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CHAPTER 2: ORGANIZING AND VISUALIZING VARIABLES

SCENARIO 2-1

An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. A representative from a local insurance agency selected a random sample of insured drivers and recorded, *X,* the number of claims each made in the last 3 years, with the following results.

X	*f*
1	14
2	18
3	12
4	5
5	1

1. Referring to Scenario 2-1, how many drivers are represented in the sample?
   a) 5
   b) 15
   c) 18
   d) 50

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: frequency distribution

2. Referring to Scenario 2-1, how many total claims are represented in the sample?
   a) 15
   b) 50
   c) 111
   d) 250

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: interpretation, frequency distribution

3. A type of vertical bar chart in which the categories are plotted in the descending rank order of the magnitude of their frequencies is called a
   a) contingency table.
   b) Pareto chart.
   c) stem-and-leaf display.
   d) pie chart.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: Pareto chart
SCENARIO 2-2

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At a meeting of information systems officers for regional offices of a national company, a survey was taken to determine the number of employees the officers supervise in the operation of their departments, where *X* is the number of employees overseen by each information systems officer.

X	*f*
1	7
2	5
3	11
4	8
5	9

4. Referring to Scenario 2-2, how many regional offices are represented in the survey results?
   a) 5
   b) 11
   c) 15
   d) 40

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: interpretation, frequency distribution

5. Referring to Scenario 2-2, across all the regional offices, how many total employees were supervised by those surveyed?
   a) 15
   b) 40
   c) 127
   d) 200

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: interpretation, frequency distribution

6. The width of each bar in a histogram corresponds to the
   a) differences between the boundaries of the class.
   b) number of observations in each class.
   c) midpoint of each class.
   d) percentage of observations in each class.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: histogram

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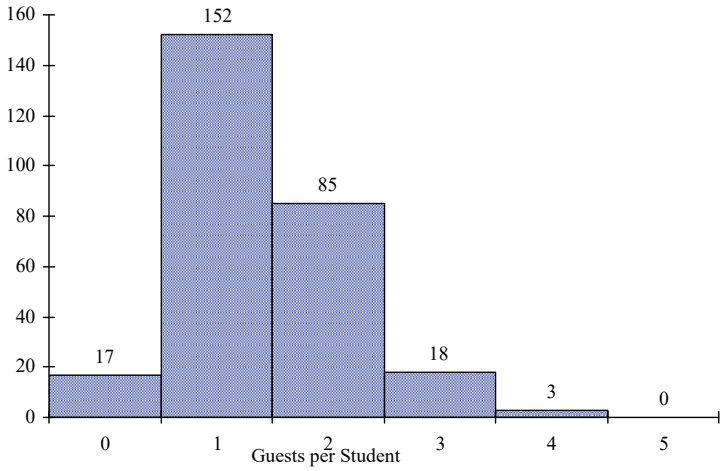
SCENARIO 2-3

Every spring semester, the School of Business coordinates a luncheon with local business leaders for graduating seniors, their families, and friends. Corporate sponsorship pays for the lunches of each of the seniors, but students must purchase tickets to cover the cost of lunches served to guests they bring with them. The following histogram represents the attendance at the senior luncheon, where X is the number of guests each graduating senior invited to the luncheon and f is the number of graduating seniors in each category.



7. Referring to the histogram from Scenario 2-3, how many graduating seniors attended the luncheon?
   a) 4
   b) 152
   c) 275
   d) 388

ANSWER:
c
TYPE: MC DIFFICULTY: Difficult
EXPLANATION: The number of graduating seniors is the sum of all the frequencies, f.
KEYWORDS: interpretation, histogram

8. Referring to the histogram from Scenario 2-3, if all the tickets purchased were used, how many guests attended the luncheon?
   a) 4
   b) 152
   c) 275
   d) 388

ANSWER:
d
TYPE: MC DIFFICULTY: Difficult
EXPLANATION: The total number of guests is $\sum_{i=1}^{6} X_i f_i$
KEYWORDS: interpretation, histogram

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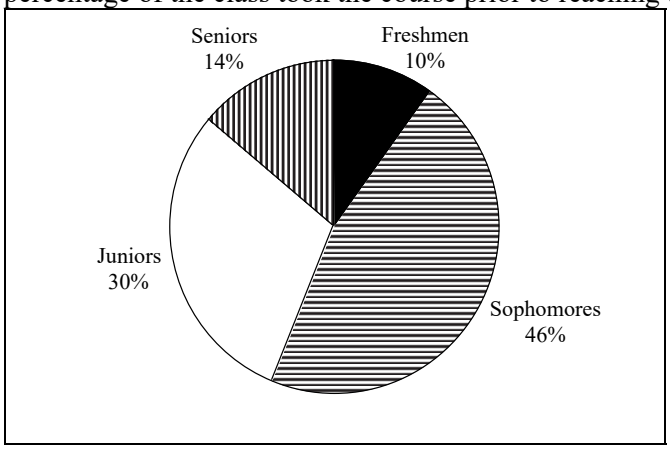
9. A professor of economics at a small Texas university wanted to determine what year in school students were taking his tough economics course. Shown below is a pie chart of the results. What percentage of the class took the course prior to reaching their senior year?



a) 14%
b) 44%
c) 54%
d) 86%

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: interpretation, pie chart

10. When polygons or histograms are constructed, which axis must show the true zero or "origin"?
    a) The horizontal axis.
    b) The vertical axis.
    c) Both the horizontal and vertical axes.
    d) Neither the horizontal nor the vertical axis.

ANSWER:
b- Origin is at intersection of the Y axes.
TYPE: MC DIFFICULTY: Easy
KEYWORDS: polygon, histogram

11. When constructing charts, the following is plotted at the class midpoints:
    a) frequency histograms.
    b) percentage polygons.
    c) cumulative percentage polygon (ogives).
    d) All of the above.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: percentage polygon

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SCENARIO 2-4

A survey was conducted to determine how people rated the quality of programming available on television. Respondents were asked to rate the overall quality from 0 (no quality at all) to 100 (extremely good quality). The stem-and-leaf display of the data is shown below.

Stem	Leaves
3	24
4	03478999
5	0112345
6	12566
7	01
8	
9	2

12. Referring to Scenario 2-4, what percentage of the respondents rated overall television quality with a rating of 80 or above?
    a) 0
    b) 4
    c) 96
    d) 100

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

13. Referring to Scenario 2-4, what percentage of the respondents rated overall television quality with a rating of 50 or below?
    a) 11
    b) 40
    c) 44
    d) 56

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

14. Referring to Scenario 2-4, what percentage of the respondents rated overall television quality with a rating from 50 through 75?
    a) 11
    b) 40
    c) 44
    d) 56

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

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SCENARIO 2-5
The following are the duration in minutes of a sample of long-distance phone calls made within the continental United States reported by one long-distance carrier.

Time (in Minutes)	Relative Frequency
0 but less than 5	0.37
5 but less than 10	0.22
10 but less than 15	0.15
15 but less than 20	0.10
20 but less than 25	0.07
25 but less than 30	0.07
30 or more	0.02

15. Referring to Scenario 2-5, what is the width of each class?
    a) 1 minute
    b) 5 minutes
    c) 2%
    d) 100%

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: class interval, relative frequency distribution

16. Referring to Scenario 2-5, if 1,000 calls were randomly sampled, how many calls lasted under 10 minutes?
    a. 220
    b. 370
    c. 410
    d. 590

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, interpretation

17. Referring to Scenario 2-5, if 100 calls were randomly sampled, how many calls lasted 15 minutes or longer?
    a. 10
    b. 14
    c. 26
    d. 74

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, interpretation

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18. Referring to Scenario 2-5, if 10 calls lasted 30 minutes or more, how many calls lasted less than 5 minutes?
    a) 10
    b) 185
    c) 295
    d) 500

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, interpretation

19. Referring to Scenario 2-5, what is the cumulative relative frequency for the percentage of calls that lasted under 20 minutes?
    a) 0.10
    b) 0.59
    c) 0.76
    d) 0.84

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: cumulative relative frequency

20. Referring to Scenario 2-5, what is the cumulative relative frequency for the percentage of calls that lasted 10 minutes or more?
    a) 0.16
    b) 0.24
    c) 0.41
    d) 0.90

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: cumulative relative frequency

21. Referring to Scenario 2-5, if 100 calls were randomly sampled, _____ of them would have lasted at least 15 minutes but less than 20 minutes
    a) 6
    b) 8
    c) 10
    d) 16

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: relative frequency distribution, interpretation

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22. Referring to Scenario 2-5, if 100 calls were sampled, _____ of them would have lasted less than 15 minutes.
    a) 26
    b) 74
    c) 10
    d) None of the above.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, interpretation

23. Referring to Scenario 2-5, if 100 calls were sampled, _____of them would have lasted 20 minutes or more.
    a) 26
    b) 16
    c) 74
    d) None of the above.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, interpretation

24. Referring to Scenario 2-5, if 100 calls were sampled, _____ of them would have lasted less than 5 minutes or at least 30 minutes or more.
    a) 35
    b) 37
    c) 39
    d) None of the above.

