Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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Business Statistics and Analytics in Practice, 9e **(Bowerman)**
Chapter 2 Descriptive Statistics and Analytics: Tabular and Graphical Methods

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

Answer: TRUE
Explanation: This kind of graph places the measurements in order from smallest to largest.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Remember
AACSB: Reflective Thinking
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2) The relative frequency is the frequency of a class divided by the total number of measurements.

Answer: TRUE
Explanation: This is used when we wish to summarize the proportion (or fraction) of items in each class.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data; Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.; 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Remember
AACSB: Reflective Thinking
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3) A bar chart is a graphic that can be used to depict qualitative data.

Answer: TRUE
Explanation: A bar chart is a graphic that depicts a frequency, relative frequency, or percent frequency distribution.
Difficulty: 1 Easy
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Remember
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4) Stem-and-leaf displays and dot plots are useful for detecting outliers.

Answer: TRUE
Explanation: Since this graph places the measurements in order from smallest to largest, it allows the analyst to see all of the measurements in the data set.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays; Dot Plots
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.; 02-04 Construct and interpret dot plots.
Bloom's: Remember
AACSB: Reflective Thinking
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5) A scatter plot can be used to identify outliers.

Answer: FALSE
Explanation: A scatter plot is used to identify the relationship between two variables.
Difficulty: 2 Medium
Topic: Scatter Plots
Learning Objective: 02-07 Examine the relationships between variables by using scatter plots.
Bloom's: Remember
AACSB: Reflective Thinking
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6) When looking at the shape of the distribution using a histogram, a distribution is skewed to the right when the left tail is shorter than the right tail.

Answer: TRUE
Explanation: This type of histogram has a high frequency number of data points on the right compared to the left side of the histogram.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
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7) When we wish to summarize the proportion (or fraction) of items in a class, we use the frequency distribution for each class.

Answer: FALSE
Explanation: The relative frequency summarizes the proportion (or fraction) of items in a class. Frequency distribution shows actual counts of items in each class.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data; Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.; 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
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8) When establishing the classes for a frequency distribution, it is generally agreed that the more classes you use the better your frequency distribution will be.

Answer: FALSE
Explanation: Classes should be determined by the number of data measurements.
Difficulty: 1 Easy
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Remember
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9) The cumulative frequency for a class will always be at least as large as the cumulative frequency for any class with a smaller upper boundary.

Answer: TRUE
Explanation: This is the number of measurements that are less than the upper boundary of the class.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
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10) A frequency table includes row and column percentages.

Answer: FALSE
Explanation: Frequency tables include frequencies, relative frequency, and percent frequency. Cross-tabulation tables include row and column percentages.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data; Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.; 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
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11) When constructing a graphical display that utilizes categorical data, classes that have frequencies of 5 percent or less are usually combined together into a single category.

Answer: TRUE
Explanation: This is done so we can combine the categorical data in a way that is visually pleasing to read and analyze.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-02 Construct and interpret Pareto charts.
Bloom's: Remember
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12) In a Pareto chart, the bar for the "Other" category should be placed to the far left of the chart.

Answer: FALSE
Explanation: The bar to the far left of the Pareto chart will be the category with the highest frequency.
Difficulty: 1 Easy
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-02 Construct and interpret Pareto charts.
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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.

Answer: TRUE
Explanation: The defect with the highest frequency will be at the top of the table and so forth.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-02 Construct and interpret Pareto charts.
Bloom's: Remember
AACSB: Reflective Thinking
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14) It is possible to create different interpretations of the same graphical display by simply using different captions.

Answer: TRUE
Explanation: It is all in the way that the analyzer would like to display and depict the data to the reader.
Difficulty: 2 Medium
Topic: Misleading Graphs and charts
Learning Objective: 02-08 Recognize misleading graphs and charts.
Bloom's: Remember
AACSB: Reflective Thinking
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15) Beginning the vertical scale of a graph at a value different from zero can cause increases to look more dramatic.

Answer: TRUE
Explanation: This can cause extreme interpretations at first; it is always important to note on your graph what value you are beginning with on your graph.
Difficulty: 2 Medium
Topic: Misleading Graphs and charts
Learning Objective: 02-08 Recognize misleading graphs and charts.
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16) A runs plot is a form of scatter plot.

Answer: TRUE
Explanation: A runs plot is also known as a times series plot.
Difficulty: 1 Easy
Topic: Scatter Plots
Learning Objective: 02-07 Examine the relationships between variables by using scatter plots.
Bloom's: Remember
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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.

Answer: TRUE
Explanation: It visually displays all of the data points that were collected for an analysis.
Difficulty: 1 Easy
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Remember
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18) Splitting the stems refers to assigning the same stem to two or more rows of the stem-and-leaf display.

Answer: TRUE
Explanation: This is another way of stretching the display of the data.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Remember
AACSB: Reflective Thinking
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19) When data are qualitative, the bars should never be separated by gaps.

Answer: FALSE
Explanation: Bar graphs for qualitative data are displayed with a gap between each category.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
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20) Each stem of a stem-and-leaf display should be a single digit.

Answer: FALSE
Explanation: Leaves on the stem-and-leaf are a single digit.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
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21) Leaves on a stem-and-leaf display should be rearranged so that they are in increasing order from left to right.

Answer: TRUE
Explanation: This helps keeps order and aids in helping the reader to visually see all of the data.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Remember
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22) Gauges feature a single measure showing variation over time.

Answer: FALSE
Explanation: Sparklines feature a single measure showing variation over time.
Difficulty: 2 Medium
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Bloom's: Remember
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23) Data drill down is a form of data discovery.

Answer: TRUE
Explanation: Data drill down reveals more detailed data that underlie a higher-level summary.
Difficulty: 1 Easy
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
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24) Treemaps are used to compare multiple stem-and-leaf diagrams.

Answer: FALSE
Explanation: Treemaps help visualize two (or more) variables in a series of clustered rectangles.
Difficulty: 2 Medium
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Bloom's: Remember
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25) Sparklines always need to be displayed with either their axes or coordinates.

Answer: FALSE
Explanation: Sparklines seldom show their axes or coordinates.
Difficulty: 2 Medium
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Bloom's: Remember
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26) A bullet graph features a single measure and displays it as either a horizontal or vertical bar.

