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?

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17	5	2.5	2.5	2.5
	18	94	47.7	47.7	50.3
	19	50	25.4	25.4	75.6
	20	22	11.2	11.2	86.8
	21	14	7.1	7.1	93.9
	22	5	2.5	2.5	96.4
	23	3	1.5	1.5	98.0
	24	1	.5	.5	98.5
	31	1	.5	.5	99.0
	37	1	.5	.5	99.5
	45	1	.5	.5	100.0
	Total	197	100.0	100.0	

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?

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17	5	2.5	2.5	2.5
	18	94	47.7	47.7	50.3
	19	50	25.4	25.4	75.6
	20	22	11.2	11.2	86.8
	21	14	7.1	7.1	93.9
	22	5	2.5	2.5	96.4
	23	3	1.5	1.5	98.0
	24	1	.5	.5	98.5
	31	1	.5	.5	99.0
	37	1	.5	.5	99.5
	45	1	.5	.5	100.0
	Total	197	100.0	100.0	

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?

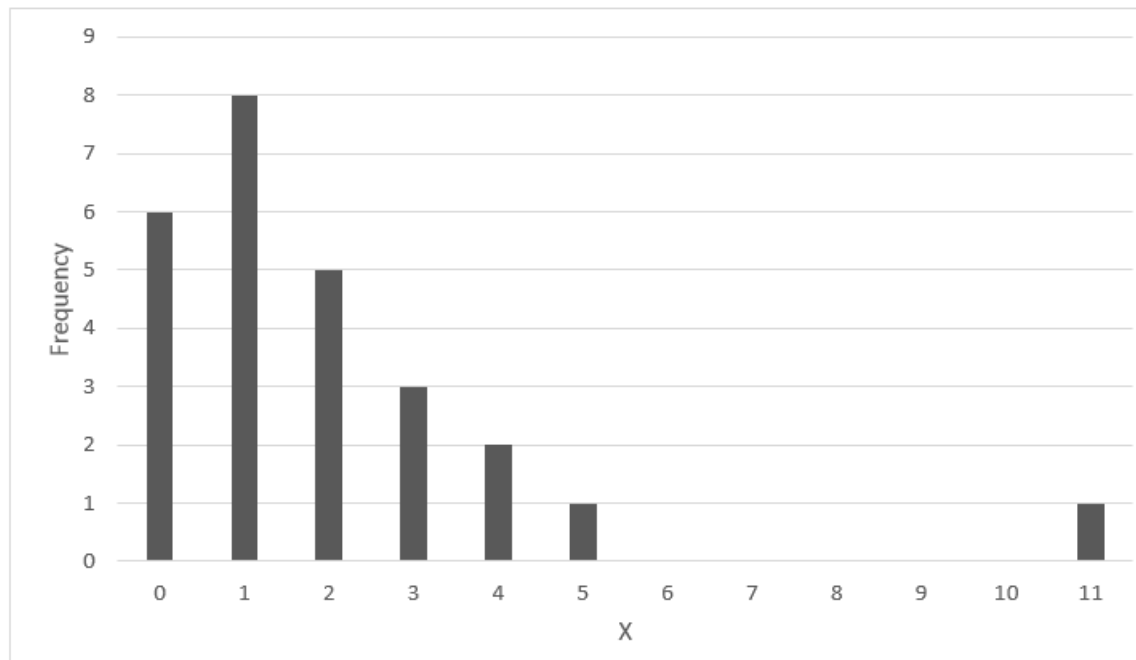| X	f	Proportion	Percent	Cumulative Frequencies	Cumulative Percentages
6	3	.3	30	10	100
5	4	.4	40	7	70
4	2	.2	20	3	30
3	1	.1	10	1	10
2	0	0	0	0	0
1	0	0	0	0	0