ANSWER:
c
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: relative frequency distribution, interpretation

25. Which of the following is appropriate for displaying data collected on the different brands of cars students at a major university drive?

    a) A Pareto chart
    b) A two-way classification table
    c) A histogram
    d) A scatter plot

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: Pareto diagram

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26. One of the developing countries is experiencing a baby boom, with the number of births rising for the fifth year in a row, according to a BBC News report. Which of the following is best for displaying this data?
    a) A Pareto chart
    b) A two-way classification table
    c) A histogram
    d) A time-series plot

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: time-series plot

27. When studying the simultaneous responses to two categorical questions, you should set up a
    a) contingency table.
    b) frequency distribution table.
    c) cumulative percentage distribution table.
    d) histogram.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table

28. Data on 1,500 students' height were collected at a larger university in the East Coast. Which of the following is the best chart for presenting the information?
    a) A pie chart.
    b) A Pareto chart.
    c) A side-by-side bar chart.
    d) A histogram.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, histogram

29. Data on the number of part-time hours students at a public university worked in a week were collected. Which of the following is the best chart for presenting the information?
    a) A pie chart.
    b) A Pareto chart.
    c) A percentage table.
    d) A percentage polygon.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, percentage polygon

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30. Data on the number of credit hours of 20,000 students at a public university enrolled in a Spring semester were collected. Which of the following is the best for presenting the information?
    a) A pie chart.
    b) A Pareto chart.
    c) A stem-and-leaf display.
    d) A contingency table.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, stem-and-leaf

31. A survey of 150 executives were asked what they think is the most common mistake candidates make during job interviews. Six different mistakes were given. Which of the following is the best for presenting the information?
    a) A bar chart.
    b) A histogram
    c) A stem-and-leaf display.
    d) A contingency table.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, bar chart

32. You have collected information on the market share of 5 different search engines used by U.S. Internet users in a quarter. Which of the following is the best for presenting the information?
    a) A pie chart.
    b) A histogram
    c) A stem-and-leaf display.
    d) A contingency table.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, pie chart

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33. You have collected information on the consumption by the 15 largest coffee-consuming nations. Which of the following is the best for presenting the shares of the consumption?
    a) A pie chart.
    b) A Pareto chart
    c) A side-by-side bar chart.
    d) A contingency table.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: choice of chart, Pareto chart
NOTE: Even though a pie chart can also be used, the Pareto chart is preferable for separating the "vital few" from the "trivial many".

34. You have collected data on the approximate retail price (in $) and the energy cost per year (in $) of 15 refrigerators. Which of the following is the best for presenting the data?
    a) A pie chart.
    b) A scatter plot
    c) A side-by-side bar chart.
    d) A contingency table.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, scatter plot

35. You have collected data on the number of U.S. households actively using online banking and/or online bill payment over a 10-year period. Which of the following is the best for presenting the data?
    a) A pie chart.
    b) A stem-and-leaf display
    c) A side-by-side bar chart.
    d) A time-series plot.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, time-series plot

36. You have collected data on the monthly seasonally adjusted civilian unemployment rate for the United States over a 10-year period. Which of the following is the best for presenting the data?
    a) A contingency table.
    b) A stem-and-leaf display
    c) A time-series plot.
    d) A side-by-side bar chart.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, time-series plot

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37. You have collected data on the number of complaints for 6 different brands of automobiles sold in the US over a 10-year period. Which of the following is the best for presenting the data?
    a) A contingency table.
    b) A stem-and-leaf display
    c) A time-series plot.
    d) A side-by-side bar chart.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: choice of chart, side-by-side bar chart

38. You have collected data on the responses to two questions asked in a survey of 40 college students majoring in business—What is your gender (Male = M; Female = F) and What is your major (Accountancy = A; Computer Information Systems = C; Marketing = M). Which of the following is the best for presenting the data?
    a) A contingency table.
    b) A stem-and-leaf display
    c) A time-series plot.
    d) A Pareto chart.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: choice of chart, contingency table

SCENARIO 2-6
A sample of 200 students at a Big-Ten university was taken after the midterm to ask them whether they went bar hopping the weekend before the midterm or spent the weekend studying, and whether they did well or poorly on the midterm. The following table contains the result.

	Did Well in Midterm	Did Poorly in Midterm
Studying for Exam	80	20
Went Bar Hopping	30	70

39. Referring to Scenario 2-6, of those who went bar hopping the weekend before the midterm in the sample, _____ percent of them did well on the midterm.
    a) 15
    b) 27.27
    c) 30
    d) 55

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table, interpretation

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40. Referring to Scenario 2-6, of those who did well on the midterm in the sample, _____ percent of them went bar hopping the weekend before the midterm.
    a) 15
    b) 27.27
    c) 30
    d) 50

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table, interpretation

41. Referring to Scenario 2-6, _____ percent of the students in the sample went bar hopping the weekend before the midterm and did well on the midterm.
    a) 15
    b) 27.27
    c) 30
    d) 50

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table, interpretation

42. Referring to Scenario 2-6, _____ percent of the students in the sample spent the weekend studying and did well on the midterm.
    a) 40
    b) 50
    c) 72.72
    d) 80

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table, interpretation

43. Referring to Scenario 2-6, if the sample is a good representation of the population, we can expect _____ percent of the students in the population to spend the weekend studying and do poorly on the midterm.
    a) 10
    b) 20
    c) 45
    d) 50

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table, interpretation

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44. Referring to Scenario 2-6, if the sample is a good representation of the population, we can expect _____ percent of those who spent the weekend studying to do poorly on the midterm.
    a) 10
    b) 20
    c) 45
    d) 50

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: contingency table, interpretation

45. Referring to Scenario 2-6, if the sample is a good representation of the population, we can expect _____ percent of those who did poorly on the midterm to have spent the weekend studying.
    a) 10
    b) 22.22
    c) 45
    d) 50

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate.
KEYWORDS: contingency table, interpretation

46. In a contingency table, the number of rows and columns
    a) must always be the same.
    b) must always be 2.
    c) must add to 100%.
    d) None of the above.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: contingency table

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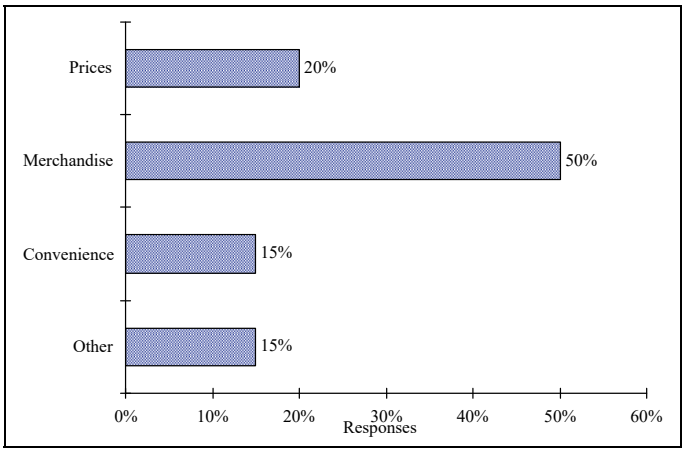
47. Retailers are always interested in determining why a customer selected their store to make a purchase. A sporting goods retailer conducted a customer survey to determine why its customers shopped at the store. The results are shown in the bar chart below. What proportion of the customers responded that they shopped at the store because of the merchandise or the convenience?



a) 35%
b) 50%
c) 65%
d) 85%

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: bar chart, interpretation

SCENARIO 2-7

The Stem-and-Leaf display below contains data on the number of months between the date a civil suit is filed and when the case is actually adjudicated for 50 cases heard in superior court.

Stem	Leaves
1	2 3 4 4 4 7 8 9 9
2	2 2 2 2 3 4 5 5 6 7 8 8 8 9
3	0 0 1 1 1 3 5 7 7 8
4	0 2 3 4 5 5 7 9
5	1 1 2 4 6 6
6	1 5 8

48. Referring to Scenario 2-7, locate the first leaf, i.e., the lowest valued leaf with the lowest valued stem. This represents a wait of _____ months.

ANSWER:
12
TYPE: FI DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

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49. Referring to Scenario 2-7, the civil suit with the longest wait between when the suit was filed and when it was adjudicated had a wait of _____ months.

ANSWER:
68
TYPE: FI DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

50. Referring to Scenario 2-7, the civil suit with the fourth shortest waiting time between when the suit was filed and when it was adjudicated had a wait of _____ months.

ANSWER:
14
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

51. Referring to Scenario 2-7, _____ percent of the cases were adjudicated within the first 2 years.

ANSWER:
30
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

52. Referring to Scenario 2-7, _____ percent of the cases were not adjudicated within the first 4 years.

ANSWER:
20
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

53. Referring to Scenario 2-7, if a frequency distribution with equal sized classes was made from this data, and the first class was "10 but less than 20," the frequency of that class would be _____.

ANSWER:
9
TYPE: FI DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

54. Referring to Scenario 2-7, if a frequency distribution with equal sized classes was made from this data, and the first class was "10 but less than 20," the relative frequency of the third class would be _____.

ANSWER:
0.20 or 20% or 10/50
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution

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55. Referring to Scenario 2-7, if a frequency distribution with equal sized classes was made from this data, and the first class was "10 but less than 20," the cumulative percentage of the second class would be _____.

