Test Bank for Business Statistics in Practice 8th Bowerman

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Chapter 02 Test Bank - Static KEY

1. A stem-and-leaf display is a graphical portrayal of a data set that shows the data set's overall pattern of variation.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

2. The relative frequency is the frequency of a class divided by the total number of measurements.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Qualitative Data

3. A bar chart is a graphic that can be used to depict qualitative data.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 1 Easy
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

4. Stem-and-leaf displays and dot plots are useful for detecting outliers.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-04 Construct and interpret dot plots.
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Dot Plots
Topic: Stem-and-Leaf Displays

5. A scatter plot can be used to identify outliers.

FALSE

A scatter plot is used to identify the relationship between two variables.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-07 Examine the relationships between variables by using scatter plots.
Topic: Scatter Plots

6. When looking at the shape of the distribution using a stem-and-leaf, a distribution is skewed to the right when the left tail is shorter than the right tail.

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TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

7. When we wish to summarize the proportion (or fraction) of items in a class, we use the frequency distribution for each class.

FALSE

This is the definition for relative frequency. Frequency distribution shows actual counts of items in a class.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Qualitative Data

8. When establishing the classes for a frequency table, it is generally agreed that the more classes you use the better your frequency table will be.

FALSE

Classes should be determined by the number of data measurements.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 1 Easy
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Qualitative Data

9. The sample cumulative distribution function is nondecreasing.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.

10. A frequency table includes row and column percentages.

FALSE

Frequency tables include frequencies, relative frequency, and percent frequency. Cross-tabulation tables include row and column percentages.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Qualitative Data
Topic: Graphically Summarizing Quantitative Data

11. When constructing any graphical display that utilizes categorical data, classes that have frequencies of 5 percent or less are usually combined together into a single category.

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TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-02 Construct and interpret Pareto charts.
Topic: Graphically Summarizing Qualitative Data

12. In a Pareto chart, the bar for the "Other" category should be placed to the far left of the chart.

FALSE

The bar to the far left of the Pareto chart will be the category with the highest frequency.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 1 Easy
Learning Objective: 02-02 Construct and interpret Pareto charts.
Topic: Graphically Summarizing Qualitative Data

13. In the first step of setting up a Pareto chart, a frequency table should be constructed of the defects (or categories) in decreasing order of frequency.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-02 Construct and interpret Pareto charts.
Topic: Graphically Summarizing Qualitative Data

14. It is possible to create different interpretations of the same graphical display by simply using different captions.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-08 Recognize misleading graphs and charts.
Topic: Misleading Graphs and charts

15. Beginning the vertical scale of a graph at a value different from zero can cause increases to look more dramatic.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-08 Recognize misleading graphs and charts.
Topic: Misleading Graphs and charts

16. A runs plot is a form of scatter plot.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 1 Easy
Learning Objective: 02-07 Examine the relationships between variables by using scatter plots.
Topic: Scatter Plots

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17. The stem-and-leaf display is advantageous because it allows us to actually see the measurements in the data set.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 1 Easy
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

18. Splitting the stems refers to assigning the same stem to two or more rows of the stem-and-leaf display.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

19. When data are qualitative, the bars should never be separated by gaps.

FALSE

Bar graphs for qualitative data are displayed with a gap between each category.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Quantitative Data

20. Each stem of a stem-and-leaf display should be a single digit.

FALSE

Leaves on the stem-and-leaf are a single digit.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

21. Leaves on a stem-and-leaf display should be rearranged so that they are in increasing order from left to right.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

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22. Gauges feature a single measure showing variation over time.

FALSE

Sparklines feature a single measure showing variation over time.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

23. Data drill down is a form of data discovery.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 1 Easy
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

24. Treemaps are used to display qualitative measures of performance.

FALSE

Treemaps help visualize two variables on quantitative measures.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

25. Sparklines always need to be displayed with either their axes or coordinates.

FALSE

Sparklines seldom show their axes or coordinates.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

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26. A bullet graph features a single measure as either a horizontal or vertical bar.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 1 Easy
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

27. Key performance indicators are best represented by a data discovery method.

FALSE

KPIs are best represented by an analytic dashboard.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 3 Hard
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

28. A treemap graphic is a series of clustered rectangles.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 1 Easy
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

29. Sparklines are line charts often embedded with the text where they are being discussed.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

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30. An analytic dashboard presents both current and historical trends of a business's key performance indicators.

TRUE

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

31. If space is an issue when presenting analytic dashboard graphics, gauges should be used most frequently.

FALSE

Gauges take up considerable space and are cluttered.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 3 Hard
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

32. Which of the following is not a graphical tool for descriptive analytics (dashboards)?

A. bullet graph
B. sparkline
C. scatter plot
D. treemap
E. gauge

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 1 Easy
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

33. A(n) _____ is a graphical presentation of the current status and historical trends of a business's key performance indicators.

A. frequence distribution
B. histogram
C. Pareto chart
D. dashboard

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium

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Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

34. As a business owner, I have requested my staff to develop a set of dashboards that can be used by the public to show wait time at each of my four local coffee shops at peak times during the day and whether the time is short, medium, or long. Which of the following graphical displays would be the best choice?

A. bullet graph
B. sparkline
C. treemap
D. gauges

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 3 Hard
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

35. Which of the following is the best analytic dashboard graphical method for visualizing hierarchical information?

A. bullet graph
B. sparkline
C. treemap
D. gauge

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

36. Which of the following dashboard graphical methods will show variation over time?

A. bullet graph
B. sparkline
C. treemap
D. gauge

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Topic: Descriptive Analytics

37. A(n) _____ is a graph of a cumulative distribution.

A. histogram
B. scatter plot
C. ogive plot
D. pie chart

AACSB: Reflective Thinking

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Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.

38. _____ can be used to study the relationship between two variables.
A. Cross-tabulation tables
B. Frequency tables
C. Cumulative frequency distributions
D. Dot plots

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 1 Easy
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Contingency Tables

39. Row or column percentages can be found in

A. frequency tables.
B. relative frequency tables
C. cross-tabulation tables.
D. cumulative frequency tables.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Contingency Tables

40. All of the following are used to describe quantitative data except the _____.

A. histogram
B. stem-and-leaf chart
C. dot plot
D. pie chart

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

41. An observation separated from the rest of the data is a(n) _____.

A. absolute extreme
B. outlier
C. mode
D. quartile

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 1 Easy
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

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42. Which of the following graphs is for qualitative data?
A. histogram
B. bar chart
C. ogive plot
D. stem-and-leaf

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

43. A plot of the values of two variables is a _____ plot.
A. runs
B. scatter
C. dot
D. ogive

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-07 Examine the relationships between variables by using scatter plots.
Topic: Scatter Plots

44. A Stem-and-leaf display is best used to _____.

A. provide a point estimate of the variability of the data set
B. provide a point estimate of the central tendency of the data set
C. display the shape of the distribution
D. None of the other choices is correct.

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

45. When grouping a large sample of measurements into classes, the _____ is a better tool than the _____.

A. histogram, stem-and-leaf display
B. box plot, histogram
C. stem-and-leaf display, scatter plot
D. scatter plot, box plot

AACSB: Reflective Thinking
Blooms: Understand
Difficulty: 3 Hard
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

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46. A _____ displays the frequency of each group with qualitative data and a _____ displays the frequency of each group with quantitative data.

A. histogram, stem-and-leaf display
B. bar chart, histogram
C. scatter plot, bar chart
D. stem-and-leaf, pie chart

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Qualitative Data
Topic: Graphically Summarizing Quantitative Data

47. A _____ shows the relationship between two variables.

A. stem-and-leaf
B. bar chart
C. histogram
D. scatter plot
E. pie chart

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-07 Examine the relationships between variables by using scatter plots.
Topic: Scatter Plots

48. A _____ can be used to differentiate the "vital few" causes of quality problems from the "trivial many" causes of quality problems.

A. histogram
B. scatter plot
C. Pareto chart
D. ogive plot
E. stem-and-leaf display

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-02 Construct and interpret Pareto charts.
Topic: Graphically Summarizing Qualitative Data

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49. _____ and _____ are used to describe qualitative (categorical) data.

A. Stem-and-leaf displays, scatter plots
B. Scatter plots, histograms
C. Box plots, bar charts
D. Bar charts, pie charts
E. Pie charts, histograms

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

50. Which one of the following graphical tools is used with quantitative data?

A. bar chart
B. histogram
C. pie chart
D. Pareto chart

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

51. When developing a frequency distribution, the class (group) intervals should be _____.

A. large
B. small
C. integer
D. mutually exclusive
E. equal

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 3 Hard
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

52. Which of the following graphical tools is not used to study the shapes of distributions?

A. stem-and-leaf display
B. scatter plot
C. histogram
D. dot plot

AACSB: Reflective Thinking
Blooms: Understand
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.