Answer: TRUE
Explanation: These ranges of the single measure represent qualitative measures of performance and can be displayed as different colors of varying intensities.
Difficulty: 1 Easy
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
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27) Key performance indicators are best represented by a data discovery method.

Answer: FALSE
Explanation: KPIs are best represented by an analytic dashboard.
Difficulty: 3 Hard
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Bloom's: Remember
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28) A treemap displays information as a series of clustered rectangles.

Answer: TRUE
Explanation: This large rectangle in the treemap can be broken into smaller rectangles to represent major segments.
Difficulty: 1 Easy
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Bloom's: Remember
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29) Sparklines are line charts and are often embedded with the text where they are being discussed.

Answer: TRUE
Explanation: Sparklines represent the general shape of the variation in some measurement such as temperature or price.
Difficulty: 2 Medium
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
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30) An analytic dashboard presents both current and historical trends of a business's key performance indicators.

Answer: TRUE
Explanation: This allows the reader to monitor the key functions in a particular business.
Difficulty: 2 Medium
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Bloom's: Remember
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31) If space is an issue when presenting analytic dashboard graphics, gauges should be used most frequently.

Answer: FALSE
Explanation: Gauges take up considerable space and are cluttered.
Difficulty: 3 Hard
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Bloom's: Remember
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32) Which of the following is *not* a graphical tool for descriptive analytics (dashboards)?
A) bullet graph
B) sparkline
C) raw data
D) treemap
E) gauge

Answer: C
Explanation: Raw data is data that has not been processed; no graphical tools have been applied to it yet.
Difficulty: 1 Easy
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
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33) A(n) _____ is a graphical presentation of the current status and historical trends of a business's key performance indicators.
A) frequency distribution
B) histogram
C) Pareto chart
D) dashboard

Answer: D
Explanation: A dashboard analysis allows you to monitor all of the key functions of a business.
Difficulty: 2 Medium
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Bloom's: Remember
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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

Answer: A
Explanation: A bullet graph is used when you are analyzing a single measure—in this case wait time.
Difficulty: 3 Hard
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
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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

Answer: C
Explanation: A treemap is used when visualizing hierarchical information because the information is displayed as a tree where different branchings would be used to show the hierarchical information.
Difficulty: 2 Medium
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
Bloom's: Remember
AACSB: Reflective Thinking
Accessibility: Keyboard Navigation

36) Which of the following tools used by graphical descriptive analytics will show variation over time?
A) bullet graph
B) sparkline
C) treemap
D) gauge

Answer: B
Explanation: A sparkline is a line chart that presents the general shape of the variation in some particular measures like temperature or price.
Difficulty: 2 Medium
Topic: Graphical Descriptive Analytics
Learning Objective: 02-09 Construct and interpret gauges, bullet graphs, treemaps, and sparklines.
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37) A(n) _____ is a graph of a cumulative distribution.
A) histogram
B) scatter plot
C) ogive
D) pie chart

Answer: C
Explanation: An ogive is a graph of the cumulative frequency of the class or the cumulative relative frequencies or the cumulative percent frequencies.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Remember
AACSB: Reflective Thinking
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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

Answer: A
Explanation: Frequency distributions and dot plots only use one variable. To study the relationship between two variables, you need to use either cross-tabulation tables or scatter plots.
Difficulty: 1 Easy
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
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39) Row or column percentages can be found in
A) frequency tables.
B) relative frequency tables.
C) cross-tabulation tables.
D) cumulative frequency tables.

Answer: C
Explanation: Cross-tabulation tables show the relationship between two variables using rows and column percentages.
Difficulty: 2 Medium
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Bloom's: Remember
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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

Answer: D
Explanation: Pie charts are used only for categorical or qualitative data.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
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41) An unusually large or small observation separated from the rest of the data is a(n) _____.
A) absolute extreme
B) outlier
C) mode
D) quartile

Answer: B
Explanation: Outliers are identified as measurements that are widely separated from the other data measurements.
Difficulty: 1 Easy
Topic: Stem-and-Leaf Displays; Dot Plots
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.; 02-04 Construct and interpret dot plots.
Bloom's: Remember
AACSB: Reflective Thinking
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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

Answer: B
Explanation: Histogram, stem-and-leaf, and frequency (ogive) graphs display quantitative data.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
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43) A plot that allows us to visualize the relationship between two variables is a(n) _____ plot.
A) frequency
B) scatter
C) dot
D) ogive

Answer: B
Explanation: Scatter plots display the relationship between two variables.
Difficulty: 2 Medium
Topic: Scatter Plots
Learning Objective: 02-07 Examine the relationships between variables by using scatter plots.
Bloom's: Remember
AACSB: Reflective Thinking
Accessibility: Keyboard Navigation

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) display a two-variable treemap

Answer: C
Explanation: It is more difficult to find central tendency and variability using a stem-and-leaf display. It is easy to visualize the shape of the distribution using stem-and-leaf.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
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45) Which of the following divides quantitative measurements into classes and graphs the frequency, relative frequency, or percentage frequency for each class?
A) histogram
B) dot plot
C) stem-and-leaf display
D) scatter plot

Answer: A
Explanation: A box plot does not easily group measurements into classes; a scatter plot is for looking at the relationship between two variables.
Difficulty: 3 Hard
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Understand
AACSB: Reflective Thinking
Accessibility: Keyboard Navigation

46) A _____ displays the frequency of each class with qualitative data and a _____ displays the frequency of each class with quantitative data.
A) histogram; stem-and-leaf display
B) bar chart; histogram
C) scatter plot; bar chart
D) stem-and-leaf; pie chart

Answer: B
Explanation: The histogram and stem-and-leaf are used to graphically display quantitative data; a scatter plot is used for displaying the relationship between two variables.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data; Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.; 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
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47) A _____ shows the relationship between two variables.
A) stem-and-leaf
B) bar chart
C) histogram
D) scatter plot
E) pie chart