ANSWER:
46% or 0.46 or 23/50
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: cumulative percentage distribution

SCENARIO 2-8

The Stem-and-Leaf display represents the number of times in a year that a random sample of 100 "lifetime" members of a health club actually visited the facility.

Stem	Leaves
0	012222333333445666666667789999
1	1111222234444455669999
2	00011223455556889
3	0000446799
4	011345567
5	0077
6	8
7	67
8	3
9	0247

56. Referring to Scenario 2-8, the person who has the largest leaf associated with the smallest stem visited the facility _____ times.

ANSWER:
9
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

57. Referring to Scenario 2-8, the person who visited the health club less than anyone else in the sample visited the facility _____ times.

ANSWER:
0 or no
TYPE: FI DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

58. Referring to Scenario 2-8, the person who visited the health club more than anyone else in the sample visited the facility _____ times.

ANSWER:
97
TYPE: FI DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

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59. Referring to Scenario 2-8, _____ of the 100 members visited the health club at least 52 times in a year.

ANSWER:
10
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

60. Referring to Scenario 2-8, _____ of the 100 members visited the health club no more than 12 times in a year.

ANSWER:
38
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

61. Referring to Scenario 2-8, if a frequency distribution with equal sized classes was made from this data, and the first class was "0 but less than 10," the frequency of the fifth class would be _____.

ANSWER:
9
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, frequency distribution

62. Referring to Scenario 2-8, if a frequency distribution with equal sized classes was made from this data, and the first class was "0 but less than 10," the relative frequency of the last class would be _____.

ANSWER:
4% or 0.04 or 4/100
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, relative frequency distribution

63. Referring to Scenario 2-8, if a frequency distribution with equal sized classes was made from this data, and the first class was "0 but less than 10," the cumulative percentage of the next-to-last class would be _____.

ANSWER:
96% or 0.96 or 96/100
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, cumulative percentage distribution

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64. Referring to Scenario 2-8, if a frequency distribution with equal sized classes was made from this data, and the first class was "0 but less than 10," the class midpoint of the third class would be _____.

ANSWER:
25 or (20+30)/2
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, class midpoint

SCENARIO 2-9

The frequency distribution below represents the rents of 250 randomly selected federally subsidized apartments in a small town.

Rent in $	Frequency
1,100 but less than 1,200	113
1,200 but less than 1,300	85
1,300 but less than 1,400	32
1,400 but less than 1,500	16
1,500 but less than 1,600	4

65. Referring to Scenario 2-9, _____ apartments rented for at least $1,200 but less than $1,400.

ANSWER:
117
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution

66. Referring to Scenario 2-9, _____ percent of the apartments rented for $1,400 or more.

ANSWER:
8% or 20/250
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution, cumulative percentage distribution

67. Referring to Scenario 2-9, _____ percent of the apartments rented for at least $1,300.

ANSWER:
20.8% or 52/250
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: frequency distribution, cumulative percentage distribution

68. Referring to Scenario 2-9, the class midpoint of the second class is _____.

ANSWER:
1,250
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution, class midpoint

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69. Referring to Scenario 2-9, the relative frequency of the second class is _____.

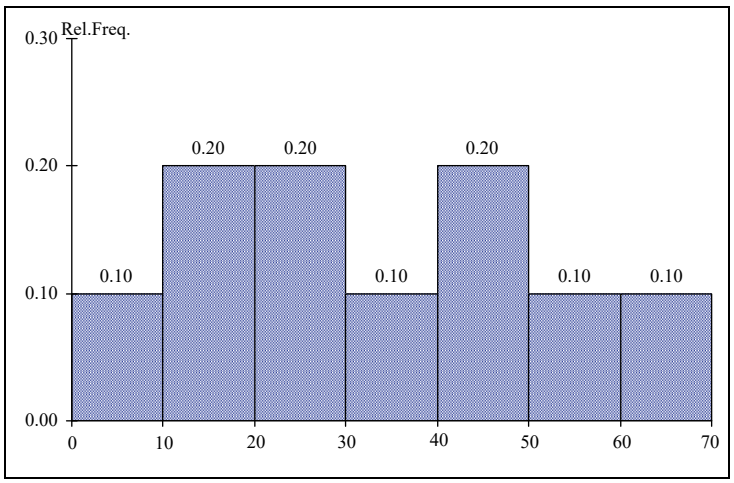
ANSWER:
85/250 or 17/50 or 34% or 0.34
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution, relative frequency distribution

70. Referring to Scenario 2-9, the percentage of apartments renting for less than $1,400 is _____.

ANSWER:
230/250 or 23/25 or 92% or 0.92
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: frequency distribution, cumulative percentage distribution

SCENARIO 2-10

The histogram below represents scores achieved by 200 job applicants on a personality profile.



71. Referring to the histogram from Scenario 2-10, _____ percent of the job applicants scored between 10 and 20.

ANSWER:
20%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: histogram, percentage distribution

72. Referring to the histogram from Scenario 2-10, _____ percent of the job applicants scored below 50.

ANSWER:
80%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram, percentage distribution

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73. Referring to the histogram from Scenario 2-10, the number of job applicants who scored between 30 and below 60 is _____.

ANSWER:
80
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram

74. Referring to the histogram from Scenario 2-10, the number of job applicants who scored 50 or above is _____.

ANSWER:
40
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram

75. Referring to the histogram from Scenario 2-10, 90% of the job applicants scored above or equal to _____.

ANSWER:
10
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram, cumulative percentage distribution

76. Referring to the histogram from Scenario 2-10, half of the job applicants scored below _____.

ANSWER:
30
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram, cumulative percentage distribution

77. Referring to the histogram from Scenario 2-10, _____ percent of the applicants scored below 20 or at least 50.

ANSWER:
50%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram, cumulative percentage distribution

78. Referring to the histogram from Scenario 2-10, _____ percent of the applicants scored between 20 and below 50.

ANSWER:
50%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram, cumulative percentage distribution

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SCENARIO 2-11

The ordered array below resulted from selecting a sample of 25 batches of 500 computer chips and determining how many in each batch were defective.

Defects

1	2	4	4	5	5	6	7	9	9	12	12	15
17	20	21	23	23	25	26	27	27	28	29	29	

79. Referring to Scenario 2-11, if a frequency distribution for the defects data is constructed, using "0 but less than 5" as the first class, the frequency of the “20 but less than 25” class would be _____.

ANSWER:
4
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution

80. Referring to Scenario 2-11, if a frequency distribution for the defects data is constructed, using "0 but less than 5" as the first class, the relative frequency of the “15 but less than 20” class would be _____.

ANSWER:
0.08 or 8% or 2/25
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution

81. Referring to Scenario 2-11, construct a frequency distribution for the defects data, using "0 but less than 5" as the first class.

ANSWER:

Defects	Frequency
0 but less than 5	4
5 but less than 10	6
10 but less than 15	2
15 but less than 20	2
20 but less than 25	4
25 but less than 30	7

TYPE: PR DIFFICULTY: Easy
KEYWORDS: frequency distribution

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82. Referring to Scenario 2-11, construct a relative frequency or percentage distribution for the defects data, using "0 but less than 5" as the first class.

ANSWER:

Defects	Percentage
0 but less than 5	16
5 but less than 10	24
10 but less than 15	8
15 but less than 20	8
20 but less than 25	16
25 but less than 30	28

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, percentage distribution

83. Referring to Scenario 2-11, construct a cumulative percentage distribution for the defects data if the corresponding frequency distribution uses "0 but less than 5" as the first class.

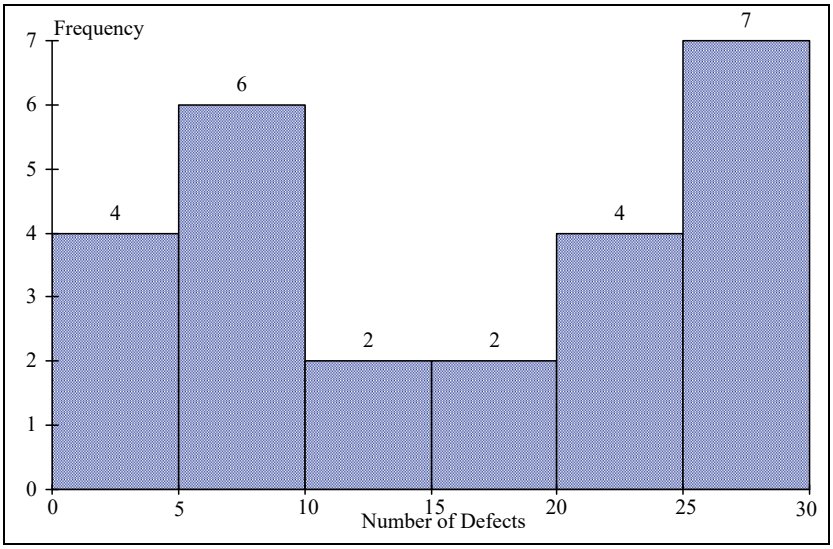
ANSWER:

Defects	CumPct
0	0
5	16
10	40
15	48
20	56
25	72
30	100

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: cumulative percentage distribution

84. Referring to Scenario 2-11, construct a histogram for the defects data, using "0 but less than 5" as the first class.