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53. All of the following are used to describe qualitative data except the _____.

A. bar chart
B. pie chart
C. histogram
D. pareto chart

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

54. If there are 130 values in a data set, how many classes should be created for a frequency histogram?

A. 4
B. 5
C. 6
D. 7
E. 8

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

55. If there are 120 values in a data set, how many classes should be created for a frequency histogram?

A. 4
B. 5
C. 6
D. 7
E. 8

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

56. If there are 62 values in a data set, how many classes should be created for a frequency histogram?

A. 4
B. 5
C. 6
D. 7
E. 8

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

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57. If there are 30 values in a data set, how many classes should be created for a frequency histogram?

A. 4
B. 5
C. 6
D. 7
E. 8

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

58. A CFO is looking at what percentage of a company's resources are spent on computing. He samples companies in the pharmaceutical industry and develops the following stem-and-leaf graph.

5	269
6	255568999
7	11224557789
8	001222458
9	02455679
10	1556
11	137
12	
13	255

What is the approximate shape of the distribution of the data?

A. normal
B. skewed to the right
C. skewed to the left
D. bimodal
E. uniform

AACSB: Analytical Thinking
Blooms: Analyze
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

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59. A CFO is looking at what percentage of a company's resources are spent on computing. He samples companies in the pharmaceutical industry and develops the following stem-and-leaf graph.

5	269
6	255568999
7	11224557789
8	001222458
9	02455679
10	1556
11	137
12	
13	255

What is the smallest percentage spent on R&D?

A. 5.9
B. 5.6
C. 5.2
D. 5.02
E. 50.2

AACSB: Reflective Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

60. A CFO is looking at what percentage of a company's resources are spent on computing. He samples companies in the pharmaceutical industry and develops the following stem-and-leaf graph.

5	269
6	255568999
7	11224557789
8	001222458
9	02455679
10	1556
11	137
12	
13	255

If you were creating a frequency histogram using these data, how many classes would you create?

A. 4
B. 5
C. 6

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D. 7
E. 8

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

61. A CFO is looking at what percentage of a company's resources are spent on computing. He samples companies in the pharmaceutical industry and develops the following stem-and-leaf graph.

5	269
6	255568999
7	11224557789
8	001222458
9	02455679
10	1556
11	137
12	
13	255

What would be the class length used in creating a frequency histogram?

A. 1.4
B. 8.3
C. 1.2
D. 1.7
E. 0.9

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

62. A CFO is looking at what percentage of a company's resources are spent on computing. He samples companies in the pharmaceutical industry and develops the following stem-and-leaf graph.

5	269
6	255568999
7	11224557789
8	001222458
9	02455679
10	1556
11	137
12	
13	255

What would be the first class interval for the frequency histogram?

A. 5.2-6.5
B. 5.2-6.0
C. 5.0-6.0

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D. 5.2-6.6
E. 5.2-6.4

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

63. A local airport keeps track of the percentage of flights arriving within 15 minutes of their scheduled arrivals. The stem-and-leaf plot of the data for one year is below.

76	9
77	114
78	
79	07
80	88
81	2
82	1
83	88

How many flights were used in this plot?

A. 7
B. 9
C. 10
D. 11
E. 12

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

64. A local airport keeps track of the percentage of flights arriving within 15 minutes of their scheduled arrivals. The stem-and-leaf plot of the data for one year is below.

76	9
77	114
78	
79	07
80	88
81	2
82	1
83	88

In developing a histogram of these data, how many classes would be used?

A. 4
B. 5
C. 6
D. 7
E. 8

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium

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Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

65. A local airport keeps track of the percentage of flights arriving within 15 minutes of their scheduled arrivals. The stem-and-leaf plot of the data for one year is below.

76	9
77	114
78	
79	07
80	88
81	2
82	1
83	88

What would be the class length for creating the frequency histogram?

A. 1.4
B. 0.8
C. 2.7
D. 1.7
E. 2.3

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

66. A company collected the ages from a random sample of its middle managers, with the resulting frequency distribution shown below.

Class Interval	*Frequency*
20 to < 25	8
25 to < 30	6
30 to < 35	5
35 to < 40	12
40 to < 45	15
45 to < 50	7

What would be the approximate shape of the relative frequency histogram?

A. symmetrical
B. uniform
C. multiple peaks
D. skewed to the left
E. skewed to the right

AACSB: Reflective Thinking
Blooms: Understand
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.

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Topic: Graphically Summarizing Quantitative Data

67. A company collected the ages from a random sample of its middle managers, with the resulting frequency distribution shown below.

Class Interval	*Frequency*
20 to < 25	8
25 to < 30	6
30 to < 35	5
35 to < 40	12
40 to < 45	15
45 to < 50	7

What is the relative frequency for the largest interval?

A. .132
B. .226
C. .231
D. .283
E. .288

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 3 Hard
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

68. A company collected the ages from a random sample of its middle managers, with the resulting frequency distribution shown below.

Class Interval	*Frequency*
20 to < 25	8
25 to < 30	6
30 to < 35	5
35 to < 40	12
40 to < 45	15
45 to < 50	7

What is the midpoint of the third class interval?

A. 22.5
B. 27.5
C. 32.5
D. 37.5
E. 42.5

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 3 Hard
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

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69. The general term for a graphical display of categorical data made up of vertical or horizontal bars is called a(n) _____.

A. pie chart
B. Pareto chart
C. bar chart
D. ogive plot

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

70. A flaw possessed by a population or sample unit is _____.

A. always random
B. a defect
C. displayed by a dot plot
D. the cause for extreme skewness to the right

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-02 Construct and interpret Pareto charts.
Topic: Graphically Summarizing Qualitative Data

71. A graphical portrayal of a quantitative data set that divides the data into classes and gives the frequency of each class is a(n) _____.

A. ogive plot
B. dot plot
C. histogram
D. Pareto chart
E. bar chart

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

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72. The number of measurements falling within a class interval is called the _____.

A. frequency
B. relative frequency
C. leaf
D. cumulative sum

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

73. A relative frequency curve having a long tail to the right is said to be _____.

A. skewed to the left
B. normal
C. a scatter plot
D. skewed to the right

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

74. The percentage of measurements in a class is called the _____ of that class.

A. frequency
B. relative frequency
C. leaf
D. cumulative percentage

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

75. A histogram that tails out toward larger values is _____.

A. skewed to the left
B. normal
C. a scatter plot
D. skewed to the right

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

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76. A histogram that tails out toward smaller values is _____.

A. skewed to the left
B. normal
C. a scatter plot
D. skewed to the right

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

77. A very simple graph that can be used to summarize a quantitative data set is called a(n) _____.

A. runs plot
B. ogive plot
C. dot plot
D. pie chart

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-04 Construct and interpret dot plots.
Topic: Dot Plots

78. An example of manipulating a graphical display to distort reality is _____.

A. starting the axes at zero
B. making the bars in a histogram equal widths
C. stretching the axes
D. starting the axes at zero and stretching the axes

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-08 Recognize misleading graphs and charts.
Topic: Misleading Graphs and charts

79. As a general rule, when creating a stem-and-leaf display, there should be _____ stem values.

A. between 3 and 10
B. between 1 and 100
C. no fewer than 20
D. between 5 and 20

AACSB: Reflective Thinking
Blooms: Remember
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

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80. At the end of their final exam, 550 students answered an additional question in which they rated their instructor's teaching effectiveness, with the following results.

	Student's Rating of Instructor	
Student's Final Grade	Very or Somewhat Effective	Very or Somewhat Ineff
A	190	85
B	75	120
C	20	17
D	9	18
F	1	15

What proportion of the students who rated their instructor as very or somewhat effective received a B or better in the class?

A. 0.345
B. 0.254
C. 0.482
D. 0.898
E. 0.644

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 3 Hard
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Contingency Tables

81. At the end of their final exam, 550 students answered an additional question in which they rated their instructor's teaching effectiveness, with the following results.

	Student's Rating of Instructor	
Student's Final Grade	Very or Somewhat Effective	Very or Somewhat Ineffective
A	190	85
B	75	120
C	20	17
D	9	18
F	1	15

What proportion of the students who rated their instructor as very or somewhat effective received a B or better in the class?