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?
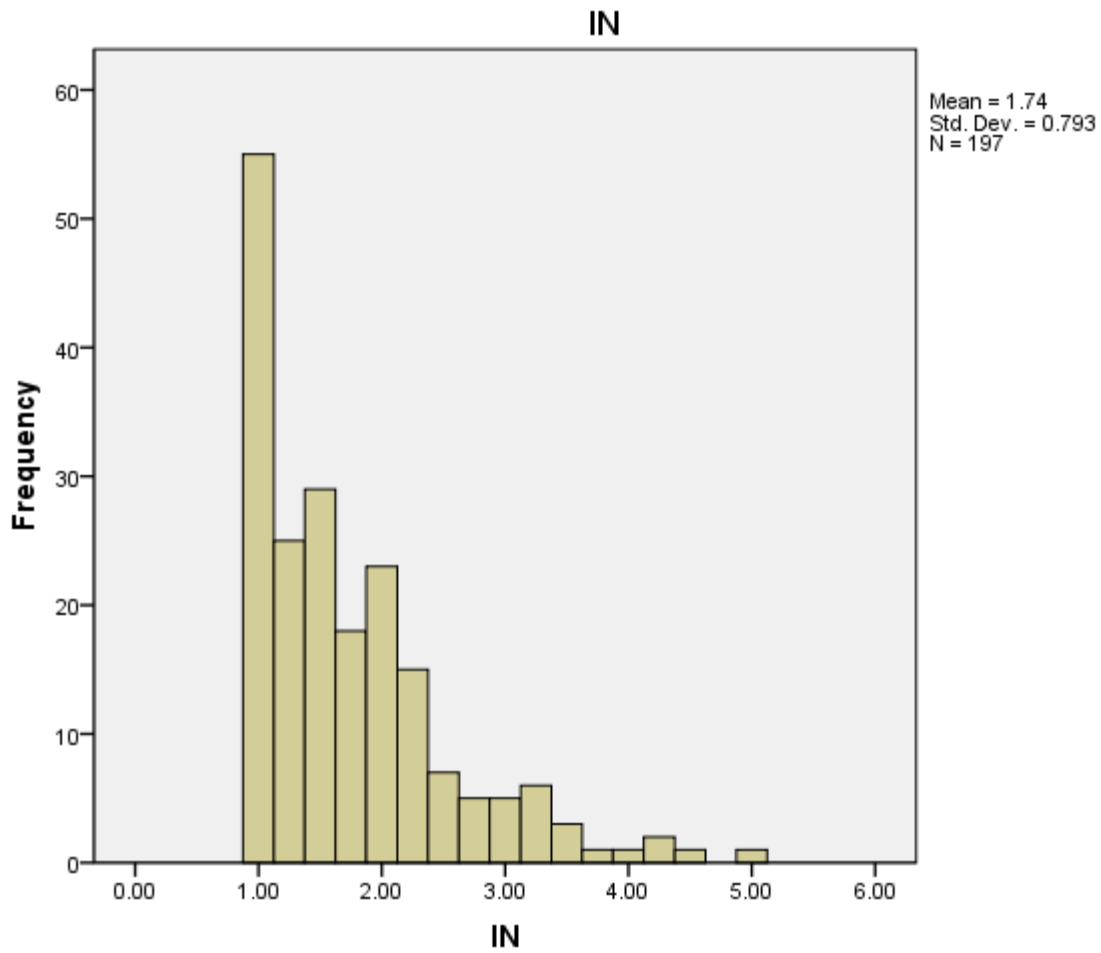