ANSWER:



TYPE: PR DIFFICULTY: Easy
KEYWORDS: histogram, frequency distribution

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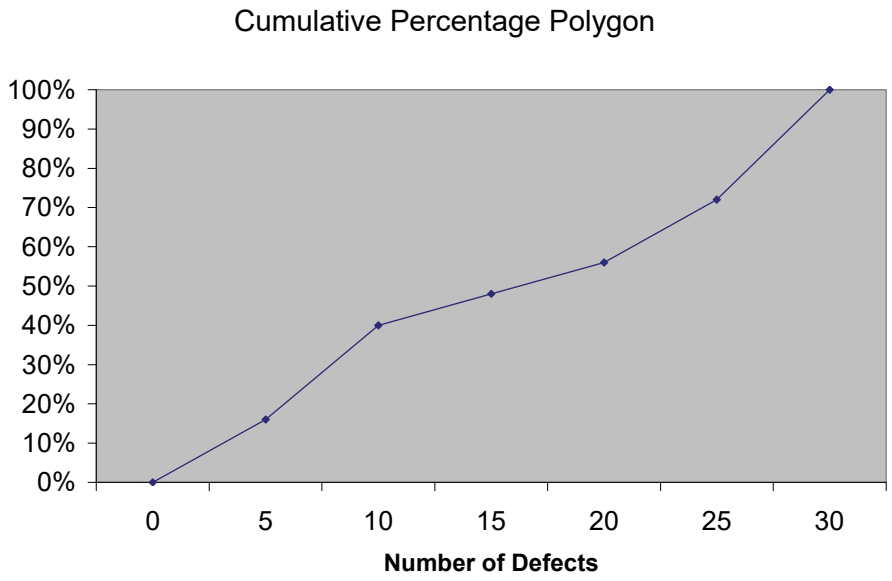
85. Referring to Scenario 2-11, construct a cumulative percentage polygon for the defects data if the corresponding frequency distribution uses "0 but less than 5" as the first class.

ANSWER:



TYPE: PR DIFFICULTY: Moderate
KEYWORDS: cumulative percentage polygon

86. The point halfway between the boundaries of each class interval in a grouped frequency distribution is called the _____.

ANSWER:
class midpoint
TYPE: FI DIFFICULTY: Easy
KEYWORDS: cumulative percentage polygon, frequency distribution

87. A _____ is a vertical bar chart in which the rectangular bars are constructed at the boundaries of each class interval.

ANSWER:
histogram
TYPE: FI DIFFICULTY: Easy
KEYWORDS: histogram

88. It is essential that each class grouping or interval in a frequency distribution be _____ and _____.

ANSWER:
non-overlapping and of equal width
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: frequency distribution, class interval

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89. To compare one large set of numerical data to another, a _____ distribution must be developed from the frequency distribution.

ANSWER:
relative frequency or percentage
TYPE: FI DIFFICULTY: Easy
KEYWORDS: relative frequency distribution, percentage distribution

90. When comparing two or more large sets of numerical data, the distributions being developed should use the same _____.

ANSWER:
class boundaries.
TYPE: FI DIFFICULTY: Easy
KEYWORDS: class boundaries

91. The width of each class grouping or interval in a frequency distribution should be _____.

ANSWER:
the same or equal
TYPE: FI DIFFICULTY: Easy
KEYWORDS: class interval, frequency distribution

92. In constructing a polygon, each class grouping is represented by its _____ and then these are consecutively connected to one another.

ANSWER:
midpoint
TYPE: FI DIFFICULTY: Easy
KEYWORDS: polygon, class interval, midpoint

93. A _____ is a summary table in which numerical data are tallied into class intervals or categories.

ANSWER:
frequency distribution
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution, class interval

94. True or False: In general, grouped frequency distributions should have between 5 and 15 class intervals.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: frequency distribution, number of classes

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95. True or False: The sum of relative frequencies in a distribution always equals 1.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: relative frequency

96. True or False: The sum of cumulative frequencies in a distribution always equals 1.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: cumulative distribution

97. True or False: In graphing two categorical data, the side-by-side bar chart is best suited when comparing joint responses.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: side-by-side bar chart

98. True or False: When constructing a frequency distribution, classes should be selected so that they are of equal width.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: frequency distribution

99. True or False: A research analyst was directed to arrange raw data collected on the yield of wheat, ranging from 40 to 93 bushels per acre, in a frequency distribution. He should choose 30 as the class interval width.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: frequency distribution, class interval

100. True or False: If the values of the seventh and eighth class in a cumulative percentage distribution are the same, we know that there are no observations in the eighth class.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: cumulative percentage distribution

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101. True or False: One of the advantages of a pie chart is that it clearly shows that the total of all the categories of the pie adds to 100%.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: pie chart

102. True or False: The larger the number of observations in a numerical data set, the larger the number of class intervals needed for a grouped frequency distribution.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: class interval, frequency distribution

103. True or False: Determining the class boundaries of a frequency distribution is highly subjective.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: class boundaries, frequency distribution

104. True or False: The original data values cannot be determined once they are grouped into a frequency distribution table.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: frequency distribution

105. True or False: The percentage distribution cannot be constructed from the frequency distribution directly.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: percentage distribution, frequency distribution

106. True or False: The stem-and-leaf display is often superior to the frequency distribution in that it maintains the original values for further analysis.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, frequency distribution

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107. True or False: The relative frequency is the frequency in each class divided by the total number of observations.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: relative frequency distribution

108. True or False: Ogives are plotted at the midpoints of the class groupings.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ogives, midpoint

109. True or False: Percentage polygons are plotted at the boundaries of the class groupings.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: percentage polygons

110. True or False: The main principle behind the Pareto chart is the ability to separate the "vital few" from the "trivial many."

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: Pareto chart

111. True or False: A histogram can have gaps between the bars, whereas bar charts cannot have gaps.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: histogram, bar chart

112. True or False: Histograms are used for numerical data while bar charts are suitable for categorical data.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: histogram, bar chart

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113. True or False: A Walmart store in a small town monitors customer complaints and organizes these complaints into six distinct categories. Over the past year, suppose the company has received 534 complaints. One possible graphical method for representing these data would be a Pareto chart.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: Pareto chart

114. True or False: Apple Computer, Inc. collected information on the age of their customers. Suppose the youngest customer was 12 and the oldest was 72. To study the distribution of the age among its customers, it can use a Pareto chart.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: Pareto chart

115. True or False: Apple Computer, Inc. collected information on the age of their customers. Suppose the youngest customer was 12 and the oldest was 72. To study the distribution of the age among its customers, it is best to use a pie chart.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: pie chart

116. True or False: Apple Computer, Inc. collected information on the age of their customers. Suppose the youngest customer was 12 and the oldest was 72. To study the distribution of the age among its customers, it can use a percentage polygon.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: percentage polygon

117. True or False: Apple Computer, Inc. collected information on the age of their customers. Suppose the youngest customer was 12 and the oldest was 72. To study the percentage of their customers who are below a certain age, it can use an ogive.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: ogive

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118. True or False: If you wish to construct a graph of a relative frequency distribution, you would most likely construct an ogive first.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: Ogive

119. True or False: An ogive is a cumulative percentage polygon.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: Ogive, cumulative percentage polygon

120. True or False: A side-by-side bar chart is two histograms plotted side-by-side.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: side-by-side bar chart

121. True or False: A good choice for the number of class groups to use in constructing frequency distribution is to have at least 5 but no more than 15 class groups.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: number of classes

122. True or False: In general, a frequency distribution should have at least 8 class groups but no more than 20.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: number of classes

123. True of False: To determine the width of class interval, divide the number of class groups by the range of the data.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: class interval

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124. True or False: The percentage polygon is formed by having the lower boundary of each class represent the data in that class and then connecting the sequence of lower boundaries at their respective class percentages.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: percentage polygon

125. True or False: A polygon can be constructed from a bar chart.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: polygon

126. To evaluate two categorical variables at the same time, a _____ could be developed.

ANSWER:
contingency or cross-classification table or side-by-side bar chart
TYPE: FI DIFFICULTY: Easy
KEYWORDS: contingency table, cross-classification table

127. Relationships in a contingency table can be examined more fully if the frequencies are converted into _____ .

ANSWER:
percentages or proportions
TYPE: FI DIFFICULTY: Easy
KEYWORDS: contingency table

SCENARIO 2-12

The table below contains the opinions of a sample of 200 people broken down by gender about the latest congressional plan to eliminate anti-trust exemptions for professional baseball.

	For	**Neutral**	**Against**	**Totals**
Female	38	54	12	104
Male	12	36	48	96
Totals	50	90	60	200

128. Referring to Scenario 2-12, construct a table of row percentages.

ANSWER:

	For	**Neutral**	**Against**	**Totals**
Female	36.54	51.92	11.54	100.00
Male	12.50	37.50	50.00	100.00
Totals	25.00	45.00	30.00	100.00

TYPE: PR DIFFICULTY: Easy
KEYWORDS: row percentages

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129. Referring to Scenario 2-12, construct a table of column percentages.