A. 0.03
B. 0.06
C. 0.08
D. 0.13
E. 0.15

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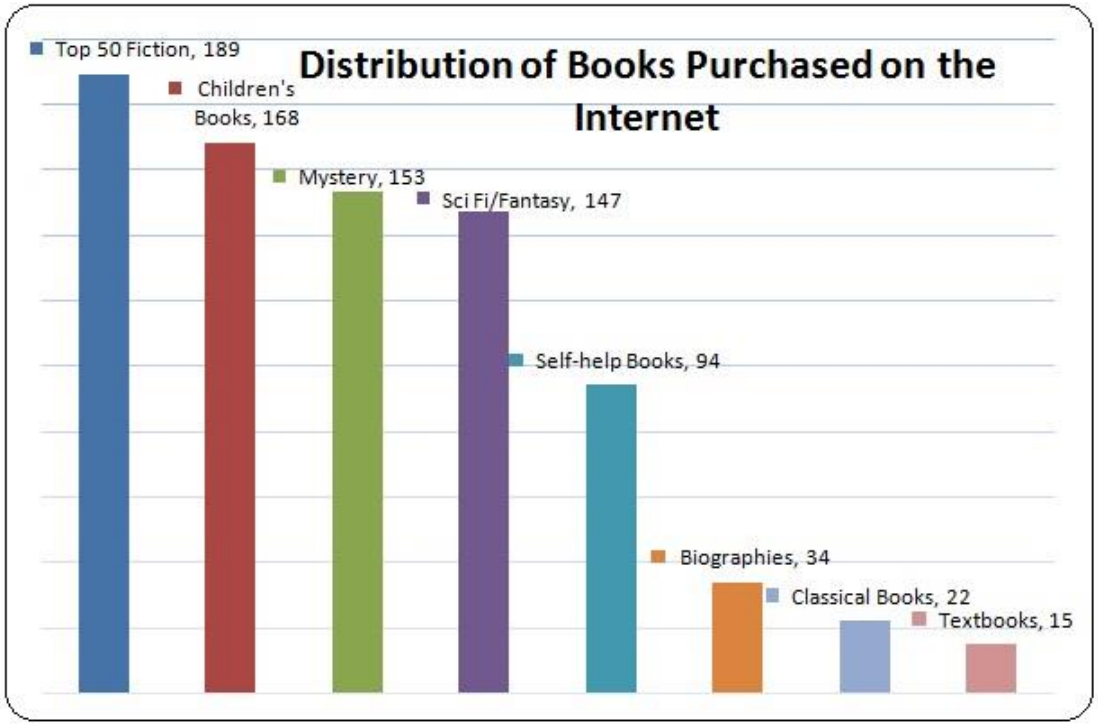
AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 3 Hard
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Contingency Tables

82. 822 customers were randomly selected from those who had recently bought a book over the Internet. The chart below shows the breakdown of the classification of the book type.



What percentage of the books purchased were either mystery or science fiction/fantasy?

A. 18.61
B. 36.50
C. 17.88
D. 24.33
E. 22.99

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

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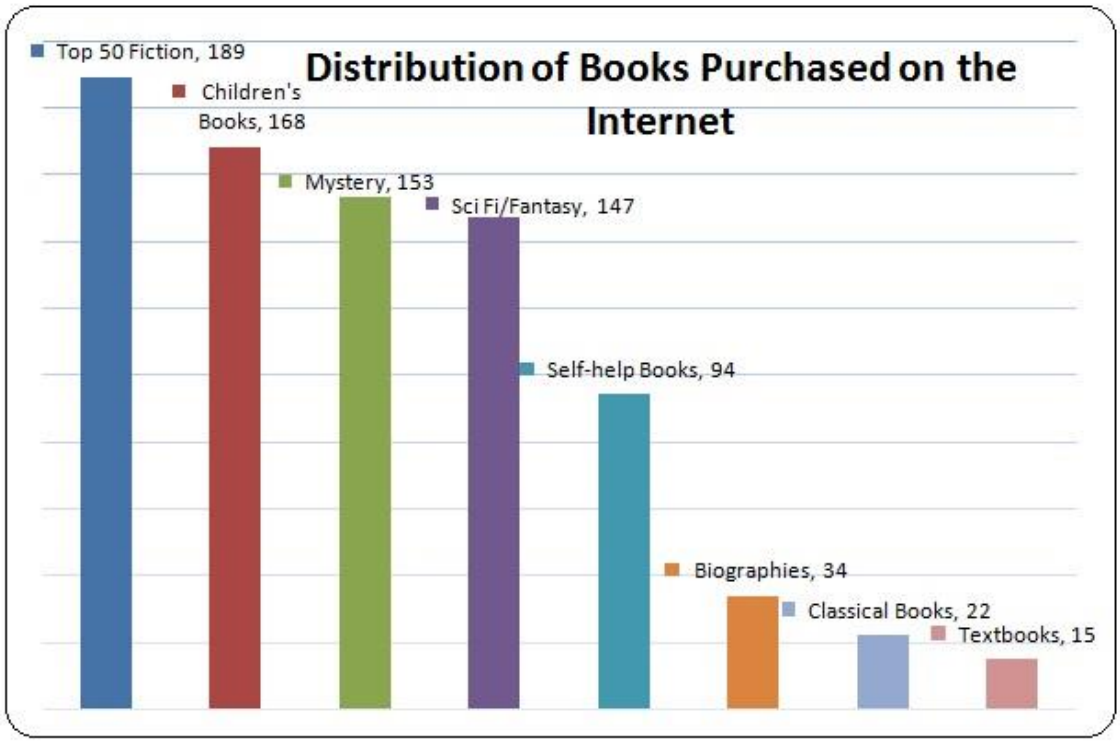
83. 822 customers were randomly selected from those who had recently bought a book over the Internet. The chart below shows the breakdown of the classification of the book type.



What percentage of the books purchased were self-help books?

A. 11.44
B. .1144
C. 1.82
D. 0.0182
E. 0.940

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

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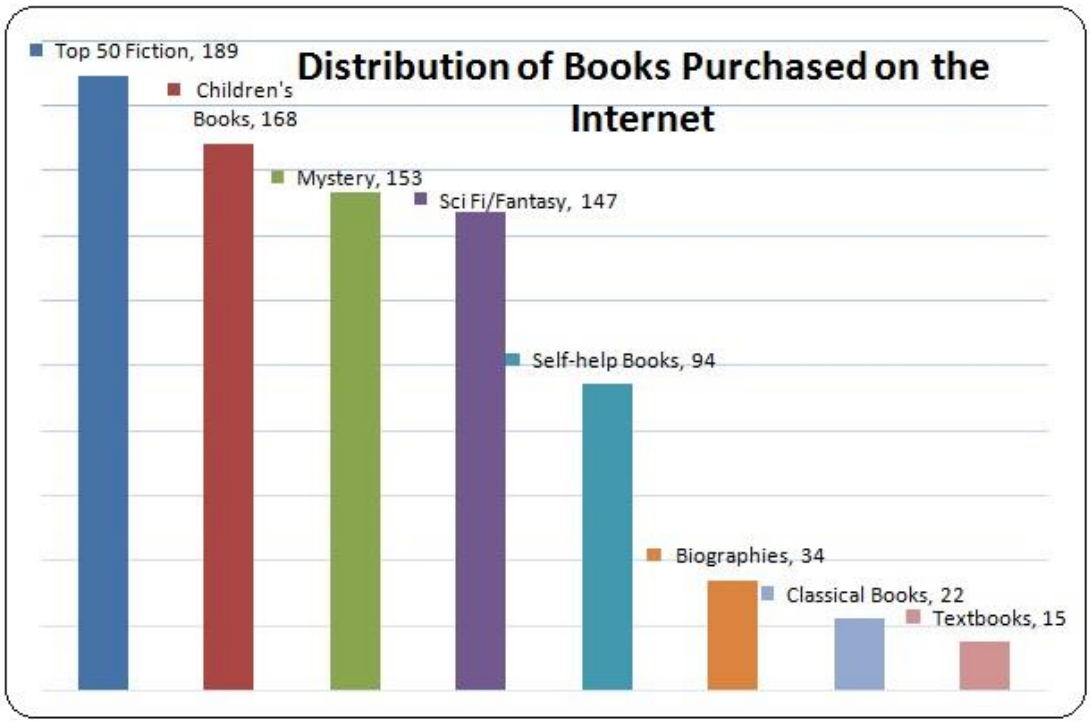
84. 822 customers were randomly selected from those who had recently bought a book over the Internet. The chart below shows the breakdown of the classification of the book type.



What percentage of the books were in the top two categories?

A. 22.99
B. 20.44
C. 4.50
D. 43.43
E. 0.4343

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

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85. Using the following data, describe the shape of the data distribution.