A. 2

B. 4

C. 6

D. 1

Ans: D

Learning Objective: Frequency bar graph

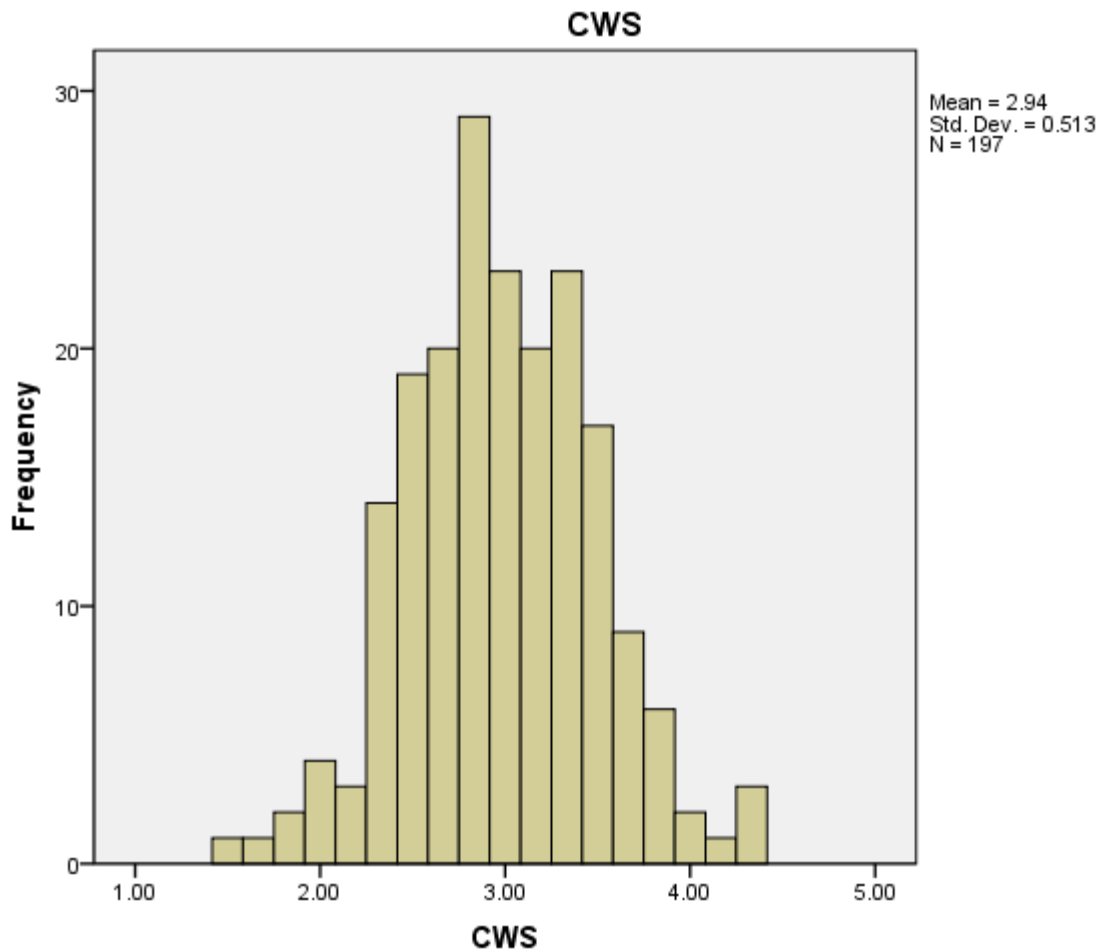46. Is the graph below positively skewed or negatively skewed?