ANSWER:

	For	Neutral	Against	Totals
Female	76.00	60.00	20.00	52.00
Male	24.00	40.00	80.00	48.00
Totals	100.00	100.00	100.00	100.00

TYPE: PR DIFFICULTY: Easy
KEYWORDS: column percentages

130. Referring to Scenario 2-12, construct a table of total percentages.

ANSWER:

	For	Neutral	Against	Totals
Female	19.00	27.00	6.00	52.00
Male	6.00	18.00	24.00	48.00
Totals	25.00	45.00	30.00	100.00

TYPE: PR DIFFICULTY: Easy
KEYWORDS: total percentages

131. Referring to Scenario 2-12, of those for the plan in the sample, _____ percent were females.

ANSWER:
76%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

132. Referring to Scenario 2-12, of those neutral in the sample, _____ percent were males.

ANSWER:
40%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

133. Referring to Scenario 2-12, of the males in the sample, _____ percent were for the plan.

ANSWER:
12.50%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

134. Referring to Scenario 2-12, of the females in the sample, _____ percent were against the plan.

ANSWER:
11.54%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

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135. Referring to Scenario 2-12, of the females in the sample, _____ percent were either neutral or against the plan.

ANSWER:
63.46% or (51.92+11.54)%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

136. Referring to Scenario 2-12, _____ percent of the 200 were females who were against the plan.

ANSWER:
6%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

137. Referring to Scenario 2-12, _____ percent of the 200 were males who were neutral.

ANSWER:
18%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

138. Referring to Scenario 2-12, _____ percent of the 200 were females who were either neutral or against the plan.

ANSWER:
33%
TYPE: FI DIFFICULTY: Difficult
KEYWORDS: contingency table

139. Referring to Scenario 2-12, _____ percent of the 200 were males who were not against the plan.

ANSWER:
24%
TYPE: FI DIFFICULTY: Difficult
KEYWORDS: contingency table

140. Referring to Scenario 2-12, _____ percent of the 200 were not neutral.

ANSWER:
55%
TYPE: FI DIFFICULTY: Difficult
KEYWORDS: contingency table, row percentages

141. Referring to Scenario 2-12, _____ percent of the 200 were against the plan.

ANSWER:
30%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, row percentages

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142. Referring to Scenario 2-12, _____ percent of the 200 were males.

ANSWER:
48%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: contingency table, column percentages

143. Referring to Scenario 2-12, if the sample is a good representation of the population, we can expect _____ percent of the population will be for the plan.

ANSWER:
25%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, row percentages

144. Referring to Scenario 2-12, if the sample is a good representation of the population, we can expect _____ percent of the population will be males.

ANSWER:
48%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: column percentages, contingency table

145. Referring to Scenario 2-12, if the sample is a good representation of the population, we can expect _____ percent of those for the plan in the population will be males.

ANSWER:
24%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

146. Referring to Scenario 2-12, if the sample is a good representation of the population, we can expect _____ percent of the males in the population will be against the plan.

ANSWER:
50%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

147. Referring to Scenario 2-12, if the sample is a good representation of the population, we can expect _____ percent of the females in the population will not be against the plan.

ANSWER:
88.46% or (36.54+51.92)
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

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SCENARIO 2-13

Given below is the stem-and-leaf display representing the amount of detergent used in gallons (with leaves in 10ths of gallons) in a day by 25 drive-through car wash operations in Phoenix.

```
 9 | 147
10 | 02238
11 | 135566777
12 | 223489
13 | 02
```

148. Referring to Scenario 2-13, if a frequency distribution for the amount of detergent used is constructed, using "9.0 but less than 10.0 gallons" as the first class, the frequency of the "11.0 but less than 12.0 gallons" class would be _____.

ANSWER:
9
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution

149. Referring to Scenario 2-13, if a percentage histogram for the detergent data is constructed, using "9.0 but less than 10.0 gallons" as the first class, the percentage of drive-through car wash operations that use "12.0 but less than 13.0 gallons" of detergent would be _____.

ANSWER:
24%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, percentage distribution

150. Referring to Scenario 2-13, if a percentage histogram for the detergent data is constructed, using "9.0 but less than 10.0 gallons" as the first class, what percentage of drive-through car wash operations use less than 12 gallons of detergent in a day?

ANSWER:
68%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: percentage distribution, cumulative relative frequency

151. Referring to Scenario 2-13, if a relative frequency or percentage distribution for the detergent data is constructed, using "9.0 but less than 10.0 gallons" as the first class, what percentage of drive-through car wash operations use at least 10 gallons of detergent in a day?

ANSWER:
88%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: relative frequency distribution, percentage distribution

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152. Referring to Scenario 2-13, if a relative frequency or percentage distribution for the detergent data is constructed, using "9.0 but less than 10.0 gallons" as the first class, what percentage of drive-through car wash operations use at least 10 gallons but less than 13 gallons of detergent in a day?

ANSWER:
80%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: relative frequency distribution, percentage distribution

153. Referring to Scenario 2-13, construct a frequency distribution for the detergent data, using "9.0 but less than 10.0 gallons" as the first class.

ANSWER:

Purchases (gals)	Frequency
9.0 but less than 10.0	3
10.0 but less than 11.0	5
11.0 but less than 12.0	9
12.0 but less than 13.0	6
13.0 but less than 14.0	2

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: frequency distribution

154. Referring to Scenario 2-13, construct a relative frequency or percentage distribution for the detergent data, using "9.0 but less than 10.0" as the first class.

ANSWER:
Gasoline

Purchases (gals)	Percentage
9.0 but less than 10.0	12%
10.0 but less than 11.0	20
11.0 but less than 12.0	36
12.0 but less than 13.0	24
13.0 but less than 14.0	8

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, percentage distribution

155. Referring to Scenario 2-13, construct a cumulative percentage distribution for the detergent data if the corresponding frequency distribution uses "9.0 but less than 10.0" as the first class.

ANSWER:

Gasoline Purchases (gals)	Frequency Less Than	Percentage Less Than
9.0 but less than 10.0	3	12
10.0 but less than 11.0	8	32
11.0 but less than 12.0	17	68
12.0 but less than 13.0	23	92
13.0 but less than 14.0	25	100

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: cumulative percentage distribution

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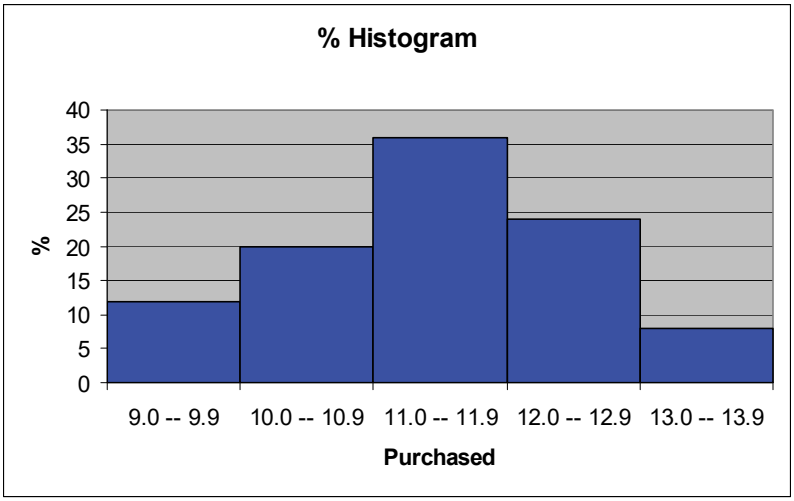
156. Referring to Scenario 2-13, construct a percentage histogram for the detergent data, using "9.0 but less than 10.0" as the first class.

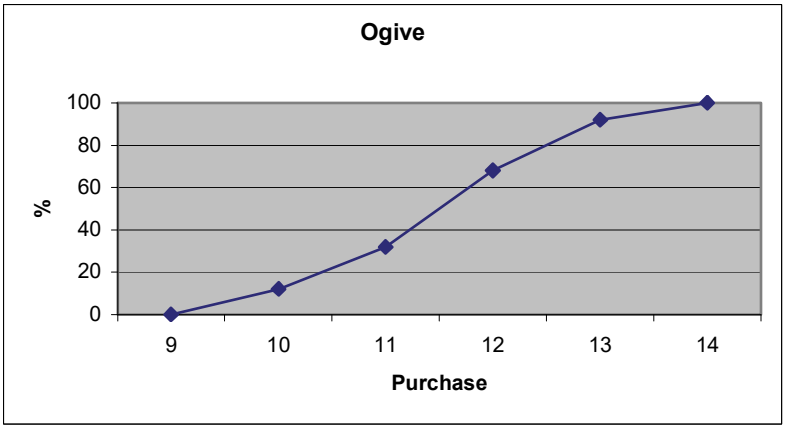
ANSWER:



TYPE: PR DIFFICULTY: Moderate
KEYWORDS: histogram, frequency distribution

157. Referring to Scenario 2-13, construct a cumulative percentage polygon for the detergent data if the corresponding frequency distribution uses "9.0 but less than 10.0" as the first class.