1.	11.5	6.	13.7	11.	11.0	16.	14.5
2.	13.5	7.	14.0	12.	13.0	17.	15.5
3.	12.5	8.	12.0	13.	16.7	18.	13.0
4.	15.2	9.	12.7	14.	12.5	19.	18.2
5.	14.7	10.	12.5	15.	11.5	20.	11.7

A. skewed to the left
B. bimodal
C. normal
D. skewed to the right

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Qualitative Data

86. Using the following data, what would be the range of the values of the stem in a stem-and-leaf display?

1.	11.5	6.	13.7	11.	11.0	16.	14.5
2.	13.5	7.	14.0	12.	13.0	17.	15.5
3.	12.5	8.	12.0	13.	16.7	18.	13.0
4.	15.2	9.	12.7	14.	12.5	19.	18.2
5.	14.7	10.	12.5	15.	11.5	20.	11.7

A. 11-17
B. 11-18
C. 10-18
D. 12-17
E. 12-18

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

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87. Using the following data, what would be the leaf unit in a stem-and-leaf display?

1.	11.5	6.	13.7	11.	11	16.	
2.	13.5	7.	14	12.	13	17.	
3.	12.5	8.	12	13.	16.7	18.	
4.	15.2	9.	12.7	14.	12.5	19.	
5.	14.7	10.	12.5	15.	11.5	20.	

A. 1.0
B. 10
C. .10
D. .01
E. .20

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

88. Consider the following data on distances traveled by people to visit the local amusement park and calculate the relative frequency for the shortest distance.

Distance	Frequency
1–8 miles	15
9–16 miles	12
17–24 miles	7
25–32 miles	5
33–40 miles	1

A. .375
B. .150
C. .500
D. .300
E. .333

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 1 Easy
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

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89. Consider the following data on distances traveled by people to visit the local amusement park and calculate the relative frequency for the distances over 24 miles.

Distance	Frequency
1–8 miles	15
9–16 miles	12
17–24 miles	7
25–32 miles	5
33–40 miles	1

A. .375
B. .150
C. .125
D. .025
E. .325

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

90. The following is a partial relative frequency distribution of grades in an introductory statistics course.

Grade	Relative Frequency
A	.22
B	?
C	.18
D	.17
F	.06

Find the relative frequency for the B grade.

A. .78
B. .27
C. .65
D. .37
E. .47

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 1 Easy
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

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91. The following is a relative frequency distribution of grades in an introductory statistics course.

Grade	Relative Frequency
A	.22
B	?
C	.18
D	.17
F	.06

If this was the distribution of 200 students, find the frequency for the highest two grades.

A. 44
B. 118
C. 59
D. 74
E. 35

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

92. The following is a relative frequency distribution of grades in an introductory statistics course.

Grade	Relative Frequency
A	.22
B	?
C	.18
D	.17
F	.06

If this was the distribution of 200 students, find the frequency of failures.

A. 12
B. 6
C. 23
D. 46
E. 3

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

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93. The following is a relative frequency distribution of grades in an introductory statistics course.

Grade	Relative Frequency
A	.22
B	?
C	.18
D	.17
F	.06

If we wish to depict these data using a pie chart, find how many degrees should be assigned to the highest grade of A.

A. 61.1
B. 22.0
C. 79.2
D. 90.0
E. 212.40

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 3 Hard
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

94. Recently an advertising company called 200 people and asked them to identify the company that was in an ad running nationwide. The following results were obtained.

	Female	Male	Total
Correctly recalled the company	66	50	116
Incorrectly recalled the company	44	40	84
Total	110	90	200

What percentage of those surveyed were female and could not recall the company?

A. 40.0
B. 22.0
C. 52.4
D. 66.7
E. 37.9

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Contingency Tables

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95. Recently an advertising company called 200 people and asked them to identify the company that was in an ad running nationwide. The following results were obtained.

	Female	Male	Total
Correctly recalled the company	66	50	116
Incorrectly recalled the company	44	40	84
Total	110	90	200

What percentage of those surveyed could not correctly recall the company?

A. 58.00
B. 56.89
C. 55.00
D. 43.10
E. 42.00

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Cross-tabulation

96. A local electronics retailer recently conducted a study on purchasers of large screen televisions. The study recorded the type of television and the credit account balance of the customer at the time of purchase. They obtained the following results.

Credit Balance	LED	LCD	Plasma	Projection
Under $200	10	16	40	5
$200–$800	8	12	24	15
Over $800	16	12	16	30
Total	34	40	80	50

What percentage of purchases were plasma televisions by customers with the smallest credit balances?

A. 50.00
B. 39.20
C. 56.30
D. 34.80
E. 19.60

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Contingency Tables

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Access Complete Test Bank for Business Statistics in Practice 8th Bowerman

97. A local electronics retailer recently conducted a study on purchasers of large screen televisions. The study recorded the type of television and the credit account balance of the customer at the time of purchase. They obtained the following results.

Credit Balance	LED	LCD	Plasma	Projection
Under $200	10	16	40	5
$200–$800	8	12	24	15
Over $800	16	12	16	30
Total	34	40	80	50

What percentage of the customers had the highest credit balances and purchased an LCD television?

A. 36.30
B. 5.90
C. 19.60
D. 56.30
E. 16.20

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Contingency Tables

98. The number of weekly sales calls by a sample of 25 pharmaceutical salespersons is below.

24, 56, 43, 35, 37, 27, 29, 44, 34, 28, 33, 28, 46, 31, 38, 41, 48, 38, 27, 29, 37, 33, 31, 40, 50

How many classes should be used in the construction of a histogram?

A. 4
B. 6
C. 10
D. 5
E. 2

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

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99. The number of weekly sales calls by a sample of 25 pharmaceutical salespersons is below.

24, 56, 43, 35, 37, 27, 29, 44, 34, 28, 33, 28, 46, 31, 38, 41, 48, 38, 27, 29, 37, 33, 31, 40, 50

What is the shape of the distribution of the data?

A. skewed with tail to the right
B. skewed with tail to the left
C. normal
D. bimodal

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Qualitative Data

100. The number of items rejected daily by a manufacturer because of defects for the last 30 days are:

20, 21, 8, 17, 22, 19, 18, 19, 14, 17, 11, 6, 21, 25, 4, 19, 9, 12, 16, 16, 10, 28, 24, 6, 21, 20, 25, 5, 17, 8

How many classes should be used in constructing a histogram?

A. 6
B. 5
C. 7
D. 4
E. 8

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

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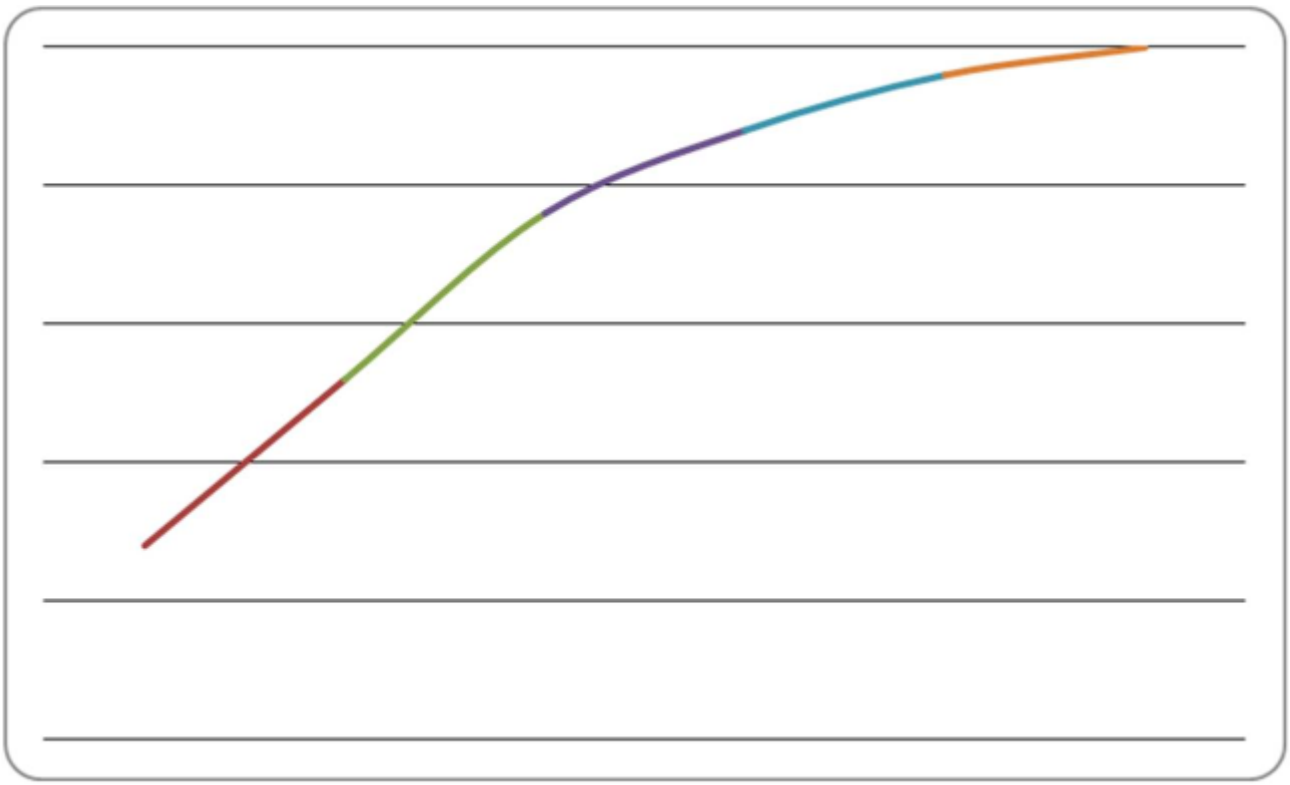
Access Complete Test Bank for Business Statistics in Practice 8th Bowerman

101. The number of weekly sales calls by a sample of 25 pharmaceutical salespersons is below.

24, 56, 43, 35, 37, 27, 29, 44, 34, 28, 33, 28, 46, 31, 38, 41, 48, 38, 27, 29, 37, 33, 31, 40, 50

Construct an ogive plot.



