

## **Chapter 2 Test Bank**

### ***Multiple Choice***

1. Data are factual information presented in \_\_\_\_\_ form.

- a. alphabetic
- b. processed
- c. numerical
- d. unfiltered

Ans: C

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: What You Know and What is New

Question Type: MC

2. A frequency distribution table lists all distinct values or categories along with their \_\_\_\_\_ in a variable.

- a. average
- b. tally counts
- c. distribution shapes
- d. total

Ans: B

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

3. What kinds of variables can be organized in frequency distribution tables?

- a. Only interval variables
- b. Only categorical variables
- c. Only numerical variables
- d. Both categorical and numerical variables

Ans: D

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: Frequency Table Distribution

Question Type: MC

4. Frequency distribution tables are often simply referred to as \_\_\_\_\_.

- a. frequency tables
- b. multiplication tables
- c. summary tables
- d. categorical tables

Ans: A

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: Frequency Distribution Tables

Question Type: MC

5. To calculate relative frequency which equation is correct?

- a. Divide frequency by total frequency, then multiply by 100.
- b. Multiply total frequency by frequency of a category.
- c. Divide frequency of the value or category by the sample size.
- d. Multiply frequency of a category by 100.

Ans: C

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

6. The sum of all relative frequencies should equal \_\_\_\_.

- a. the sample size
- b. 100
- c. the sum of all frequencies
- d. 1.00

Ans: D

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

7. What is the relationship between frequency and sample size in a frequency distribution table?

- a.  $\sum n = f$
- b.  $\sum X = n$
- c.  $\sum n = X$
- d.  $\sum f = n$

Ans: D

Learning Objective: 2-2

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

8. Calculate  $\sum X$  using the frequency table below.

X	f
2	4
5	5
7	8
9	3
10	1

- a. 127

b. 123

c. 126

d. 125

Ans: C

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

9. You must summate the values from an equal interval frequency table. To get the best estimate you must first calculate \_\_\_\_\_.

a. the range of the data

b. the order of the data

c. the midpoint of each equal interval

d. the sum of every value

Ans: C

Learning Objective: 2-2

Cognitive Domain: Knowledge

Answer Location:

Question Type: MC

10. Calculate the value of  $\sum X$  using the following frequency table.

X	F
1	10
2	3
3	7
4	5

a. 58

b. 57

c. 25

d. 10

Ans: B

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

11. Based on the frequency table, what is the sample size (n)?

X	F
1	10
2	3
3	7
4	5

a. 58

b. 57

c. 10

d. 25

Ans: D

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

12. Calculate the value of  $\sum X$  using the following frequency table.

X	F
1	7
2	5
3	4
6	3
8	2

a. 63

b. 53

c. 272

d. 61

Ans: A

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

13. Bar graphs can represent which type/s of data?

a. Discrete and continuous

b. Discrete and categorical

c. Only categorical

d. Ratio

Ans: B

Learning Objective: 2-3

Cognitive Domain: Knowledge

Answer Location: Bar Graphs and Histograms

Question Type: MC

14. The y axis of a bar graph represents \_\_\_\_\_.

a. the sum of the frequencies multiplied by the values

b. the sample size

c. the frequency or relative frequency of each value

d. the values or categories

Ans: C

Learning Objective: 2-3

Cognitive Domain: Knowledge

Answer Location: Bar Graphs and Histograms

Question Type: MC

15. A histogram is defined as a graphical representation of a \_\_\_\_\_.

a. nominal variable

b. discrete variable

- c. continuous variable
- d. categorical variable

Ans: C

Learning Objective: 2-3

Cognitive Domain: Knowledge

Answer Location: Bar Graphs and Histograms

Question Type: MC

16. Pie charts can be a powerful visual aid to present information only when the data

- a. are negatively skewed.
- b. are positively skewed.
- c. add to a meaningful sum.
- d. are normally distributed.