Answer: D
Explanation: Pie charts and bar charts are used for a single qualitative variable; stem-and-leaf charts and histograms are used for displaying a single quantitative variable.
Difficulty: 2 Medium
Topic: Scatter Plots
Learning Objective: 02-07 Examine the relationships between variables by using scatter plots.
Bloom's: Remember
AACSB: Reflective Thinking
Accessibility: Keyboard Navigation

48) A(n) _____ 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

Answer: C
Explanation: A pareto chart is a specialized bar chart to look at the frequency of categories; a scatter plot is for displaying the relationship between two variables; a histogram, stem-and-leaf, and ogive plot are used to display quantitative data.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-02 Construct and interpret Pareto charts.
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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) Dot plots; bar charts
D) Bar charts; pie charts
E) Pie charts; histograms

Answer: D
Explanation: Stem-and-leaf displays, box plots, and histograms are used for quantitative data; scatter plots are for displaying the relationship between two variables.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Remember
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Accessibility: Keyboard Navigation

50) Which one of the following graphical tools is used with quantitative data?
A) bar chart
B) histogram
C) pie chart
D) Pareto chart

Answer: B
Explanation: Pie charts, Pareto charts, and bar charts are used with categorical/qualitative data.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
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51) When developing a frequency distribution, the class (group) intervals must be _____.
A) large
B) small
C) integer
D) nonoverlapping
E) equal

Answer: D
Explanation: There is no definitive size of intervals for classes, and intervals can be fractional. The number of classes can result in the final class having a different interval size than the previous ones.
Difficulty: 3 Hard
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Remember
AACSB: Reflective Thinking
Accessibility: Keyboard Navigation

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

Answer: B
Explanation: Scatter plots are used to display the relationship between two variables.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
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

Answer: C
Explanation: Histograms are used for quantitative data.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Remember
AACSB: Reflective Thinking
Accessibility: Keyboard Navigation

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

Answer: E
Explanation:
2^k, where k = number of classes and 2^k is the closest value larger than 130.
$2^7 = 128$; $2^8 = 256$.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
AACSB: Analytical Thinking
Accessibility: Keyboard Navigation

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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

Answer: D
Explanation: 2^k, where k = number of classes and 2^k is the closest value larger than 120. $2^7 = 128$.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
AACSB: Analytical Thinking
Accessibility: Keyboard Navigation

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

Answer: C
Explanation: 2^k, where k = number of classes and 2^k is the closest value larger than 62. $2^6 = 64$.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
AACSB: Analytical Thinking
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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

Answer: B
Explanation: 2^k, where k = number of classes and 2^k is the closest value larger than 30. $2^5 = 32$.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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 display (leaf unit = 0.1).

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

Answer: B
Explanation: With outliers at the stem of 13 and the majority of the data grouped around stems 6, 7, and 8, the shape is skewed with the outliers to the right.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Analyze
AACSB: Analytical Thinking
Accessibility: Keyboard Navigation

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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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 display (leaf unit = 0.1).

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

Answer: C
Explanation: The smallest value displayed in the graph is 5.2 percent.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Apply
AACSB: Reflective Thinking
Accessibility: Keyboard Navigation

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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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 display (leaf unit = 0.1).

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
D) 7
E) 8

Answer: C
Explanation: There are 50 data measurements. 2^k, where k = number of classes and 2^k is the closest value larger than 50. $2^6 = 64$.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays; Graphically Summarizing Quantitative Data
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.; 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
AACSB: Analytical Thinking
Accessibility: Keyboard Navigation

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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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 display (leaf unit = 0.1).

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

Answer: A
Explanation: There are 50 data measurements. 2^k, where k = number of classes and 2^k is the closest value larger than 50. $2^6 = 64$, so 6 classes. Class length = (Max value − Min value)/6 = (13.5 − 5.2)/6. Length = 1.38, rounded to 1.4.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays; Graphically Summarizing Quantitative Data
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.; 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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 display (leaf unit = 0.1).

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 < 6.6
B) 5.2 < 6.0
C) 5.0 < 6.0
D) 5.0 < 6.4
E) 5.2 < 6.4

Answer: A
Explanation: There are 50 data measurements. 2^k, where k = number of classes and 2^k is the closest value larger than 50. $2^6 = 64$, so 6 classes. Class length = (Max value − Min value)/6 = (13.5 − 5.2)/6. Length = 1.38, rounded to 1.4. The boundary for the first nonoverlapping interval is the smallest measurement and the sum of the first measurement and the length (5.2 + 1.38 = 6.58). So the first interval will contain the values 5.2 − 6.5.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays; Graphically Summarizing Quantitative Data
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.; 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
AACSB: Analytical Thinking
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63) A company's Chief Operating Officer (COO) keeps track of the mileage on her trips from her office at corporate headquarters to the company's off-site manufacturing facility and its nearby suppliers. The stem-and-leaf display 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 trips were used in this display?
A) 7
B) 9
C) 10
D) 11
E) 12

Answer: E
Explanation: Count of measurements is 12.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

64) A company's Chief Operating Officer (COO) keeps track of the mileage on her trips from her office at corporate headquarters to the company's off-site manufacturing facility and its nearby suppliers. The stem-and-leaf display 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

Answer: A
Explanation: Number of measurements = 12; $2^4 = 16$; classes = 4.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays; Graphically Summarizing Quantitative Data
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.; 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

65) A company's Chief Operating Officer (COO) keeps track of the mileage on her trips from her office at corporate headquarters to the company's off-site manufacturing facility and its nearby suppliers. The stem-and-leaf display 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) 14
B) 9
C) 27
D) 18
E) 23

Answer: D
Explanation:
Measurements = 12; classes = 4; class length = (838 − 769)/4 = 17.25, rounded to 18
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays; Graphically Summarizing Quantitative Data
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.; 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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) linear
D) skewed to the left
E) skewed to the right

Answer: D
Explanation: The majority of data lie to the right side of the distribution; the tail of the smaller number of measurements extends to the left, so the graph is skewed with a tail to the left.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Understand
AACSB: Reflective Thinking
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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 class with the greatest frequency?
A) .132
B) .226
C) .231
D) .283
E) .288

Answer: D
Explanation: Measurements = 53; largest interval has 15 measurements.15/53 = .283.
Difficulty: 3 Hard
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
AACSB: Analytical Thinking
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