A. positively skewed

B. negatively skewed

Ans: A

Learning Objective: Skewness positive

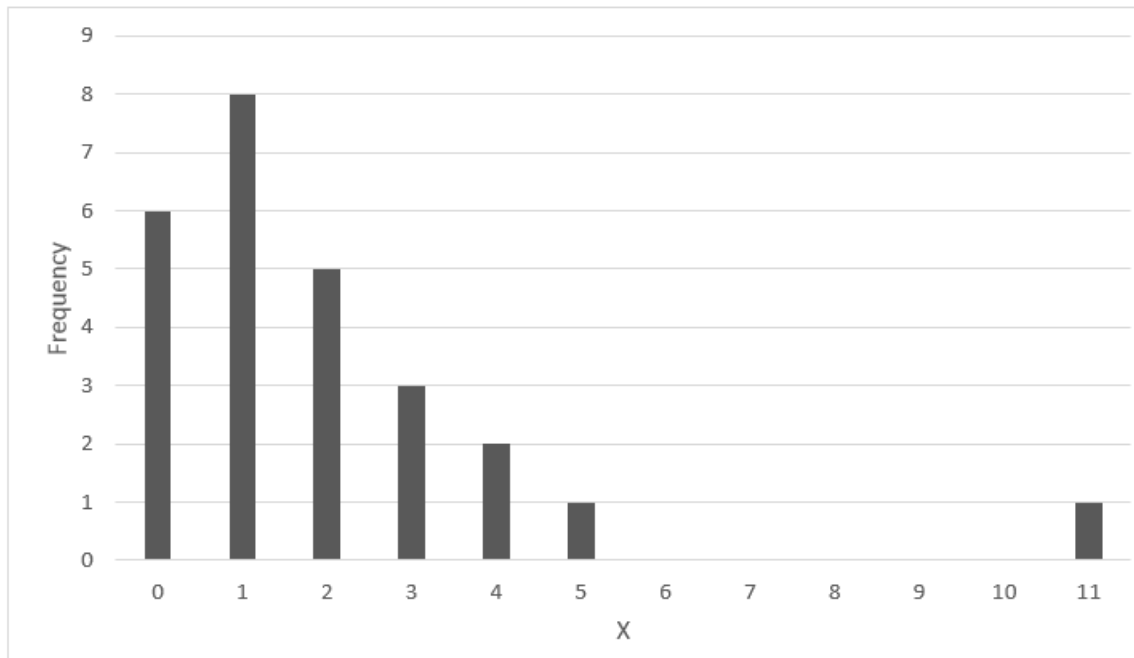47. Is the graph below platykurtic or leptokurtic?

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

Reading Questions

Chapter 1: Introduction to Statistics and Frequency Distributions

1. Reading with purpose means:

a. thinking about other things while you are reading a textbook.

*b. actively trying to extract information from a text by focusing on the main point of each paragraph.

2. Is it better to read the paragraph and then answer the reading question or to read the reading question and then search for the answer? It is better to:

*a. read the paragraph, then answer the reading question.

b. read the reading question, then search for the question's answer.

3. Which of the following best describes the activities in this book?

*a. Activities introduce new material that was not included in the chapter reading.

b. All of the new material is in the reading. The activities are simply meant to give you practice with the material in the reading.

4. When completing activities, your primary goal should be to get the correct answer quickly.

 True

*False

5. How should you use the self-tests?

a. Use them to study; complete them open-book so you can be sure to look up all the answers.

*b. Use them to test what you know days before the exam; try to duplicate the testing situation as much as possible.

6. This course requires basic algebra.

*True

False

7. Solve the following equation for X: $30 = \frac{X}{3}$.

a. 10

*b. 90

8. Solve the following equation for X: $X = \frac{(3-1)4^2 + (5-1)3^2}{(3-1)+(5-1)}$

*a. 11.33

b. 15.25

9. Order of operations is only important when doing computations by hand, not when using your calculator.

True

*False

10. Why do many disciplines require students to take a statistics course? Taking a statistics course:

a. is a way to employ statistics instructors, which is good for the economy.

*b. can help people make better decisions in their chosen professions.

11. Decades of research indicates that professionals in the helping professions make better decisions when they rely on:

*a. statistics.

b. their intuition and clinical experience.

12. All hypothesis testing procedures were created so that researchers could:

a. study entire populations rather than samples.

*b. deal with sampling error.

13. If a sample represents a population well, it will:

*a. respond in a way that is similar to how the entire population would respond.

b. generate a large amount of sampling error.

14. Effect sizes and confidence intervals help researchers:

a. interpret (i.e., give meaning to) the results of significance tests.

b. address the limitations of significance tests.

*c. do both of the above.

15. Testing causal hypotheses requires knowing how to:

a. use statistics

b. use research methods to design "fair" experiments

*c. both of the above

16. The value obtained from a population is called a:

a. statistic.

*b. parameter.

17. Parameters are:

a. always exactly equal to sample statistics.

*b. often estimated or inferred from sample statistics.

18. When a statistic and parameter differ:

a. it is called an inferential statistic.

*b. there is sampling error.

19. Researchers are using descriptive statistics if they are using their results to:

a. estimate a population parameter.

*b. describe the data they actually collected.