Ans: C

Learning Objective: 2-3

Cognitive Domain: Knowledge

Answer Location: Pie Charts

Question Type: MC

17. What chart type uses its 360° shape to represent 100%?

- a. Circular bar graphs
- b. Pie charts
- c. Histograms
- d. Bar charts

Ans: B

Learning Objective: 2-3

Cognitive Domain: Comprehension

Answer Location: Pie Charts

Question Type: MC

18. The disadvantage of a pie chart is that it does not present any statistical information other than \_\_\_\_\_.

- a. visual data
- b. number of categories
- c. averages
- d. frequency or proportion

Ans: D

Learning Objective: 2-3

Cognitive Domain: Knowledge

Answer Location: Pie Charts

Question Type: MC

19. You are working as an intern for a company that deals with statistics and are asked to create a histogram out of an equal interval frequency table. From this information you know you are dealing with what kind of variable?

- a. Continuous variable
- b. Nominal variable
- c. Discrete variable

d. Ordinal variable

Ans: A

Learning Objective: 2-3

Cognitive Domain: Comprehension

Answer Location: Bar Graphs and Histograms

Question Type: MC

20. A \_\_\_\_\_ refers to the number of times every value occurs in a sample or a population.

a. pie chart

b. skew

c. distribution

d. probability

Ans: C

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Common Distribution Shapes

Question Type: MC

21. Common shapes of distributions include uniform distribution, normal distribution, and \_\_\_\_\_ distribution.

a. perfect

b. skewed

c. random

d. total

Ans: B

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Common Distribution Shapes

Question Type: MC

22. A common example of a uniform distribution is \_\_\_\_\_.

a. an unfair die

b. ages in a university

c. cards

d. car prices

Ans: C

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Uniform Distribution

Question Type: MC

23. When constructing a frequency table you notice that the relative frequencies for all of the values are approximately the same. What type of distribution shape would the data have in this case?

a. Negatively skewed distribution

b. Normal distribution

c. Uniform distribution

d. Positively skewed distribution

Ans: C

Learning Objective: 2-4

Cognitive Domain: Comprehension

Answer Location: Uniform Distribution

Question Type: MC

24. What is the relative frequency (probability) of throwing a 4 on a fair six-sided die?

- a. .167
- b. .20
- c. .04
- d. .05

Ans: A

Learning Objective: 2-4

Cognitive Domain: Application

Answer Location: Uniform Distribution

Question Type: MC

25. Many statistical procedures require that data come from a population that has a \_\_\_\_\_ distribution.

- a. random
- b. normal
- c. skewed
- d. uniform

Ans: B

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Normal Distribution

Question Type: MC

26. When a distribution peaks in the middle and tapers off symmetrically on both sides what kind of distribution is it?

- a. Probability distribution
- b. Skewed distribution
- c. Uniform distribution
- d. Normal distribution

Ans: D

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Normal Distribution

Question Type: MC

27. What type of distribution occurs when values are not symmetrically distributed and concentrate on one side or the other?

- a. Skewed distribution
- b. Normal distribution
- c. Uniform distribution
- d. Probability distribution

Ans: A

Learning Objective: 2-4

Cognitive Domain: Knowledge  
Answer Location: Skewed Distribution  
Question Type: MC

28. When the concentration of values is on the left side of a distribution with a long tail on the right side of the distribution this is known as a \_\_\_\_\_ distribution.

- a. normal
- b. uniform
- c. positively skewed
- d. negatively skewed

Ans: C

Learning Objective: 2-4  
Cognitive Domain: Knowledge  
Answer Location: Skewed Distribution  
Question Type: MC

29. When the concentration of values is on the right side of a distribution with a long tail on the left side the distribution is known as a \_\_\_\_\_ distribution.

- a. normal
- b. uniform
- c. positively skewed
- d. negatively skewed

Ans: D

Learning Objective: 2-4  
Cognitive Domain: Knowledge  
Answer Location: Skewed Distribution  
Question Type: MC

30. Looking at the frequencies in the table below you can tell that the distribution is \_\_\_\_\_.

X	F
1	1
2	2
3	2
4	7
5	12
6	20
7	19
8	18

- a. negatively skewed
- b. positively skewed
- c. normal
- d. uniform

Ans: A

Learning Objective: 2-5  
Cognitive Domain: Application  
Answer Location: Skewed Distribution  
Question Type: MC



31. Looking at the frequencies in the table below you can tell that the distribution is \_\_\_\_\_.

X	F
1	42
2	45
3	25
4	10
5	5
6	2
7	1
8	2

- a. negatively skewed
- b. positively skewed
- c. normal
- d. uniform

Ans: B

Learning Objective: 2-5

Cognitive Domain: Application

Answer Location: Skewed Distribution

Question Type: MC

32. A \_\_\_\_\_ is a graphical display of quantitative information with a line or curve that connects a series of adjacent data points.