Answer: C
Explanation: The midpoint is calculated as halfway between the boundaries of the class. The third class interval is 30 to 35, which yields a midpoint of 32.5.
Difficulty: 3 Hard
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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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

Answer: C
Explanation: An ogive plot is based on quantitative data, a Pareto chart is a specialized bar chart, and a pie chart is a circular graphical display.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Remember
AACSB: Reflective Thinking
Accessibility: Keyboard Navigation

70) Pareto charts are frequently used to identify _____.
A) random data
B) the most common types of defects
C) outliers that do not show up on a dot plot
D) the cause for extreme skewness to the right

Answer: B
Explanation: By definition, a defect is a flaw in a population or sample element.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-02 Construct and interpret Pareto charts.
Bloom's: Remember
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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

Answer: C
Explanation: Pareto and bar charts are used for qualitative data, a dot plot displays individual data points, and an ogive plot is a curved display of the cumulative distribution of the data.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Remember
AACSB: Reflective Thinking
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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

Answer: A
Explanation: By definition, frequency is the number of measurements. Relative frequency is proportional. A leaf is not a count but part of a graphical display, and the cumulative sum is not a count.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Remember
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73) A relative frequency histogram having a longer tail to the right than to the left is said to be _____.
A) skewed to the left
B) normal
C) a scatter plot
D) skewed to the right

Answer: D
Explanation: A scatter plot is a graphical display of the relationship between two variables; a normal curve is bell-shaped with even distribution on both sides of the high point of the curve. The long tail direction defines the skewness of the graph, in this case skewed to the right.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Remember
AACSB: Reflective Thinking
Accessibility: Keyboard Navigation

74) The proportion of measurements in a class is called the _____ of that class.
A) frequency
B) relative frequency
C) leaf
D) cumulative percentage

Answer: B
Explanation: By definition, frequency is the number of measurements. Relative frequency is proportional. A leaf and the cumulative sum are not counts of measurements or percentages.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Remember
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75) A histogram that has a longer tail extending toward larger values is _____.
A) skewed to the left
B) normal
C) a scatter plot
D) skewed to the right

Answer: D
Explanation: Larger values are to the right of the center part of the graph, resulting in a tail to the right. Thus, the graph is skewed to the right.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Understand
AACSB: Reflective Thinking
Accessibility: Keyboard Navigation

76) A histogram that has a longer tail extending toward smaller values is _____.
A) skewed to the left
B) normal
C) a scatter plot
D) skewed to the right

Answer: A
Explanation: Smaller values are to the left of the center part of the graph, resulting in a tail to the left. Thus, the graph is skewed to the left.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Understand
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77) A type of very simple graph that can be used to summarize a quantitative data set is a(n) _____.
A) runs plot
B) ogive plot
C) dot plot
D) pie chart

Answer: C
Explanation: A runs plot is used for time series data; a pie chart is used for qualitative data; an ogive plot is a specialized graph of the cumulative distribution of data measurements. A dot plot is a simple graphical display of data measurements.
Difficulty: 2 Medium
Topic: Dot Plots
Learning Objective: 02-04 Construct and interpret dot plots.
Bloom's: Remember
AACSB: Reflective Thinking
Accessibility: Keyboard Navigation

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) adding an unbiased caption

Answer: C
Explanation: Starting the axes at zero is the appropriate method of graphical display, as is making the bars in a histogram equal widths.
Difficulty: 2 Medium
Topic: Misleading Graphs and charts
Learning Objective: 02-08 Recognize misleading graphs and charts.
Bloom's: Remember
AACSB: Reflective Thinking
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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

Answer: D
Explanation: By definition, there should be between 5 and 20 stems to enable a reasonable display of the shape of the distribution.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Remember
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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 Final Grade	Student's Rating of Instructor: 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) 0.345
B) 0.254
C) 0.482
D) 0.898
E) 0.644

Answer: D
Explanation: 295 students rated their instructor as very or somewhat effective; (75 + 190) = 265 had a B or better; 265/295 = .898.
Difficulty: 3 Hard
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Bloom's: Apply
AACSB: Analytical Thinking
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

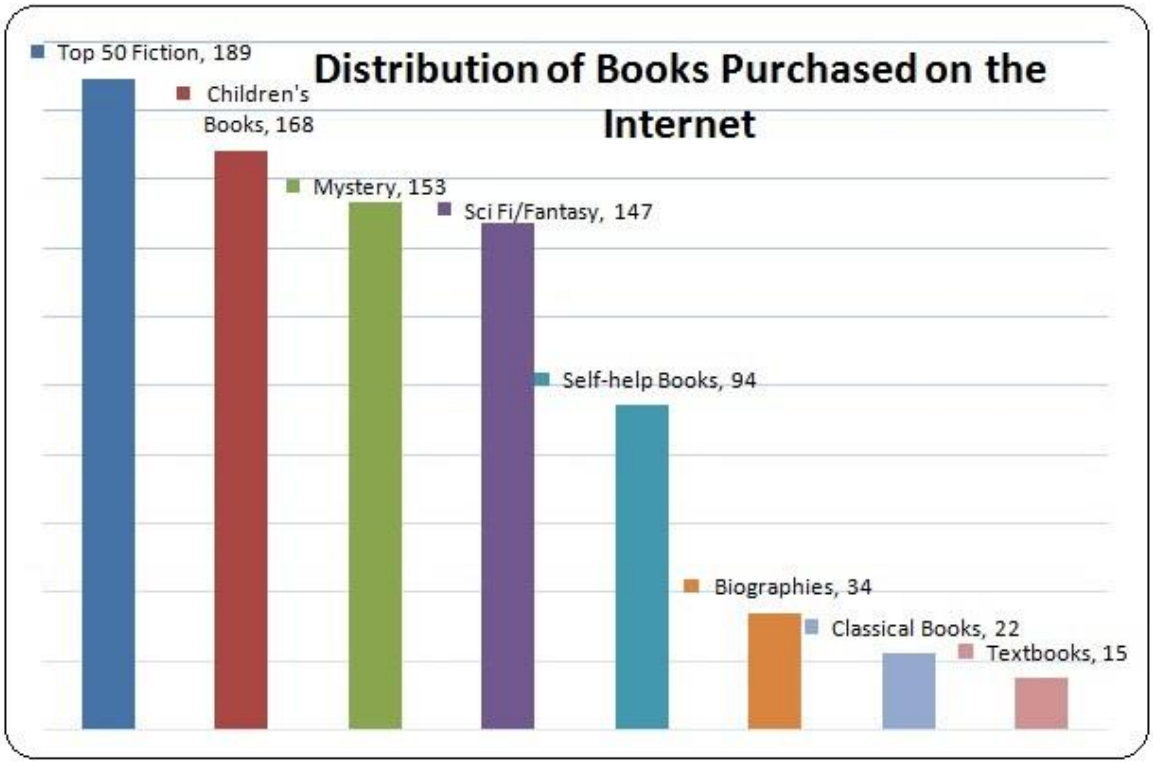
What proportion of the students who rated their instructor as very or somewhat effective received a C or lower in the class?
A) 0.03
B) 0.06
C) 0.10
D) 0.13
E) 0.15