ANSWER:



TYPE: PR DIFFICULTY: Moderate
KEYWORDS: cumulative percentage polygon

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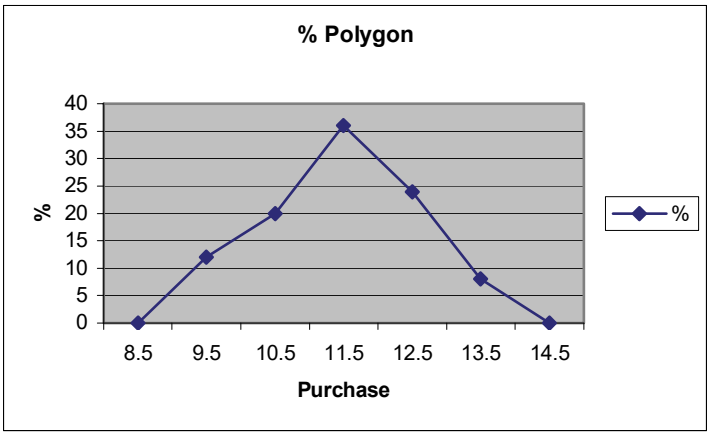
158. Referring to Scenario 2-13, construct a percentage polygon for the detergent data if the corresponding frequency distribution uses "9.0 but less than 10.0" as the first class.

ANSWER:



TYPE: PR DIFFICULTY: Moderate
KEYWORDS: percentage distribution, percentage polygon

SCENARIO 2-14

The table below contains the number of people who own a portable Blu-ray player in a sample of 600 broken down by gender.

Own a Portable Blu-ray player	Male	Female
Yes	96	40
No	224	240

159. Referring to Scenario 2-14, construct a table of row percentages.

ANSWER:

Own	Male	Female	Total
Yes	70.59%	29.41%	100.00%
No	48.28%	51.72%	100.00%
Total	53.33%	46.67%	100.00%

TYPE: PR DIFFICULTY: Easy
KEYWORDS: row percentages

160. Referring to Scenario 2-14, construct a table of column percentages.

ANSWER:

Own	Male	Female	Total
Yes	30.00%	14.29%	22.67%
No	70.00%	85.71%	77.33%
Total	100.00%	100.00%	100.00%

TYPE: PR DIFFICULTY: Easy
KEYWORDS: column percentages

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161. Referring to Scenario 2-14, construct a table of total percentages.

ANSWER:

Own	Male	Female	Total
Yes	16.00%	6.67%	22.67%
No	37.33%	40.00%	77.33%
Total	53.33%	46.67%	100.00%

TYPE: PR DIFFICULTY: Easy
KEYWORDS: total percentages

162. Referring to Scenario 2-14, of those who owned a portable Blu-ray player in the sample, _____ percent were females.

ANSWER:
29.41%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, row percentages

163. Referring to Scenario 2-14, of those who did not own a portable Blu-ray player in the sample, _____ percent were males.

ANSWER:
48.28%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, row percentages

164. Referring to Scenario 2-14, of the males in the sample, _____ percent owned a portable Blu-ray player.

ANSWER:
30%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

165. Referring to Scenario 2-14, of the females in the sample, _____ percent did not own a portable Blu-ray player.

ANSWER:
85.71%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

166. Referring to Scenario 2-14 of the females in the sample, _____ percent owned a portable Blu-ray player.

ANSWER:
14.29%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

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167. Referring to Scenario 2-14, _____ percent of the 600 were females who owned a portable Blu-ray player.

ANSWER:
6.67%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, total percentage

168. Referring to Scenario 2-14, _____ percent of the 600 were males who owned a portable Blu-ray player.

ANSWER:
16%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, total percentage

169. Referring to Scenario 2-14, _____ percent of the 600 were females who either owned or did not own a portable Blu-ray player.

ANSWER:
46.67%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, total percentage

170. Referring to Scenario 2-14, _____ percent of the 600 were males who did not own a portable Blu-ray player.

ANSWER:
37.33%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, total percentage

171. Referring to Scenario 2-14, _____ percent of the 600 owned a portable Blu-ray player.

ANSWER:
22.67%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

172. Referring to Scenario 2-14, _____ percent of the 600 did not own a portable Blu-ray player.

ANSWER:
77.33%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

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173. Referring to Scenario 2-14, _____ percent of the 600 were females.

ANSWER:
46.67%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: contingency table, row percentages

174. Referring to Scenario 2-14, if the sample is a good representation of the population, we can expect _____ percent of the population will own a portable Blu-ray player.

ANSWER:
22.67%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

175. Referring to Scenario 2-14, if the sample is a good representation of the population, we can expect _____ percent of the population will be males.

ANSWER:
53.33%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

176. Referring to Scenario 2-14, if the sample is a good representation of the population, we can expect _____ percent of those who own a portable Blu-ray player in the population will be males.

ANSWER:
70.59%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, row percentages

177. Referring to Scenario 2-14, if the sample is a good representation of the population, we can expect _____ percent of the males in the population will own a portable Blu-ray player.

ANSWER:
30%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

178. Referring to Scenario 2-14, if the sample is a good representation of the population, we can expect _____ percent of the females in the population will not own a portable Blu-ray player.

ANSWER:
85.71%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

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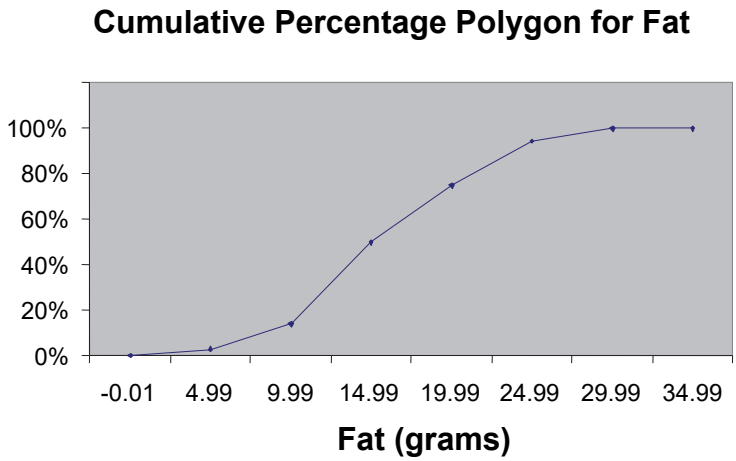
SCENARIO 2-15

The figure below is the ogive for fat (in grams) for a sample of 36 pizza products where the upper boundaries of the intervals are: 5, 10, 15, 20, 25, and 30.



179. Referring to Scenario 2-15, roughly what percentage of pizza products contains less than 10 grams of fat?
a) 3%
b) 14%
c) 50%
d) 75%

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: cumulative percentage polygon, ogive, interpretation

180. Referring to Scenario 2-15, what percentage of pizza products contains at least 20 grams of fat?
a) 5%
b) 25%
c) 75%
d) 96%

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: cumulative percentage polygon, ogive, interpretation

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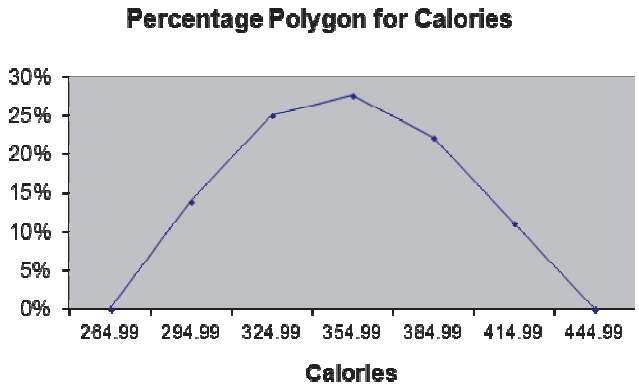
181. Referring to Scenario 2-15, what percentage of pizza products contains between 10 and 25 grams of fat?
    a) 14%
    b) 44%
    c) 62%
    d) 81%

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: cumulative percentage polygon, ogive, interpretation

SCENARIO 2-16

The figure below is the percentage polygon for the number of calories for a sample of 36 pizzas products where the upper limits of the intervals are: 310, 340, 370, 400 and 430.



182. Referring to Scenario 2-16, roughly what percentage of pizza products contains between 400 and 430 calories?
    a) 0%
    b) 11%
    c) 89%
    d) 100%

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: percentage polygon, interpretation

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183. Referring to Scenario 2-16, roughly what percentage of pizza products contains between 340 and 400 calories?
   a) 22%
   b) 25%
   c) 28%
   d) 50%

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: percentage polygon, interpretation

184. Referring to Scenario 2-16, roughly what percentage of pizza products contains at least 340 calories?
   a) 25%
   b) 28%
   c) 39%
   d) 61%

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: percentage polygon, interpretation

SCENARIO 2-17

The following table presents total retail sales in millions of dollars for the leading apparel companies over a two-year period in the past.

APPAREL COMPANY	Year 1	Year 2
Gap	1,159.0	962.0
TJX	781.7	899.0
Limited	596.5	620.4
Kohl's	544.9	678.9
Nordstrom	402.6	418.3
Talbots	139.9	130.1
Ann Taylor	114.2	124.8

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185. Referring to Scenario 2-17, construct a table of column percentages.