- a. histogram
- b. line graph
- c. bar graph
- d. pie chart

Ans: B

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Normal Distribution

Question Type: MC

33. Looking at the frequencies in the table below you can tell that the distribution is \_\_\_\_\_.

X	F
1	2
2	2
4	2
5	2
6	2
7	2
8	2

- a. negatively skewed
- b. positively skewed
- c. normal
- d. uniform

Ans: D

Learning Objective: 2-4

Cognitive Domain: Application

Answer Location: Uniform Distribution

Question Type: MC

34. Looking at the frequencies in the table below you can tell that the distribution is \_\_\_\_\_.

X	F
2	2
3	3
4	4
5	5
6	4
7	3
8	2

- a. negatively skewed
- b. positively skewed
- c. normal
- d. uniform

Ans: C

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Normal Distribution

Question Type: MC

35. If  $n = 20$  solve for k.

X	F
1	5
2	2
3	3
4	K
5	3
6	1
7	4

- a. 5
- b. 2
- c. 3
- d. 6

Ans: B

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

36. To calculate the range of a distribution you must \_\_\_\_\_.

- a. add the minimum value to the maximum value
- b. add the minimum and maximum values and divide by two
- c. subtract the minimum value from the maximum value
- d. divide the maximum value by 2

Ans: C

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

37. Calculate n for the table below.

X	F
1	5
2	4
3	6
4	8
5	4
6	1
7	2

a. 28

b. 30

c. 39

d. 31

Ans: B

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

38.  $\frac{f}{n}$  is the formula for \_\_\_\_\_.

a. calculating sample size

b. calculating relative frequency

c. calculating total frequency

d. calculating percentage of a frequency

Ans: B

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

39. The graphical representation of a continuous variable is known as a \_\_\_\_\_.

a. line graph

b. bar chart

c. pie chart

d. histogram

Ans: D

Learning Objective: 2-2

Cognitive Domain: Knowledge

Answer Location: Bar Graphs and Histograms

Question Type: MC

40. The x axis of a bar graph represents \_\_\_\_\_.

- a. the sum of the frequencies multiplied by the values
- b. the sample size
- c. the frequency or relative frequency of each value
- d. the values or categories of the variable

Ans: D

Learning Objective: 2-3

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

41. Solve for k in the frequency table below.

X	F	Relative f
1	2	.1
2	4	.2
3	8	k
4	4	.2
5	2	.1
	n=20	1.00

- a. .5
- b. .2
- c. .3
- d. .4

Ans: D

Learning Objective: 2-2

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

42.  $\frac{f}{n} * 100\%$  is the formula to calculate \_\_\_\_\_.

- a. cumulative relative frequency
- b. percentage of a category relative to the sample size
- c. percentage of a category relative to the population size
- d. frequency

Ans: B

Learning Objective: 2-2

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

43. For a given value X with f = 6 and n = 30, what is the relative frequency for value X?

- a. .167
- b. .5
- c. .2
- d. .6

Ans: C

Learning Objective: 2-2

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables  
Question Type: MC

44. The capacity for human short-term memory is \_\_\_\_\_.

- a.  $5 \pm 3$
- b.  $5 \pm 2$
- c.  $9 \pm 1$
- d.  $7 \pm 2$

Ans: D

Learning Objective: 2-2

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

45. Why is short-term memory used as the standard to determine the appropriate number of categories in a frequency table?

- a. To make sure that the information is too detailed to be absorbed quickly, forcing examination.
- b. Psychologists accept short-term memory as a universal standard.
- c. So that the information is able to be absorbed quickly with enough distinction between categories.
- d. So that the table is ordered in a logical fashion.

Ans: C

Learning Objective: 2-2

Cognitive Domain: Comprehension

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

46. In an equal interval frequency table,  $X_{\text{midpoint}}$  for each interval is calculated as

- a. the low-end value plus the high-end value.
- b. the high-end values minus the low-end value.
- c. the low-end value plus the high-end value then divided by 2.
- d. the high-end value minus the low-end value then divided by 2.

Ans: C

Learning Objective: 2-2

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

47.  $X_{\text{midpoint}}$  is useful because \_\_\_\_\_.