Answer: C
Explanation: 295 received a C or lower in the class; 30/295 = 0.10.
Difficulty: 3 Hard
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Bloom's: Apply
AACSB: Analytical Thinking
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82) 822 recently purchased books were randomly selected from all recent book purchases over the Internet. The chart below shows the breakdown of the classification of the book type.



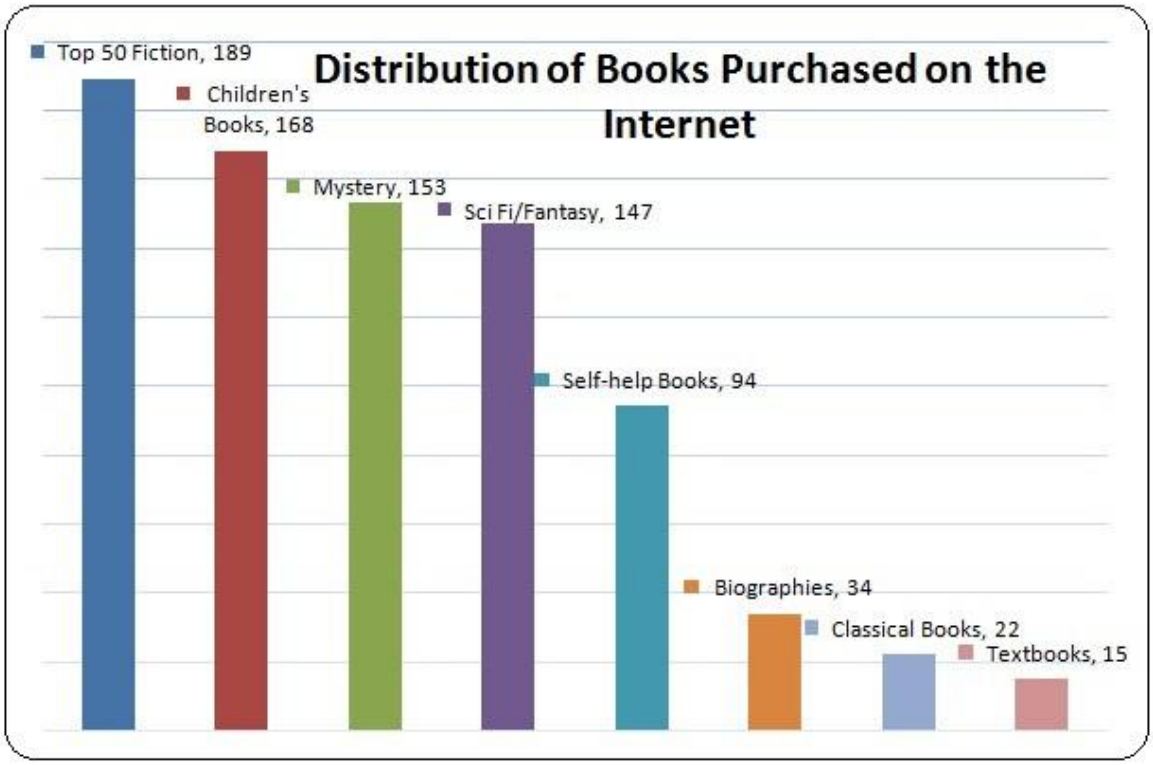
What percentage of the books in the sample were either mystery or science fiction/fantasy?
A) 18.61
B) 36.50
C) 17.88
D) 24.33
E) 22.99

Answer: B
Explanation: 300 mystery or science fiction/fantasy books purchased; 300/822 = 36.5%.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Apply
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83) 822 recently purchased books were randomly selected from all recent book purchases over the Internet. The chart below shows the breakdown of the classification of the book type.