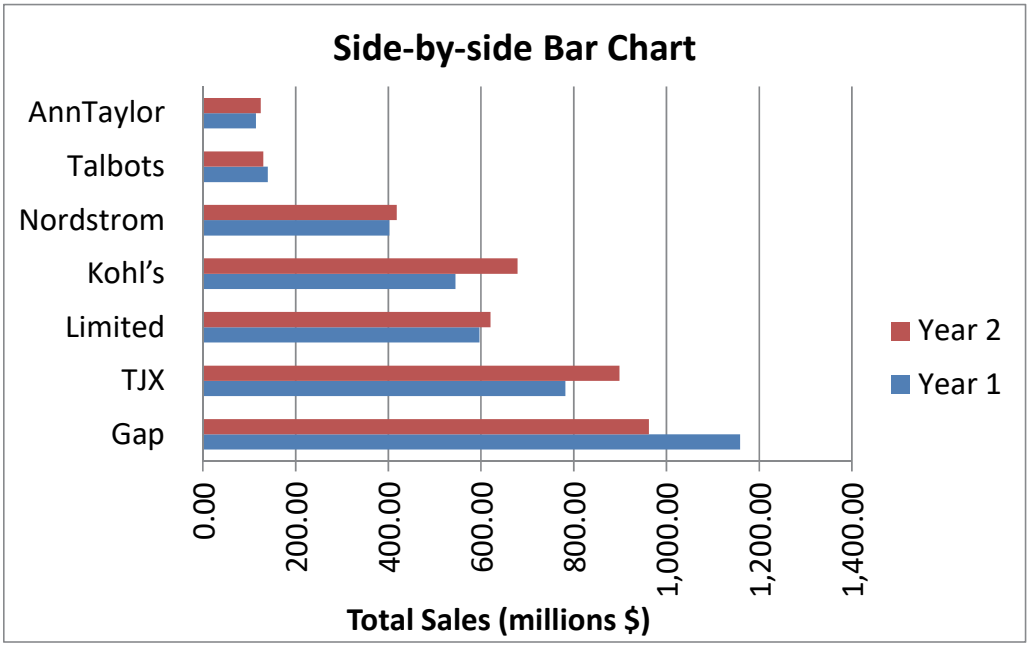
ANSWER:

Apparel Company	Year 1	Year 2
Gap	31.00%	25.09%
TJX	20.91%	23.45%
Limited	15.95%	16.18%
Kohl's	14.57%	17.71%
Nordstrom	10.77%	10.91%
Talbots	3.74%	3.39%
Ann Taylor	3.05%	3.26%
Total	100.00%	100.00%

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: column percentages

186. Referring to Scenario 2-17, construct a side-by-side bar chart.

ANSWER:



TYPE: PR DIFFICULTY: Moderate
KEYWORDS: column percentages, side-by-side bar chart

187. True or False: Referring to Scenario 2-17, in general, retail sales for the apparel industry have seen a modest growth between Year 1 and Year 2.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: column percentages, side-by-side bar chart, interpretation

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188. Referring to Scenario 2-17, among the 8 stores, _____ saw a sales decline.

ANSWER:
Gap and Talbots
TYPE: FI DIFFICULTY: Easy
KEYWORDS: column percentages, side-by-side bar chart, interpretation

SCENARIO 2-18

The stem-and-leaf display below shows the result of a survey on 50 students on their satisfaction with their school with the higher scores represent higher level of satisfaction.

Statistics	
Sample Size	50
Mean	71.06
Median	73.5
Std. Deviation	14.13695
Minimum	41
Maximum	97

Stem-and-Leaf Display

Stem unit 10

4	1 3 6 6 7
5	0 0 3 8 9
6	0 1 1 4 4 5 7 7 9 9
7	0 0 0 1 3 4 4 5 5 6 6 6 7 8 8
8	0 1 1 3 4 4 5 7 7 8 9
9	0 2 2 7

189. Referring to Scenario 2-18, what was the highest level of satisfaction?

ANSWER:
97
TYPE: PR DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

190. Referring to Scenario 2-18, what was the lowest level of satisfaction?

ANSWER:
41
TYPE: PR DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

191. Referring to Scenario 2-18, how many students have a satisfaction level in the 50s?

ANSWER:
5
TYPE: PR DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

192. Referring to Scenario 2-18, how many students have a satisfaction level below 60?

ANSWER:
10
TYPE: PR DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

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193. Referring to Scenario 2-18, how many students have a satisfaction level of at least 80?

ANSWER:
15
TYPE: PR DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

194. True or False: Referring to Scenario 2-18, the level of satisfaction is concentrated around 75.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

195. True or False: Referring to Scenario 2-18, if a student is randomly selected, his/her most likely level of satisfaction will be in the 70s among the 40s, 50s, 60s, 70s, 80s and 90s.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

196. True or False: Referring to Scenario 2-18, if a student is randomly selected, his/her most likely level of satisfaction will be in the 60s among the 40s, 50s, 60s, 70s, 80s and 90s.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

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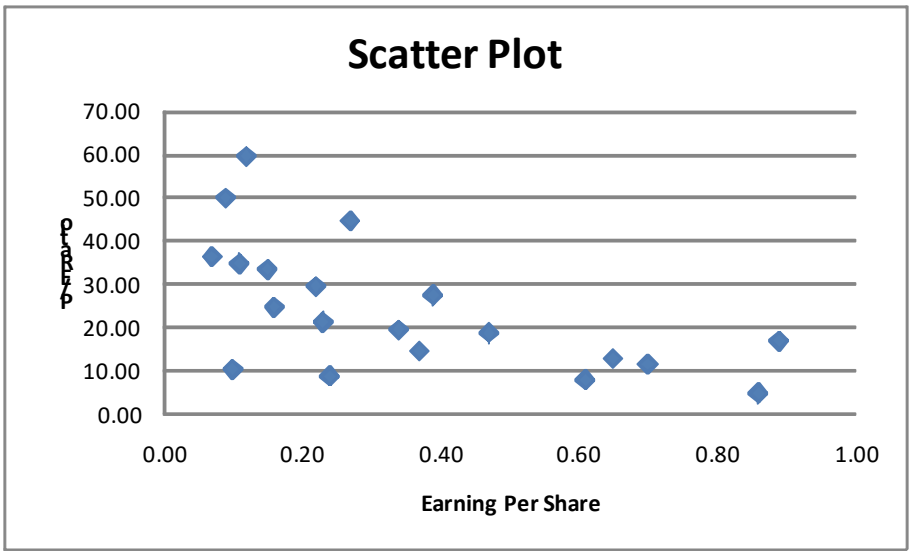
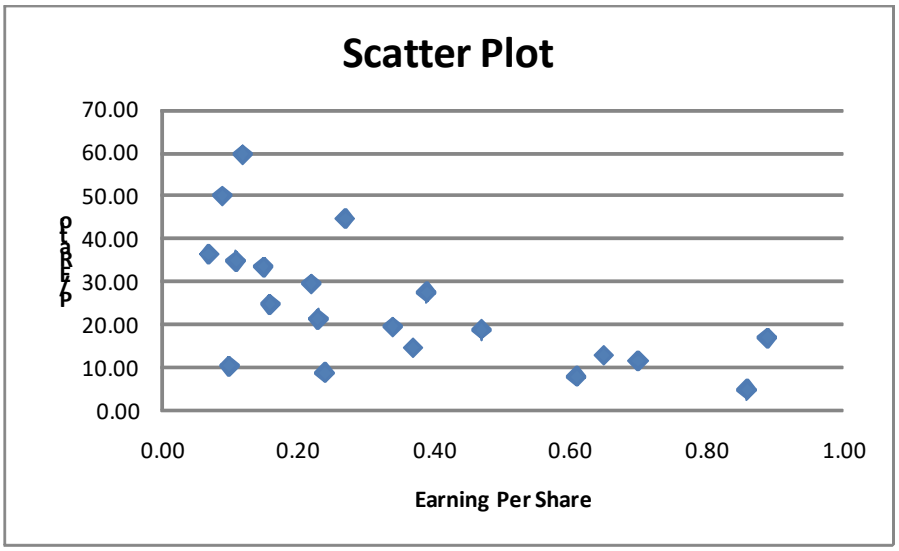
197. True or False: Given below is the scatter plot of the price/earnings ratio versus earnings per share of 20 U.S. companies. There appears to be a negative relationship between price/earnings ratio and earnings per share.



ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: scatter plot

198. True or False: Given below is the scatter plot of the price/earnings ratio versus earnings per share of 20 U.S. companies. There appear to be a positive relationship between price/earnings ratio and earnings per share.



ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: scatter plot

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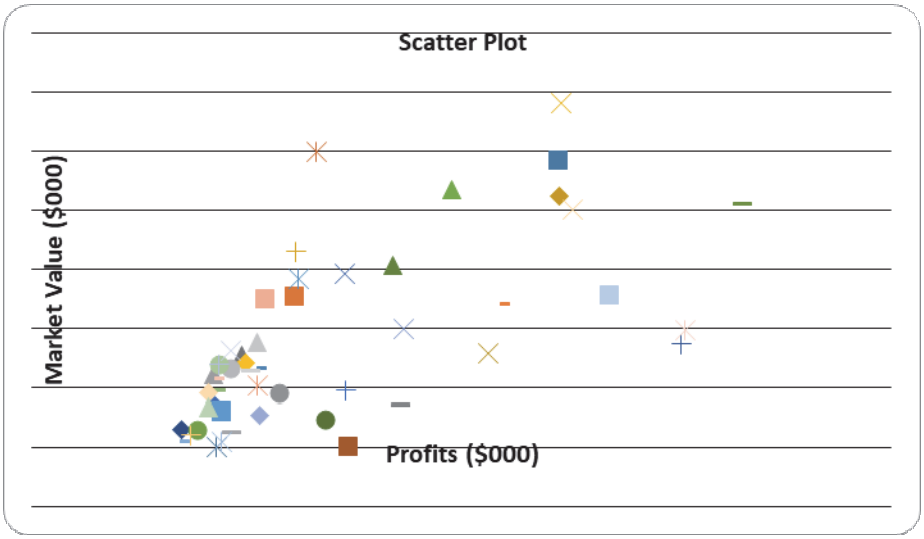
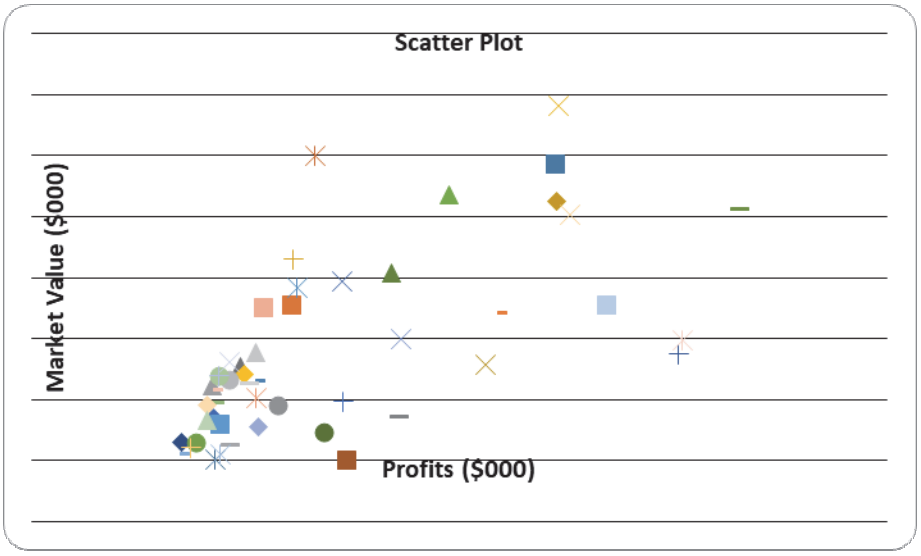
199. True or False: Given below is the scatter plot of the market value (thousands$) and profit (thousands$) of 50 U.S. companies. Higher market values appear to be associated with higher profits.



ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: scatter plot

200. True or False: Given below is the scatter plot of the market value (thousands$) and profit (thousands$) of 50 U.S. companies. There appears to be a negative relationship between market value and profit.



ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: scatter plot

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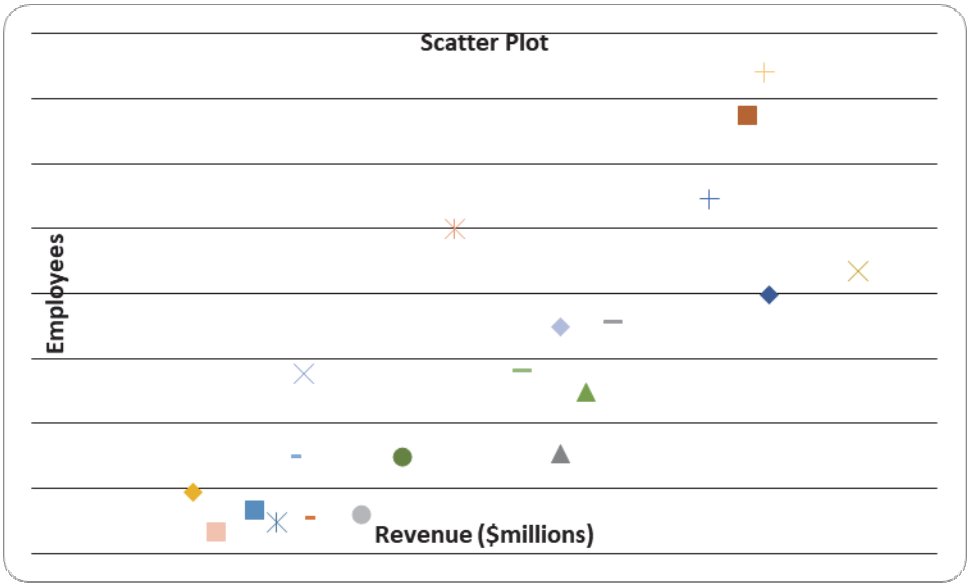
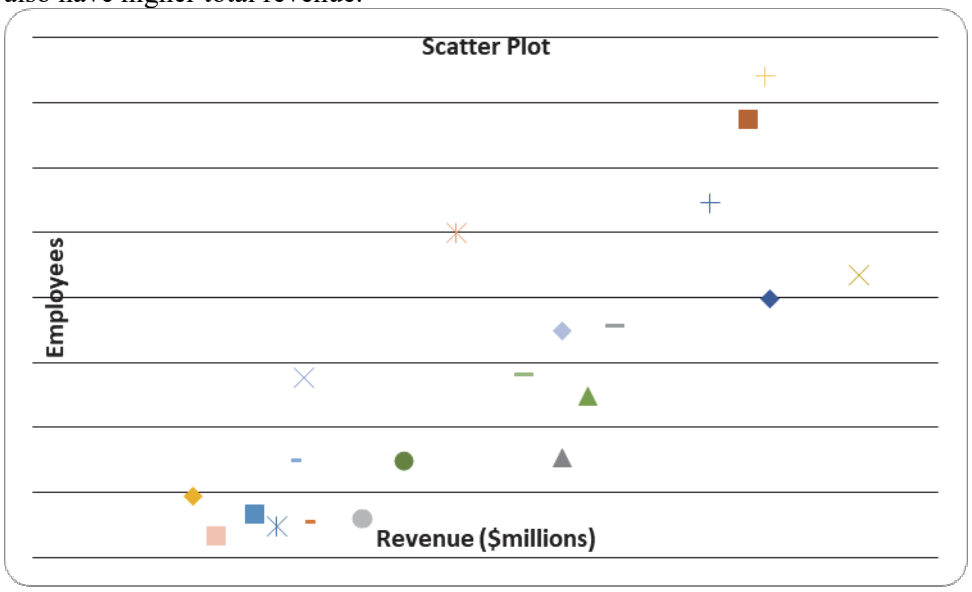
201. True or False: Given below is the scatter plot of the number of employees and the total revenue ($millions) of 20 U.S. companies. There appears to be a positive relationship between total revenue and the number of employees.



ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: scatter plot

202. True or False: Given below is the scatter plot of the number of employees and the total revenue ($millions) of 20 U.S. companies. Companies that have higher numbers of employees appear to also have higher total revenue.



ANSWER: True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: scatter plot

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203. The addition of visual elements that either fail to convey any useful information or that obscure important points about the data to enhance the visualization of data is called _____.

ANSWER:
chart junk
TYPE: FI DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

204. True or False: The Guidelines for Developing Visualizations recommend avoiding uncommon chart type such as doughnut, radar, cone and pyramid charts.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

205. True or False: The Guidelines for Developing Visualizations recommend using the simplest possible visualization.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

206. True or False: The Guidelines for Developing Visualizations recommend labeling all axes only when it is possible.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

207. True or False: The Guidelines for Developing Visualizations recommend using varying scale to conserve precious space whenever possible.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

208. True or False: The Guidelines for Developing Visualizations recommend always starting the scale for a vertical axis at zero.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

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209. True or False: The Guidelines for Developing Visualizations recommend always including a scale for each axis if the chart contains axes.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

210. True or False: When you work with many variables, you must be mindful of the limits of the information technology as well as the limits of the ability of your readers to perceive and comprehend your results.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: organizing and visualizing many variables

211. True or False: A multidimensional contingency table allows you to tally the responses of more than two continuous variables.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: multidimensional contingency table, organizing and visualizing many variables

212. True or False: A multidimensional contingency table allows you to tally the responses of more than two categorical variables.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: multidimensional contingency table, organizing and visualizing many variables

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CHAPTER 3: NUMERICAL DESCRIPTIVE MEASURES

1. Which of the following statistics is not a measure of central tendency?
    a) Arithmetic mean.
    b) Median.
    c) Mode.
    d) Q_3.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: measure of central tendency, arithmetic mean, median, mode, quartiles

2. Which measure of central tendency can be used for both numerical and categorical variables?
    a) Arithmetic mean.
    b) Median.
    c) Mode.
    d) Geometric mean.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: measure of central tendency, mode, arithmetic mean, median, geometric mean

3. Which of the arithmetic mean, median, mode, and geometric mean are resistant measures of central tendency?
    a) The arithmetic mean and median only.
    b) The median and mode only.
    c) The mode and geometric mean only.
    d) The arithmetic mean and mode only.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: measure of central tendency, resistant to outliers, mean, median, mode

4. In a right-skewed distribution
    a) the median equals the arithmetic mean.
    b) the median is less than the arithmetic mean.
    c) the median is greater than the arithmetic mean.
    d) none of the above.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: shape

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