Feedback: Create a frequency table with cumulative relative frequency and then construct the graph using the cumulative frequency points.

Classes	Frequency	RelFreq	Cum RelFreq
24 <31	7	0.28	0.28
31<38	8	0.32	0.60
38<45	6	0.24	0.84
45<52	3	0.12	0.96
52<57	1	0.04	1.00

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AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 3 Hard
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

102. The number of items rejected daily by a manufacturer because of defects for the last 30 days are:

20, 21, 8, 17, 22, 19, 18, 19, 14, 17, 11, 6, 21, 25, 4, 19, 9, 12, 16, 16, 10, 28, 24, 6, 21, 20, 25, 5, 17, 8

Complete this frequency table for these data.

	Frequency	Rel Freq	Cum Freq
4 < 9			
9 < 14			
14 < 19			
19 < 24			
24 < 29			

	Frequency	Rel Freq	Cum Freq
4 < 9	6	.2	.2
9 < 14	4	.133	.333
14 < 19	7	.233	.5607
19 < 24	9	.30	.8607
24 < 29	4	.133	1.00

Feedback: Using the given classes, frequency = number of rejected items in each class, relative frequency = frequency/30, and cumulative frequency = sum of successive class relative frequencies.

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

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103. The number of items rejected daily by a manufacturer because of defects for the last 30 days are:

20, 21, 8, 17, 22, 19, 18, 19, 14, 17, 11, 6, 21, 25, 4, 19, 9, 12, 16, 16, 10, 28, 24, 6, 21, 20, 25, 5, 17, 8

Construct a stem-and-leaf plot.

```
Stem-and-leaf of Rejected Items
N = 30
Leaf Unit = 1.0

 2    0  45
 4    0  66
 7    0  889
 8    1  1
 9    1  2
10    1  4
14    1  6777
(4)   1  8999
12    2  000111
 6    2  2
 5    2  455
 2    2  6
 1    2  9
```

Feedback: Stem should be the 10s unit. Construct by splitting stems, since the range of values is only 5-28 and there should be approximately 10 stems. When splitting the stem, consider the number of values in the split stems. Leaf unit should be the ones unit.

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

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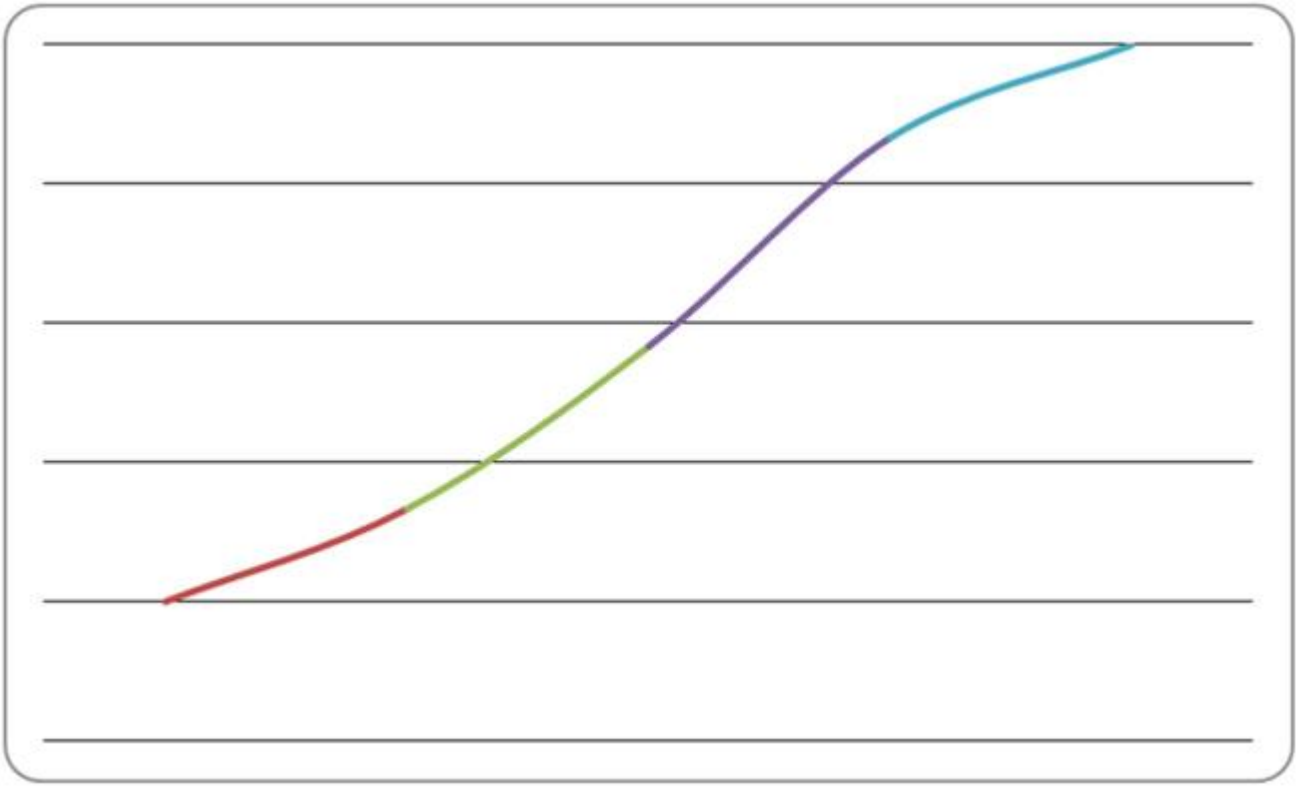
104. The number of items rejected daily by a manufacturer because of defects for the last 30 days are:

20, 21, 8, 17, 22, 19, 18, 19, 14, 17, 11, 6, 21, 25, 4, 19, 9, 12, 16, 16, 10, 28, 24, 6, 21, 20, 25, 5, 17, 8

Construct an ogive plot.



Construct a frequency table (5 classes) with cumulative relative frequency.

Classes	Frequency	RelFreq	Cum RelFreq
4<9	6	0.20	0.20
9<14	4	0.13	0.33
14<19	7	0.23	0.57
19<24	9	0.30	0.87
24<29	4	0.13	1.00

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AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

105. Consider the following data.

1.	11.5	6.	13.7	11.	11.0	16.	14.5
2.	13.5	7.	14.0	12.	13.0	17.	15.5
3.	12.5	8.	12.0	13.	16.7	18.	13.0
4.	15.2	9.	12.7	14.	12.5	19.	18.2
5.	14.7	10.	12.5	15.	11.5	20.	11.7

Create a stem-and-leaf display for the sample.

Stem-and-leaf of C1, N = 20, Leaf Unit = 0.10

4	11	0557
9	12	05557
(4)	13	0057
7	14	057
4	15	25
2	16	7
1	17	
1	18	2

Feedback: Stems should be from 11 to 18; leaves are the tenth unit.

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

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106. Consider the following data on distances traveled by people to visit the local amusement park.

Distance	Frequency
1–8 miles	15
9–16 miles	12
17–24 miles	7
25–32 miles	5
33–40 miles	1

Construct an ogive plot that corresponds to the frequency table.



Feedback: Calculate the relative frequency for each class (15/40, 12/40, 7/40, 5/40, 1/40; or .375, .30, .175, .125, and .025) and then the cumulative frequency (.375, .675, .850, .975, 1.00).

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

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107. The following is a relative frequency distribution of grades in an introductory statistics course.

Grade	Relative Frequency
A	.22
B	.37
C	.18
D	.17
F	.06

If this was the distribution of 200 students, give the frequency distribution for this data.