20. Researchers are using inferential statistics if they are using their results to:

*a. estimate a population parameter.

b. describe the data they actually collected.

21. The IV (independent variable) in a study is the:

*a. variable expected to change the outcome variable.

b. outcome variable.

22. The DV (dependent variable) in a study is the:

a. variable expected to change the outcome variable.

*b. outcome variable.

23. All studies allow you to determine if the IV causes changes in the DV.
True

*False

24. The way a variable is measured:

*a. determines the kinds of statistical procedures that can be used on that variable.

b. has very little impact on how researchers conduct their statistical analyses.

25. Researchers typically treat summed questionnaire/survey scores as which scale of measurement?

a. Nominal scale of measurement

b. Ordinal scale of measurement

*c. Interval scale of measurement

26. The scale of measurement that quantifies the thing being measured (i.e., indicates *how much*

of it there is) is _____ scale(s) of measurement.

a. the nominal

b. the ordinal

*c. both the interval and ratio

27. The scale of measurement that categorizes objects into different kinds of things is _____

scale(s) of measurement.

*a. the nominal

b. the ordinal

c. both the interval and ratio

28. The scale of measurement that indicates that some objects have more of something than other

objects but not how much more is _____ scale(s) of measurement.

a. the nominal

*b. the ordinal

c. both the interval and ratio

29. If a variable can be measured in fractions of units, it is a _____ variable.

a. discrete

*b. continuous

30. What type of graph is used for discrete data or qualitative data?

*a. bar graph

b. histogram

31. What type of graph is used for continuous data?

a. bar graph

*b. histogram

32. In bar graphs, the bars _____.

a. touch

*b. do not touch

33. In histograms, the bars _____.

*a. touch

b. do not touch

34. Use the graph to determine how many people said they had 1 sibling.

a. 4

b. 5

*c. 6

35. Line graphs can be used whenever a _____ is appropriate.

*a. histogram

b. bar graph

36. What type of graph should be used if the data are measured on a nominal scale?

a. Histogram

*b. Bar graph

37. The scores on an exam are distributed such that most scores are low (between 30–50%), but a couple of people had very high scores (i.e., above 95%). How is this distribution skewed?

*a. Positively skewed

b. Negatively skewed

38. Distributions that are flatter than a normal distribution are called:

*a. platykurtic.

b. leptokurtic.

39. The value for "*f*" represents the:

a. number of measurement categories.

*b. number of responses within a given measurement category.

40. In the above frequency table, how many people responded with an answer of 3?

a. 2

b. 4

*c. 7

41. The Variable View screen is where you:

*a. enter the variable names.

b. enter the data.

42. The Data View screen is where you:

a. enter the variable names.

*b. enter the data.

43. How many people responded with a 3 to the question "I am very happy with my cell phone provider?"

a. 2

b. 4

*c. 7

44. What percentage of the respondents answered the question with a response of 4?

a. 30.4

*b. 26.1

c. 17.4

45. What percentage of the respondents answered the question with a response of 4 or a lower value?

a. 56.5

*b. 82.6

c. 100

46. What is the most common response in the data?

a. 2

*b. 3

c. 4

d. 5

47. How many people responded with the most common response?

*a. 7

b. 6

c. 5

d. 4

48. It is possible to change the appearance of graphs created by SPSS.

*True

False

1.   b.

2.   a.

3.   a.

4.   b.

5.   b.

6.   a.

7.   b.

8.   a.

9.   b.

10.   b.

11.   a.

12.   b.

13.   a.

14.   c.

15.   c.

16.   b.

17.   b.

18.   b.

19.   b.

20.   a.

21.   a.

22.   b.

23.   b.

24.   a.

25.   c.

26.   c.

27.   a.

28.   b.

29.   b.

30.   a.

31.   b.

32.   b.

33.   a.

34.   c.

35.   a.

36.   b.

37.   a.

38.   a.

39.   b.

40.   c.

41.   a.

42.   b.

43.   c.

44.   b.

45.   b.

46.   b.

47.   a.

48.   a.