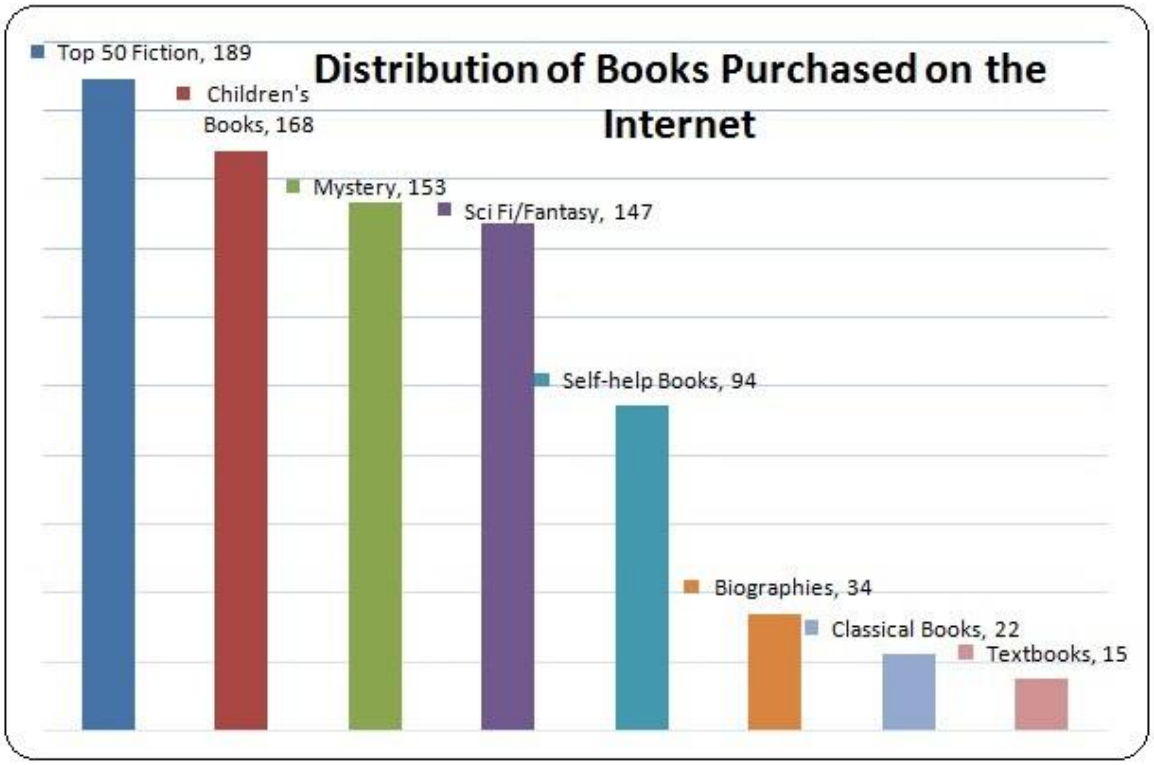
What percentage of the books in the sample were self-help books?
A) 11.44
B) .1144
C) 1.82
D) 0.0182
E) 0.940

Answer: A
Explanation: 94/822 = 11.44%
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Apply
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84) 822 recently purchased books were randomly selected from all recent book purchases over the Internet. The chart below shows the breakdown of the classification of the book type.



What percentage of the books in the sample were in the top two categories?
A) 22.99
B) 20.44
C) 4.50
D) 43.43
E) 0.4343

Answer: D
Explanation:
189 + 168 = 357 in the top two categories; 357/822 = 43.43% of the total purchased.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Apply
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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

Answer: D
Explanation: Create a stem-and-leaf graph. The stem would be 11,12,13,14,15,16,17,18; leaves would be the tenth on each data measurement:

STEM	LEAF
11	0557
12	05557
13	0057
14	057
15	25
16	7
17	
18	2

The graphical display shows that it is skewed to the right.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
AACSB: Analytical Thinking
Accessibility: Keyboard Navigation

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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

Answer: B
Explanation: Create a stem-and-leaf graph. The stem would be 11,12,13,14,15,16,17,18; leaves would be the tenth on each data measurement:

STEM	LEAF
11	0557
12	05557
13	0057
14	057
15	25
16	7
17	
18	2

Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Apply
AACSB: Analytical Thinking
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

1.	11.5	6.	13.7	11.	11.0	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) 1.0
B) 10
C) .10
D) .01
E) .20

Answer: C
Explanation: Create a stem-and-leaf graph. The stem would be 11,12,13,14,15,16,17,18; leaves would be the tenth on each data measurement.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Apply
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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

Answer: A
Explanation: Total of 40 measurements: 15/40 = .375.
Difficulty: 1 Easy
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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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

Answer: B
Explanation: (5 + 1) = 6 over 24 miles; 6/40 = .15.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

Grade	Relative Frequency
A	0.22
B	?
C	0.18
D	0.17
F	0.06

Find the relative frequency for the B grade.
A) .78
B) .27
C) .65
D) .37
E) .47

Answer: D
Explanation: 1.00 − (.22 + .18 + .17 + .06) = 1.00 − .63 = .37
Difficulty: 1 Easy
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

Grade	Relative Frequency
A	0.22
B	?
C	0.18
D	0.17
F	0.06

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

Answer: B
Explanation: (.22 + .37) = .59. 59% of 200 = 118.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

Grade	Relative Frequency
A	0.22
B	?
C	0.18
D	0.17
F	0.06

If this was the distribution of 200 students, find the frequency of failures.
A) 12
B) 6
C) 23
D) 46
E) 3

Answer: A
Explanation: The frequency is .06. The frequency of failures is 6% of 200 = 12.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Apply
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93) The following is a relative frequency distribution of grades in an introductory statistics course.

Grade	Relative Frequency
A	0.22
B	?
C	0.18
D	0.17
F	0.06

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

Answer: C
Explanation: A's are 22% of total; 360° in a circle: 22% of 360 = 79.2°.
Difficulty: 3 Hard
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

Answer: B
Explanation:
Out of 200 people, 44 were female and could not recall the company; 44/200 = 22%.
Difficulty: 2 Medium
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

Answer: E
Explanation: 84 of 200 could not recall the company; 84/200 = 42%.
Difficulty: 2 Medium
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Bloom's: Apply
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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) 50.0
B) 39.2
C) 56.3
D) 34.8
E) 19.6

Answer: E
Explanation: 40 of 204 total purchases; 40/204 = 19.6%
Difficulty: 2 Medium
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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) 36.3
B) 5.9
C) 19.6
D) 56.3
E) 16.2

Answer: B
Explanation: 12 out of 204 = 5.9%.
Difficulty: 2 Medium
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

Answer: D
Explanation: Classes are determined by the value of k, where 2^k yields a value that is closest to the sample size and is also larger than the sample size.
k = 5, so $2^5 = 32$.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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 to the right
B) skewed to the left
C) normal
D) bimodal

Answer: A
Explanation: Create a frequency table that can be used to observe the shape of the distribution.

Classes	Frequency	Rel Freq
24 < 31	7	0.28
31 < 38	8	0.32
38 < 45	6	0.24
45 < 52	3	0.12
52 < 57	1	0.04

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

Answer: B
Explanation: Number of classes = k, where $2^k > 30$. So k = 5.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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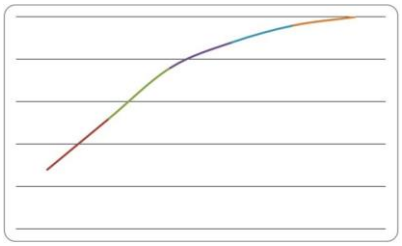
Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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 of the weekly sales calls.