- a. it can be used to calculate the skewness of a distribution
- b. knowing the midpoints of values is useful for procedures
- c. equal interval frequency tables do not allow for exact calculations of  $fX$
- d. estimated values are of higher value than exact values

Ans: C

Learning Objective: 2-2

Cognitive Domain: Comprehension

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

48. To obtain percentage for a category \_\_\_\_\_.

- a. multiply the relative frequency by  $\sum X$
- b. divide the relative frequency by 100%
- c. multiply the relative frequency by 100%
- d. multiply the relative frequency by the sample size

Ans: C

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

49. Even though no calculation errors are made in the relative frequencies, the sum of the relative frequencies is 1.01. What is the possible cause of this sum?

- a. Calculator malfunction
- b. The sum of relative frequencies do not have to equal 1
- c. A skewed distribution
- d. Rounding

Ans: D

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

50. To make sure that there is no overlap between two adjacent intervals in an equal interval frequency table, each interval actually includes \_\_\_\_\_.

- a. lower limit  $\leq X \leq$  upper limit
- b. lower limit  $< X \leq$  upper limit
- c. lower limit  $\leq X <$  upper limit
- d. lower limit  $< X <$  upper limit

Ans: C

Learning Objective: 2-2

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

51. In the frequency table of professions below, solve for k in the relative frequency column.

X	f	Relative f
Labor	35	0.50
Managerial	5	0.07
Marketing	7	k
Service	20	0.29
Human Resources	3	0.04
	n=70	

- a. 0.15
- b. 0.20
- c. 0.10
- d. 0.11

Ans: C

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

52. Calculate the value of  $\sum X$  using the following frequency table.

X	F
5	5
6	3
7	5
8	5
9	1

a. 102

b. 130

c. 125

d. 127

Ans: D

Learning Objective: 2-1

Cognitive Domain:

Answer Location:

Question Type: MC

53. Calculate the value of  $\sum X$  using the following frequency table.

X	F
2	4
4	4
7	3
8	3
9	3
10	4

a. 137

b. 126

c. 136

d. 125

Ans: C

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

54. In a case where pounds are the unit used to measure an individual's weight and the individual's weight is 140 lbs, what are the real limits of the variable?

a. 139, 140

b. 139, 141

c. 138, 142

d. 139.5, 140.5

Ans: D

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

55. What is the midpoint for the equal interval: 169–172?

- a. 170.5
- b. 171.5
- c. 171
- d. 170

Ans: A

Learning Objective: 2-2

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

56. What is the formula for calculating midpoints for equal intervals?

- a.  $(\text{low value} + \text{high value})/4$
- b.  $(\text{low value} + \text{high value})/2$
- c.  $\text{high value}/2$
- d.  $\text{low value} \times 2$

Ans: B

Learning Objective: 2-2

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

57. For the table below, calculate the sample size

X	F
2	2
3	6
4	8
5	7
6	4
7	3
8	1

- a. 39
- b. 30
- c. 31
- d. 35

Ans: C

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

58. For the equal interval table below, which is the correct value for the blank in the column,  $fX_{\text{midpoint}}$ .

X	F	$X_{\text{midpoint}}$	$fX_{\text{midpoint}}$
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1–10	2	5.5	11
11–20	4	15.5	62
21–30	5	25.5	
31–40	4	35.5	142
41–50	2	45.5	91

- a. 127.5
- b. 125
- c. 127
- d. 126

Ans: A

Learning Objective: 2-2

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

59. For the equal interval table below, what is the correct value for the blank in the column,  $X_{\text{midpoint}}$ .

X	F	$X_{\text{midpoint}}$
1–5	2	3
6–10	4	8
11–15	5	
16–20	4	18

- a. 14.5
- b. 13.5
- c. 14
- d. 13

Ans: D

Learning Objective: 2-2

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: MC

60. When a distribution is referred to as positively skewed, this means that \_\_\_\_\_.

- a. the concentration of values is on the right side of the distribution
- b. the concentration of values is in the middle of the distribution
- c. the values are evenly distributed
- d. the concentration of values is on the left side of the distribution

Ans: D

Learning Objective: 2-5

Cognitive Domain: Knowledge

Answer Location: Skewed Distribution

Question Type: MC

61. When a distribution is referred to as negatively skewed, this means that \_\_\_\_\_.

- a. the concentration of values is on the right side of the distribution
- b. the concentration of values is in the middle of the distribution
- c. the values are evenly distributed
- d. the concentration of values is on the left side of the distribution