Grade	Frequency
A	44
B	74
C	36
D	34
F	12

Feedback: Convert from proportion (relative frequency) to frequency by multiplying each relative frequency by 200 (e.g., .22 × 400 = 44 for grade A).

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Quantitative Data

108. The following is a relative frequency distribution of grades in an introductory statistics course.

Grade	Relative Frequency
A	.22
B	.37
C	.18
D	.17
F	.06

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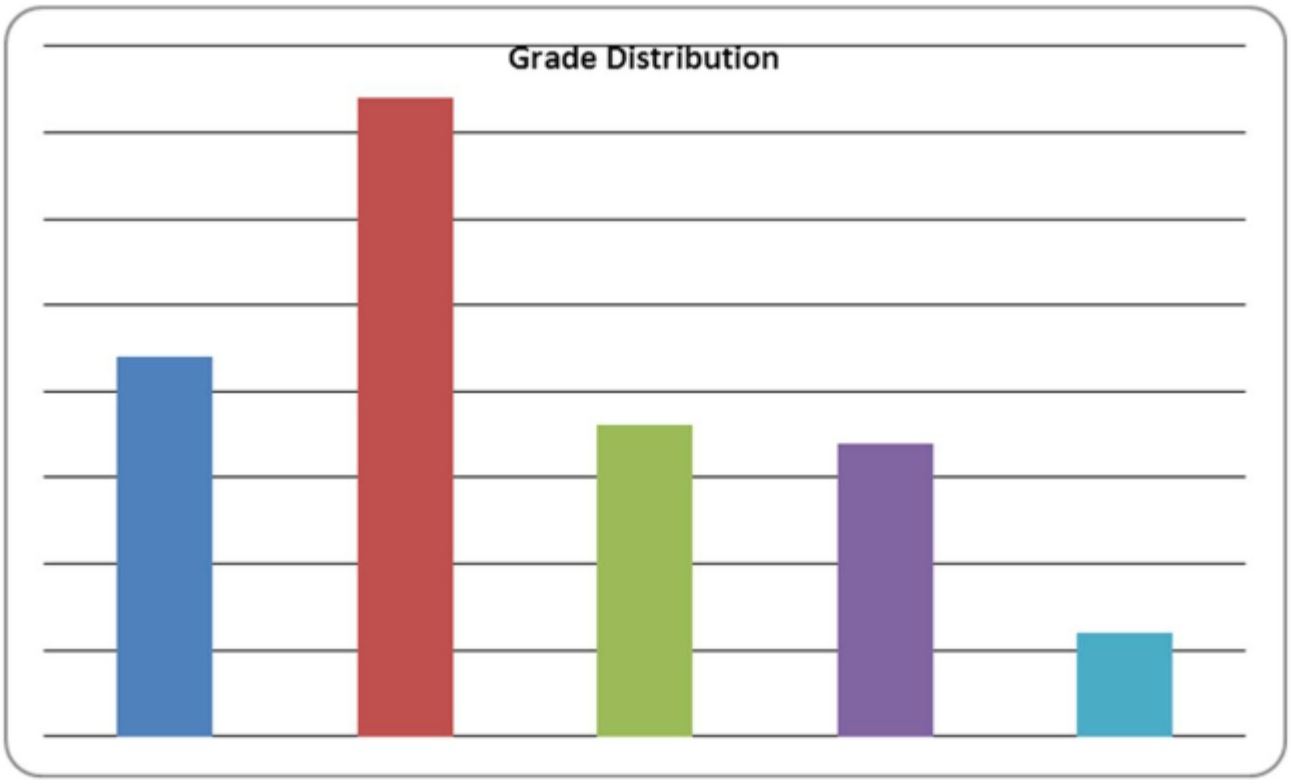
Construct a percent frequency bar chart for this data.



Feedback: Each grade category is displayed as a bar on a proportion bar chart.

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 1 Easy
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Quantitative Data

109. The following is a relative frequency distribution of grades in an introductory statistics course.

Grade	Relative Frequency
A	.22
B	.37
C	.18
D	.17
F	.06

If we wish to depict these data using a pie chart, find how many degrees (out of 360 degrees) should be assigned to each grade.

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Grade	Circle Degrees
A	.22 × 360=79.2
B	.37 × 360=133.2
C	.18 × 360=64.8
D	.17 × 360=61.2
F	.06 × 360=21.6

Feedback: Each proportion (relative frequency) is considered that portion of a circle's 360 degrees. Multiply the relative frequency (proportion) by 360 to convert to actual circle degrees (e.g., grade A: .22 × 360 = 79.2 degrees).

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Quantitative Data

110. Fill in the missing components of the following frequency distribution constructed for a sample size of 50.

Class	Frequency	Rel Frequency	Cum RelFreq
_____ < 7.95			0.12
_____ < 8.05			0.48
8.05 < _____		0.24	
_____ <8.25		0.10	
8.25 < _____			

Class	Frequency	Rel Frequency	Cum RelFreq
7.85 < 7.95	6	0.12	0.12
7.95 < 8.05	18	0.36	0.48
8.05 < 8.15	12	0.24	0.72
8.15 <8.25	5	0.10	0.82
8.25 < 8.35	9	0.18	1.00

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Feedback: Work each row to generate the missing frequency and/or relative frequency given a sample size of 50. For example, first class: cum rel freq = rel freq = x/50 = 0.12, so x = 6. Complete the class interval by recognizing that the second class beginning boundary is the end of the first interval's boundary and using the class length calculated in the second class (0.10) to apply to all other classes.

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 3 Hard
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

111. Recently an advertising company called 200 people and asked them to identify the company that was in an ad running nationwide. They obtained the following results.

	Female	Male	Total
Correctly recalled the company	66	50	116
Incorrectly recalled the company	44	40	84
Total	110	90	200

Construct a table of row percentages.

	Female	Male
Correctly recalled	66/116=0.569	50/116=0.431
Incorrectly recalled	44/84=0.524	40/84=0.476

Feedback: Row percentages are calculated by dividing each part of the row by the total of the row. For example, Female and correctly recalled = 66, which yields a row percentage of 66/116 = 0.569.

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Contingency Tables

112. Recently an advertising company called 200 people and asked them to identify the company that was in an ad running nationwide. They obtained the following results.

	Female	Male	Total
Correctly recalled the company	66	50	116
Incorrectly recalled the company	44	40	84
Total	110	90	200

Construct a table of column percentages.

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	Female	Male
Correctly recalled	66/110=0.6	50/90=0.556
Incorrectly recalled	44/110=0.4	40/90=0.444

Feedback: Column percentages are calculated by dividing each part of the column by the total of the column. For example, Female and correctly recalled = 66, which yields a column percentage of 66/110 = 0.60.

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Contingency Tables

113. A local electronics retailer recently conducted a study on purchasers of large screen televisions. The study recorded the type of television and the credit account balance of the customer at the time of purchase. They obtained the following results.

Credit Balance	LED	LCD	Plasma	Projection
Under $200	10	16	40	5
$200–$800	8	12	24	15
Over $800	16	12	16	30
Total	34	40	80	50

Construct a table of row percentages.

Credit Balance	LED	LCD	Plasma	Projection
Under $200	10/71 = 0.141	16/71 = 0.225	40/71 = 0.563	5/71 = 0.070
$200–$800	8/59 = 0.136	12/59 = 0.203	24/59 = 0.407	15/59 = 0.254
Over $800	16/74 = 0.216	12/74 = 0.162	16/74 = 0.216	30/74 = 0.405

Feedback: Row percentages are calculated by dividing each part of the row by the total of the row. Need to calculate the totals for each row (under $200 = 71; $200-$800 = 59; over $800 = 74). For example, credit balance under $200 and LCD TV = 16, which yields row percentage 16/71 = 0.225.

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Contingency Tables

114. A local electronics retailer recently conducted a study on purchasers of large screen televisions. The study recorded the type of television and the credit account balance of the customer at the time of purchase. They obtained the following results.

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Credit Balance	LED	LCD	Plasma	Projection
Under $200	10/71 = 0.141	16/71 = 0.225	40/71 = 0.563	5/71 = 0.070
$200–$800	8/59 = 0.136	12/59 = 0.203	24/59 = 0.407	15/59 = 0.254
Over $800	16/74 = 0.216	12/74 = 0.162	16/74 = 0.216	30/74 = 0.405

Construct a table of column percentages.

Credit Balance	LED	LCD	Plasma	Projection
Under $200	10/34 = 0.294	16/40 = 0.4	40/80 = 0.5	5.50 = 0.1
$200–$800	8/34 = 0.235	12/40 = 0.3	24/80 = 0.3	15/50 = 0.3
Over $800	16/34 = 0.471	12/40 = 0.3	16/80 = 0.2	30/50 = 0.6

Feedback: Column percentages calculated by dividing each part of the column by the total of the column. For example, credit balance under $200 and LCD TV = 16 yields row percentage 16/40 = 0.40.