Answer:



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

Classes	Frequency	Rel Freq	Cum Rel Freq
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

Difficulty: 3 Hard
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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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			

Answer:

Classes	Frequency	Rel Freq	Cum Rel Freq
4 < 9	6	0.2	0.2
9 < 14	4	0.133	0.333
14 < 19	7	0.233	0.567
19 < 24	9	0.30	0.867
24 < 29	4	0.133	1.00

The Cum Freq column should be .566, .866, and 0.999. The values listed do not add to 1.00 exactly due to rounding.

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.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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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 display.

Answer: One possible stem-and-leaf display (with each stem split into five):

Stem	Leaf
0	45
0	66
0	889
1	01
1	2
1	4
1	66777
1	8999
2	00111
2	2
2	455
2	
2	8

A second possible stem-and-leaf display (with each stem split into two):

Stem	Leaf
0	4
0	566889
1	0124
1	66777899
2	0011124
2	558

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.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Apply
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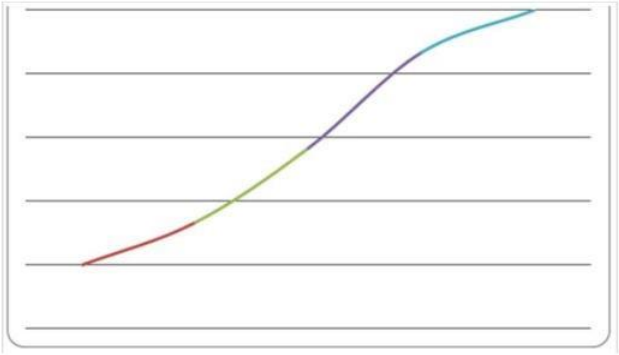
Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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 of the number of items rejected daily.

Answer:



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

Classes	Frequency	Rel Freq	Cum Rel Freq
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

Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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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.

Answer: One possible stem-and-leaf display as might be created by Minitab:

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

4	11	0 5 5 7
9	12	0 5 5 5 7
(4)	13	0 0 5 7
7	14	0 5 7
4	15	2 5
2	16	7
1	17	
1	18	2

Stems should be from 11 to 18; leaves are the tenth unit.
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Apply
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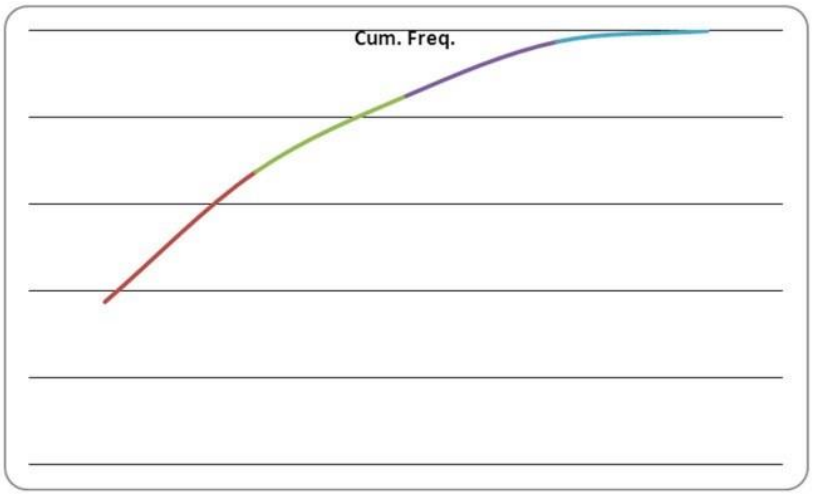
Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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 that corresponds to the frequency table.

Answer:



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).
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

Grade	Relative Frequency
A	0.22
B	0.37
C	0.18
D	0.17
F	0.06

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

Answer:

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

Convert from proportion (relative frequency) to frequency by multiplying each relative frequency by 200 (e.g., .22 × 200 = 44 for grade A).
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Apply
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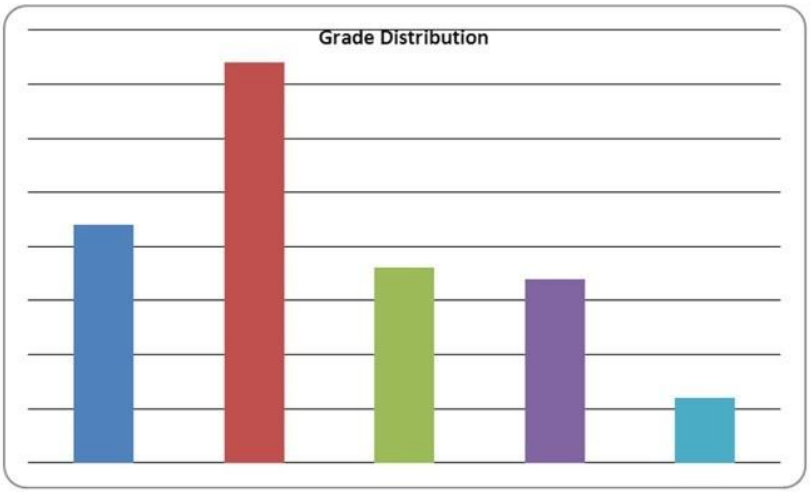
Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

Grade	Relative Frequency
A	0.22
B	0.37
C	0.18
D	0.17
F	0.06

Construct a percent bar chart for this data.

Answer:



Each grade category is displayed as a bar on a percent bar chart.
Difficulty: 1 Easy
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Apply
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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

Grade	Relative Frequency
A	0.22
B	0.37
C	0.18
D	0.17
F	0.06

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.

Answer:

Grade	Relative Frequency
A	79.2
B	133.2
C	64.8
D	61.2
F	21.6

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).
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
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110) Fill in the missing components of the following frequency distribution constructed for a sample size of 50.

Class	Frequency	Rel Frequency	Cum Rel Freq
___ < 7.95			0.12
___ < 8.05			0.48
8.05 < ___		0.24	
___ < 8.25		0.10	
8.25 < ___			

Answer:

Class	Frequency	Rel Frequency	Cum Rel Freq
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

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

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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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.