Ans: A

Learning Objective: 2-5

Cognitive Domain: Knowledge  
Answer Location: Skewed Distribution  
Question Type: MC

62. Another term for positively skewed is \_\_\_\_\_.

- a. left skewed
- b. right skewed
- c. normally skewed
- d. correctly skewed

Ans: B

Learning Objective: 2-5  
Cognitive Domain: Knowledge  
Answer Location: Skewed Distribution  
Question Type: MC

63. For the frequency table below, calculate  $\sum X$ .

X	F
2	3
4	5
6	7
8	5
10	3
12	1

- a. 150
- b. 147
- c. 66
- d. 67

Ans: A

Learning Objective: 2-1  
Cognitive Domain: Application  
Answer Location: Organizing and Summarizing Categorical Variables  
Question Type: MC

64. For the frequency table below, calculate  $\sum X$ .

X	F
2	4
4	7
6	10
8	8
10	7
12	5

- a. 292
- b. 289
- c. 291

d. 290

Ans: D

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

65. For the equal interval frequency table below, fill in the blank in the  $X_{\text{midpoint}}$  column.

X	F	$X_{\text{midpoint}}$	$fX_{\text{midpoint}}$
46-49	2	47.5	95
50-53	5	51.5	257.5
54-57	7	55.5	388.5
58-61	7		416.5
62-65	5	63.5	317.5
66-69	2	67.5	135

a. 60.5

b. 55.5

c. 58.5

d. 59.5

Ans: D

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

66. In the frequency table below, what type of distribution shape does the distribution have?

X	F
1	24
2	28
3	18
4	9
5	5
6	2
7	1

a. Positively skewed

b. Negatively skewed

c. Uniform

d. Normal

Ans: A

Learning Objective: 2-5

Cognitive Domain: Comprehension

Answer Location: Skewed Distribution

Question Type: MC

67. In the frequency table below, what type of distribution shape does the distribution have?

X	F
1	2

2	2
3	3
4	13
5	18
6	25
7	24

- a. Positively skewed
- b. Negatively skewed
- c. Uniform
- d. Normal

Ans: B

Learning Objective: 2-5

Cognitive Domain: Comprehension

Answer Location: Skewed Distribution

Question Type: MC

68. In the frequency table below, what type of distribution shape does the distribution have?

X	F
1	10
2	10
3	10
4	10
5	10
6	10
7	10

- a. Positively skewed
- b. Negatively skewed
- c. Uniform
- d. Normal

Ans: C

Learning Objective: 2-4

Cognitive Domain: Comprehension

Answer Location: Uniform Distribution

Question Type: MC

69. In the frequency table below, what type of distribution shape does the distribution have?

X	F
1	3
2	7
3	11
4	15
5	11
6	7
7	3

- a. Positively skewed
- b. Negatively skewed
- c. Uniform
- d. Normal

Ans: D

Learning Objective: 2-4

Cognitive Domain: Comprehension

Answer Location: Normal Distribution  
Question Type: MC

70. In the table below, what is the percentage of the “service” category in the frequency distribution?

X	f
Labor	8
Managerial	7
Marketing	10
Service	7
Human Resources	3

- a. 21%
- b. 15%
- c. 20%
- d. 25%

Ans: C

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: MC

## ***True/False***

1. When you add up all the frequencies in each category, the sum of all frequencies is equal to the sample size.

Ans: True

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: TF

2. When thinking of the concept of “orderly fashion” there is only one kind of order.

Ans: False

Learning Objective: 2-2

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: TF

3. It is possible to create bar graphs with multiple bars to show subcategories within categories.

Ans: True

Learning Objective: 2-3

Cognitive Domain: Knowledge

Answer Location: Bar Graphs and Histograms

Question Type: TF

4. A histogram is a graphical representation of a continuous variable.

Ans: True

Learning Objective: 2-3

Cognitive Domain: Comprehension

Answer Location: Bar Graphs and Histograms

Question Type: TF

5. The shape of a distribution can be shown graphically using bar charts or histograms.

Ans: True

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Common Distribution shapes

Question Type: TF

6. A uniform distribution gets its name from the fact that it peaks in the middle then tapers off symmetrically on both sides of the distribution.