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Topic: Contingency Tables

115. Math test anxiety can be found throughout the general population. A study of 116 seniors at a local high school was conducted. The following table was produced from the data. Complete the missing parts.

Score Range	Frequency	Rel Frequency	Cum Freq I
Very anxious 37–50		0.19	
Anxious/tense 33–36	8		0.26
Some mild anxiety 27–32			
Generally relaxed 20–26	24		0.67
Very relaxed 10–19		0.33	

Score Range	Frequency	Rel Frequency	Cum Freq Dist
Very anxious 37–50	22	0.19	0.19
Anxious/tense 33–36	8	0.07	0.26
Some mild anxiety 27–32	24	0.207	0.467
Generally relaxed 20–26	24	0.207	0.674
Very relaxed 10–19	38	0.33	1.00

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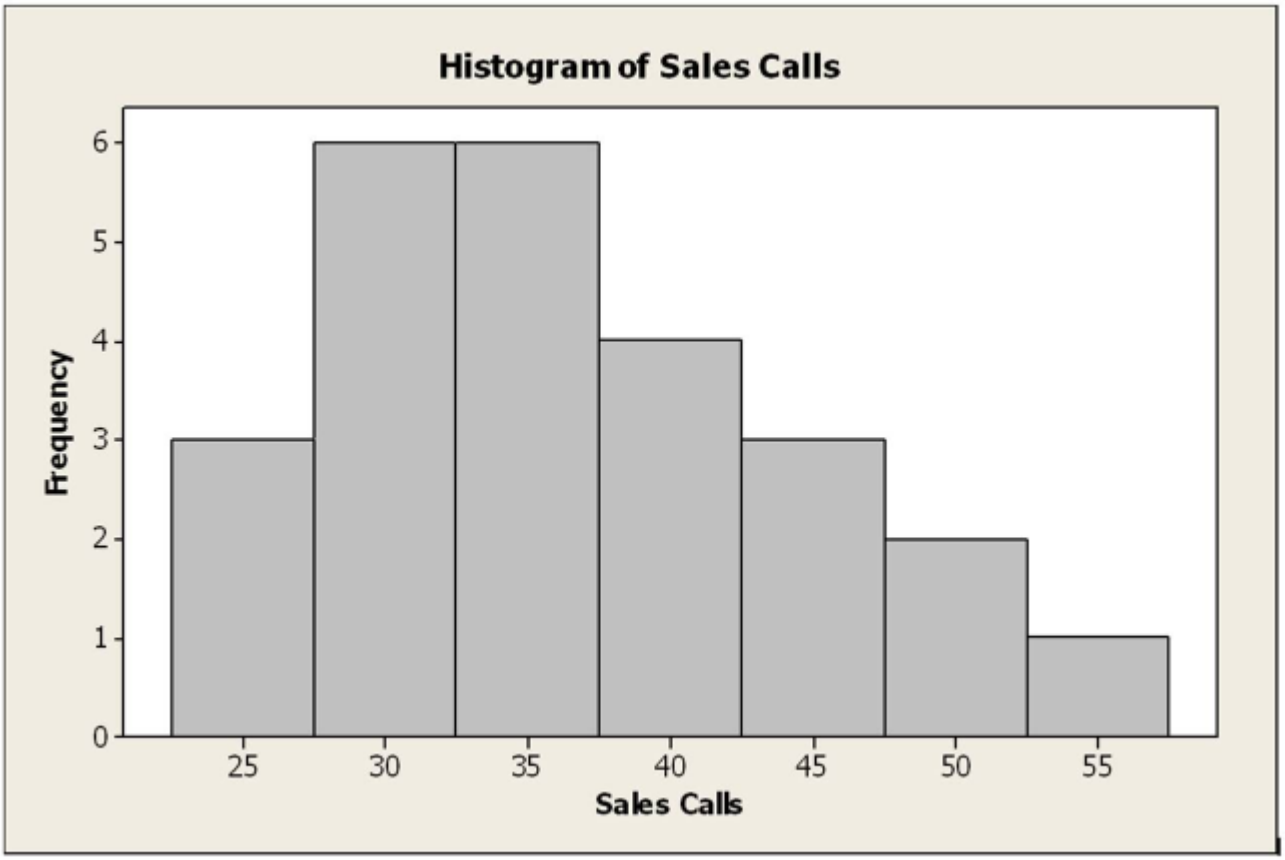
Feedback: Work each row to generate the missing frequency and/or relative frequency given a sample size of 116. For example, first class cum freq = rel freq = x/116 = 0.19, so x = 22. Use the definition of cumulative frequency, which is the sum of the class relative frequency and the previous class cumulative frequency (for example, "generally relaxed" relative frequency = 24/116 = .207, which with a cumulative frequency of .67 gives the previous class of "some mild anxiety" a cumulative frequency of .47).

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 3 Hard
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Topic: Graphically Summarizing Qualitative Data

116. The number of weekly sales calls by a sample of 25 pharmaceutical salespersons is below.

24, 56, 43, 35, 37, 27, 29, 44, 34, 28, 33, 28, 46, 31, 38, 41, 48, 38, 27, 29, 37, 33, 31, 40, 50

Construct a histogram.



Feedback: Construct a frequency table. You can use five to seven classes, depending on your choice and calculation of length as a whole integer.

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Classes - Midpoint	Frequency
25	3
30	6
35	6
40	4
45	3
50	2
55	1

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

117. The number of weekly sales calls by a sample of 25 pharmaceutical salespersons is below.

24, 56, 43, 35, 37, 27, 29, 44, 34, 28, 33, 28, 46, 31, 38, 41, 48, 38, 27, 29, 37, 33, 31, 40, 50

Construct a stem-and-leaf plot.

```
Stem-and-Leaf of Sales Calls
N = 25
Leaf Unit = 1.0

 1    2  4
 7    2  778899
 12   3  11334
(5)   3  57788
 8    4  0134
 4    4  68
 2    5  0
 1    5  6
```

Feedback: The stem should be split and consist of 20, 30, 40, and 50. Leaves are the single units for the number of sales calls (e.g., 20 stem: leaves = 4, 7, 7, 8, 8, 9, 9).

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Topic: Stem-and-Leaf Displays

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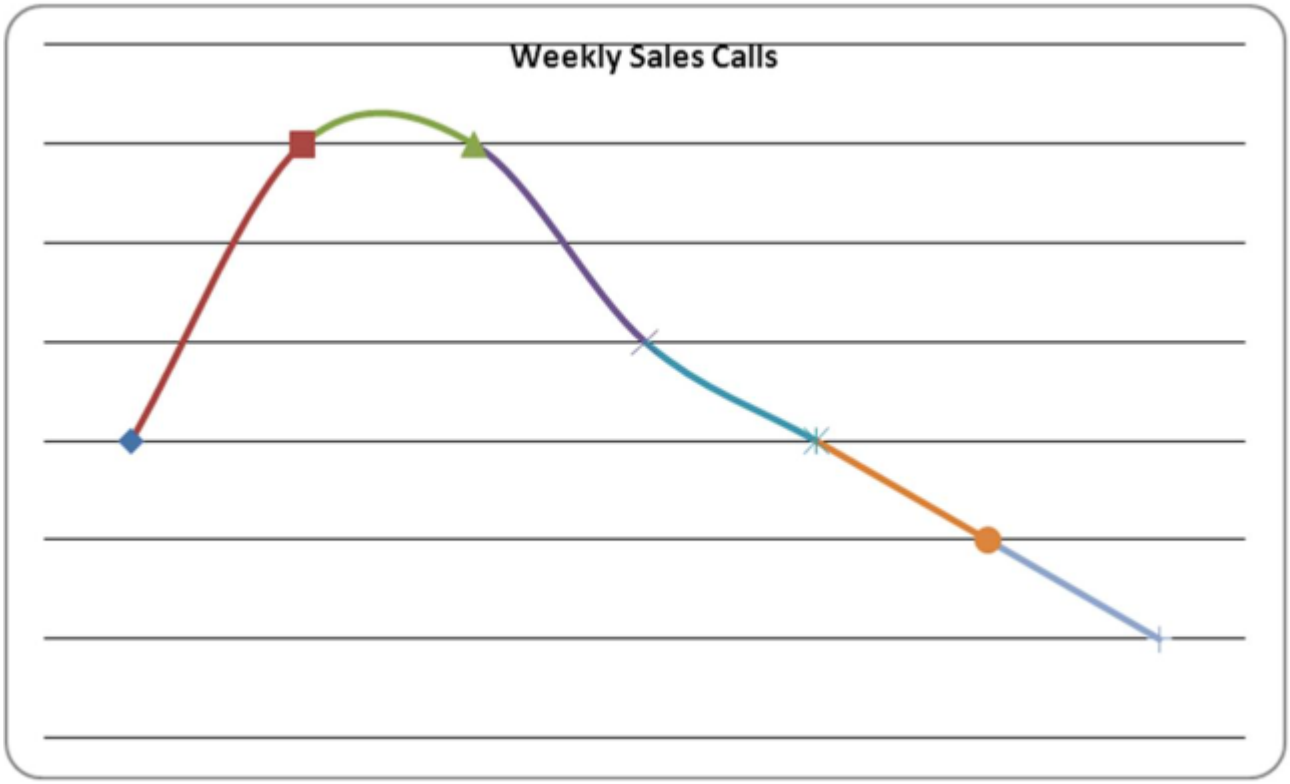
118. The number of weekly sales calls by a sample of 25 pharmaceutical salespersons is below.

