yogurt for breakfast?” How many people gave 4 as their response to this question?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***X*** | ***f*** | **Proportion** | **Percent** | **Cumulative Frequencies** | **Cumulative Percentages** |
| 6 | 3 | .3 | 30 | 10 | 100 |
| 5 | 4 | .4 | 40 | 7 | 70 |
| 4 | 2 | .2 | 20 | 3 | 30 |
| 3 | 1 | .1 | 10 | 1 | 10 |
| 2 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 0 |

A. 3

B. 4

C. 2

D. 1

E. 0

Ans: C

Learning Objective: Frequency table

45. A teacher records the number of class days each student misses over the course of a semester. How many people missed 5 classes?



A. 2

B. 4

C. 6

D. 1

Ans: D

Learning Objective: Frequency bar graph

46. Is the graph below positively skewed or negatively skewed?



A. positively skewed

B. negatively skewed

Ans: A

Learning Objective: Skewness positive

47. Is the graph below platykurtic or leptokurtic?



A. platykurtic

B. leptokurtic

Ans: B

Learning Objective: Histogram leptokurtic

48. A teacher records the number of class days each student misses over the course of a semester. Are these data positively or negatively skewed?



A. positively skewed

B. negatively skewed

Ans: A

Learning Objective: Skewness positive

49. You have interval data that is continuous and positive skewed. You need to create a graph of these data. Which of the following is appropriate? (Choose all that apply).

A. histogram

B. line graph

C. bar graph

Ans: A and B

Learning Objective: Use of histogram/line graph

50. You asked several classmates how many times they texted their parents over the weekend. Which type of graph is appropriate for the texting data?

A. bar graph

B. histogram

C. histogram or bar braph

D. histogram or line graph

Ans: A

Learning Objective: Use of bar graph