Ans: False

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Uniform Distribution

Question Type: TF

7. Many statistical procedures require that a population has a skewed distribution.

Ans: False

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Normal Distribution

Question Type: TF

8. The labeling of the skewness of a distribution depends on the direction of the tail.

Ans: True

Learning Objective: 2-5

Cognitive Domain: Knowledge

Answer Location: Skewed Distribution

Question Type: TF

9. If feasible, an interval of 5–10 should be used when constructing an equal interval table.

Ans: True

Learning Objective: 2-2

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: TF

10. Relative frequency is the same as proportion.

Ans: True

Learning Objective: 2-1

Cognitive Domain: Comprehension

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: TF

## ***Short Answer***

1. Relative frequency is similar to percentage. With percentage all categories will add up to 100%. What do all relative frequencies add up to?

Ans: 1, 1.0, 1.00

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: SA

2. When labeling a skewed distribution, the direction of the \_\_\_\_\_ is used.

Ans: Tail

Learning Objective: 2-5

Cognitive Domain: Knowledge

Answer Location: Skewed Distribution

Question Type: SA

3. What type of distribution peaks at the center and symmetrically tapers off on both sides?

Ans: Normal, normal distribution

Learning Objective: 2-4

Cognitive Domain: Knowledge

Answer Location: Normal Distribution

Question Type: SA

4. The number of occurrences of each distinct value or each category is reported as \_\_\_\_\_ in a distribution table.

Ans: Frequency

Learning Objective: 2-1

Cognitive Domain: Knowledge

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: SA

5. What type of graphical representation would be appropriate to use in the case of categorical data?

Ans: Bar chart, bar graph, or pie chart

Learning Objective: 2-3

Cognitive Domain: Knowledge  
 Answer Location: Bar Charts  
 Question Type: SA

## Essay

1. For the equal interval table below, calculate the approximate sum of X. Note that to do this, you will have to first calculate  $X_{\text{midpoint}}$  and  $fX_{\text{midpoint}}$ . Please show your work.

X	f	$X_{\text{midpoint}}$	$fX_{\text{midpoint}}$
1–5	2		
6–10	6		
11–15	7		
16–20	10		
21–25	12		
26–30	13		
31–35	10		
36–40	9		

Ans: 1637 ( $X_{\text{midpoint}} = 3, 8, 13, 18, 23, 28, 33, 38$ ) ( $fX_{\text{midpoint}} = 6, 48, 91, 180, 276, 364, 330, 342$ )

Learning Objective: 2-2

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: ESS

2. With distribution shape in mind, how is it important that a data set is in ascending order when graphically represented?

Ans: Answers may vary. Without proper ascending order the shape of the distribution will not be apparent.

Learning Objective: 2-4

Cognitive Domain: Comprehension

Answer Location: Common Distribution Shapes

Question Type: ESS

3. For the frequency table of student GPAs below calculate the values for the relative frequency column. Please show your work.

X, GPA	f	Relative frequency
2.9	7	
3.0	12	
3.1	10	
3.2	4	
3.3	6	
3.4	5	
3.5	3	
3.6	0	
3.7	2	



3.8	1	
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Ans: Relative Frequencies = 0.14, 0.24, 0.20, 0.08, 0.12, 0.10, 0.06, 0.00, 0.04, 0.02

Learning Objective: 2-1

Cognitive Domain: Application

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: ESS

4. You are asked to create a frequency distribution table with equal intervals and continuous data. The range of your data is 125 and  $n = 2000$ , far too large to put into a frequency table individually. You know the range for human short-term memory. How do you go about determining the size for your equal intervals?

Ans: Divide the range (125) by  $7 \pm 2$ . Since the range is a multiple of 5, 5 works best for division and equal intervals of 25 are reasonable.

Learning Objective: 2-2

Cognitive Domain: Comprehension

Answer Location: Organizing and Summarizing Numerical Variables

Question Type: ESS

5. Calculate the total quiz scores from the following frequency table. Please show your work.

X	f
0	2
1	2
2	3
3	12
4	13
5	14

Ans: 166

Learning Objective: 2-1

Cognitive Domain: Comprehension

Answer Location: Organizing and Summarizing Categorical Variables

Question Type: ESS