24, 56, 43, 35, 37, 27, 29, 44, 34, 28, 33, 28, 46, 31, 38, 41, 48, 38, 27, 29, 37, 33, 31, 40, 50

Construct a frequency polygon.



Feedback: The frequency polygon is the line connecting the height (frequency) of the midpoint of each class. Construct a frequency table.

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Classes - Midpoint	Frequency
25	3
30	6
35	6
40	4
45	3
50	2
55	1

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Topic: Graphically Summarizing Quantitative Data

119. The following table lists the types of customer complaint calls on satellite TV service during the first two months after installation.

No signal detected	20%
Can't receive local channels	14%
Missing channels	21%
Intermittent reception	8%
Remote control problems	25%
Other issues	12%

Construct a Pareto chart.

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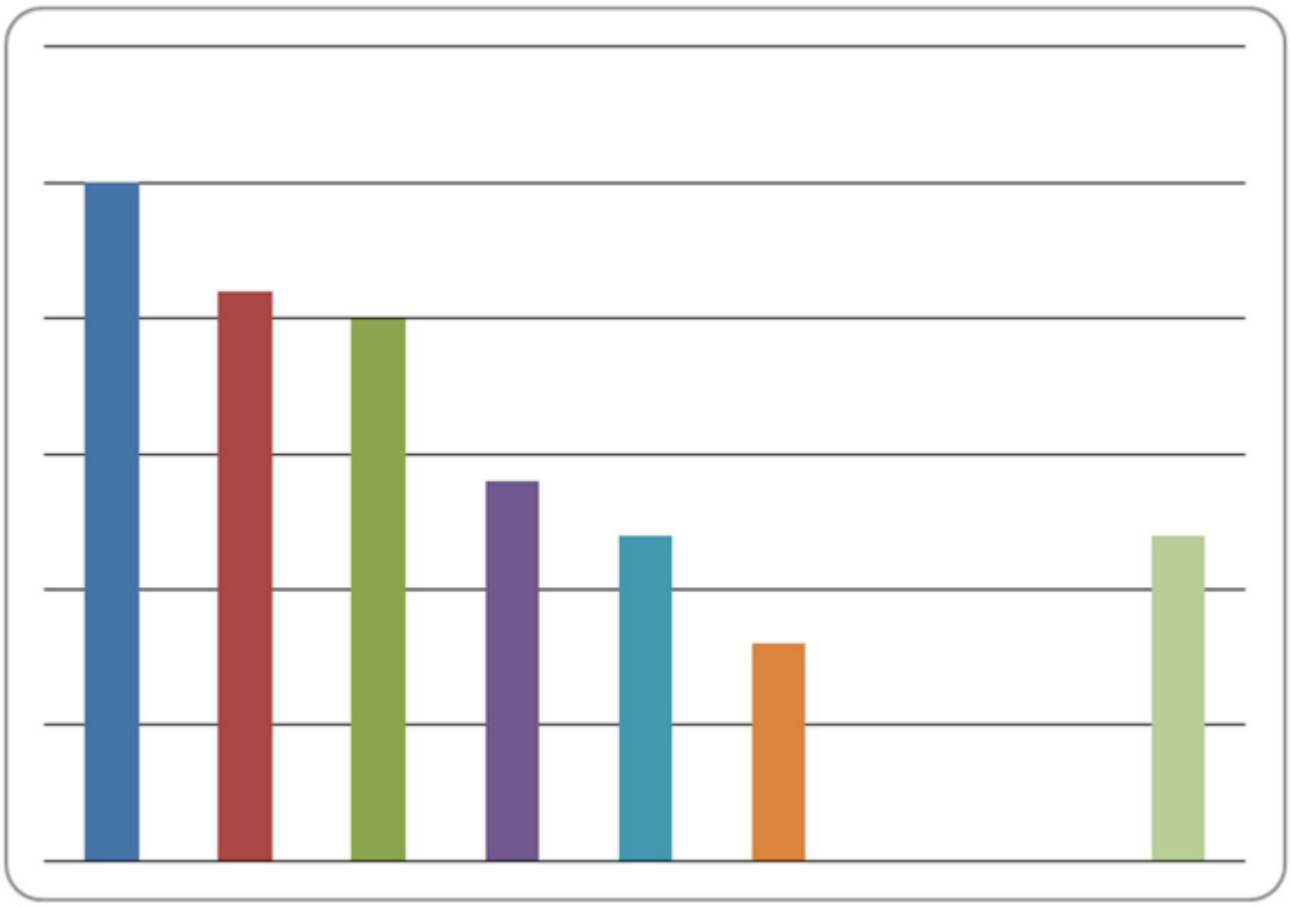
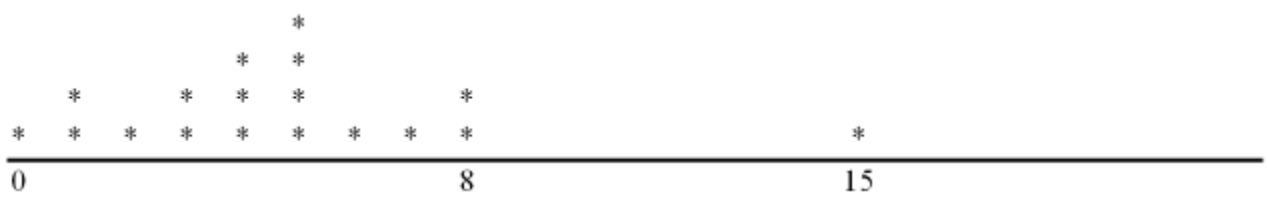


Feedback: A Pareto chart is a specialization of the bar chart used for categorical variables. The largest percentage value is charted at the far left, and each problem percentage is graphed in decreasing order. When showing "other" issues, always place that bar to the right because it includes an accumlation of various reasons.

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-02 Construct and interpret Pareto charts.
Topic: Graphically Summarizing Qualitative Data
Topic: Graphically Summarizing Quantitative Data

120. The following data consist of the number of sick days taken by the 100 employees at a small manufacturing company for the past 18 months. Construct a dot plot of these data and describe the distribution.

5, 1, 4, 8, 0, 6, 3, 5, 3, 4, 7, 15, 5, 8, 2, 1, 5, 4



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Data are skewed to the right with one outlier. Over half of the data lie in the 4-5 day range.

Feedback: A dot plot is constructed as a number line with minimum to maximum values (0 to 15). Individual values are shown along the line as points (dots). With an outlier at the maximum value, the shape has a tail to the right.

AACSB: Analytical Thinking
Blooms: Apply
Difficulty: 2 Medium
Learning Objective: 02-04 Construct and interpret dot plots.
Topic: Dot Plots

Chapter 02 Test Bank - Static Summary

Category	*# of Questions*
AACSB: Analytical Thinking	54
AACSB: Reflective Thinking	66
Blooms: Analyze	1
Blooms: Apply	54
Blooms: Remember	62
Blooms: Understand	3
Difficulty: 1 Easy	14
Difficulty: 2 Medium	93
Difficulty: 3 Hard	13
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.	19
Learning Objective: 02-02 Construct and interpret Pareto charts.	6
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.	43
Learning Objective: 02-04 Construct and interpret dot plots.	3
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.	18
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.	12
Learning Objective: 02-07 Examine the relationships between variables by using scatter plots.	4
Learning Objective: 02-08 Recognize misleading graphs and charts.	3
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.	15
Topic: Contingency Tables	11
Topic: Cross-tabulation	1
Topic: Descriptive Analytics	15
Topic: Dot Plots	3
Topic: Graphically Summarizing Qualitative Data	26

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Topic: Graphically Summarizing Quantitative Data	40
Topic: Misleading Graphs and charts	3
Topic: Scatter Plots	4
Topic: Stem-and-Leaf Displays	18

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