Answer:

	Female	Male	Total
Correctly recalled the company	56.9%	43.1%	100.0%
Incorrectly recalled the company	52.4%	47.6%	100.0%

Row percentages are calculated by dividing each part of the row by the total of the row and multiplying by 100. For example, Female and correctly recalled = 66, which yields a row percentage of (66/116)*100 = 56.9%.
Difficulty: 2 Medium
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Bloom's: Apply
AACSB: Analytical Thinking
Accessibility: Keyboard Navigation

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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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.

Answer:

	Female	Male
Correctly recalled the company	60.0%	55.6%
Incorrectly recalled the company	40.0%	44.4%
Total	100.0%	100.0%

Column percentages are calculated by dividing each part of the column by the total of the column and multiplying by 100. For example, Female and correctly recalled = 66, which yields a column percentage of (66/110)*100 = 60.0%.
Difficulty: 2 Medium
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Bloom's: Apply
AACSB: Analytical Thinking
Accessibility: Keyboard Navigation

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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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	S	12	24	15
Over $800	16	12	16	30
Total	34	40	80	50

Construct a table of row percentages.

Answer:

Credit Balance	LED	LCD	Plasma	Projection	Total
Under $200	(10/71)*100 = 14.1%	(16/71)*100 = 22.5%	(40/71)*100 = 56.3%	(5/71)*100 = 7.0%	100.0%
$200−$800	(8/59)*100 = 13.6%	(12/59)*100 = 20.3%	(24/59)*100 = 40.7%	(15/59)*100 = 25.4%	100.0%
Over $800	(16/74)*100 = 21.6%	(12/74)*100 = 16.2%	(16/74)*100 = 21.6%	(30/74)*100 = 40.5%	100.0%

Row percentages are calculated by dividing each part of the row by the total of the row and multiplying by 100. 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)*100 = 22.5%.
Difficulty: 2 Medium
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Bloom's: Apply
AACSB: Analytical Thinking
Accessibility: Keyboard Navigation

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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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.

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

Construct a table of column percentages.

Answer:

Credit Balance	LED	LCD	Plasma	Projection
Under $200	29.4%	40.0%	50.0%	10.0%
$200−$800	23.5%	30.0%	30.0%	30.0%
Over $800	47.1%	30.0%	20.0%	60.0%
Total	100.0%	100.0%	100.0%	100.0%

Column percentages calculated by dividing each part of the column by the total of the column and multiplying by 100. For example, credit balance under $200 and LCD TV = 16 yields row percentage (16/40)*100 =40.0%.
Difficulty: 2 Medium
Topic: Contingency Tables
Learning Objective: 02-06 Examine the relationships between variables by using contingency tables.
Bloom's: Apply
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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 Dist
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	

Answer:

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

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).
Difficulty: 3 Hard
Topic: Graphically Summarizing Qualitative Data; Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.; 02-01 Summarize qualitative data by using frequency distributions, bar charts, and pie charts.
Bloom's: Apply
AACSB: Analytical Thinking
Accessibility: Keyboard Navigation

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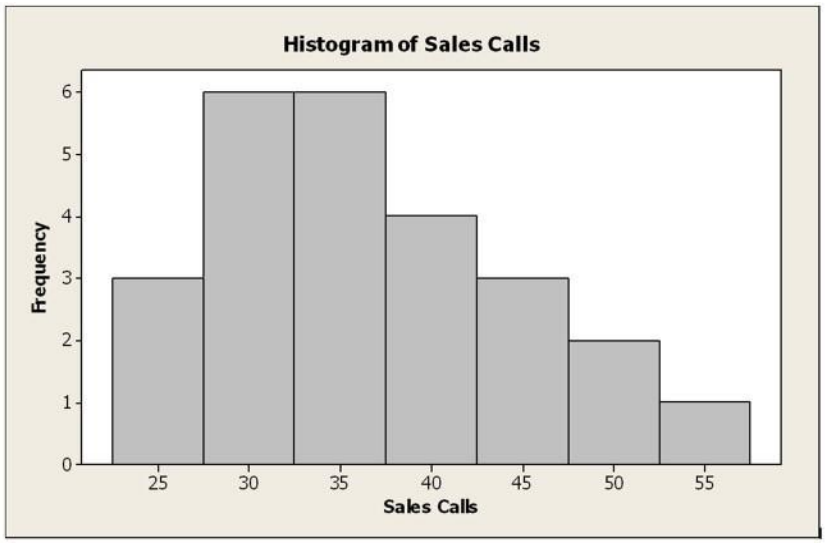
Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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.

Answer:



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

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

While the frequency table and histogram shown above are technically valid, it is unlikely that a student would create them based on the instructions in the textbook. A more likely frequency table a student might create would be:

Class	Frequency
24 < 31	7
31 < 38	8
38 < 45	6
45 < 52	3
52 < 59	1

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A histogram could easily be derived from this frequency table.
Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
Bloom's: Apply
AACSB: Analytical Thinking
Accessibility: Keyboard Navigation

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.

Answer: One possible stem-and-leaf display as might be created by Minitab:

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

1	2	4
7	2	7 7 8 8 9 9
12	3	1 1 3 3 4
(5)	3	5 7 7 8 8
8	4	0 1 3 4
4	4	6 8
2	5	0
1	5	6

Without Minitab, students would be unlikely to create the leftmost column with frequency information.

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).
Difficulty: 2 Medium
Topic: Stem-and-Leaf Displays
Learning Objective: 02-05 Construct and interpret stem-and-leaf displays.
Bloom's: Apply
AACSB: Analytical Thinking
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Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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.

Answer:



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

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

While the frequency table and frequency polygon shown above are technically valid, it is unlikely that a student would create them based on the instructions in the textbook. A more likely frequency table a student might create would be:

Class	Frequency
24 < 31	7
31 < 38	8
38 < 45	6
45 < 52	3
52 < 59	1

A frequency polygon could easily be derived from this frequency table.

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Difficulty: 2 Medium
Topic: Graphically Summarizing Quantitative Data
Learning Objective: 02-03 Summarize quantitative data using frequency distributions, histograms, frequency polygons, and ogives.
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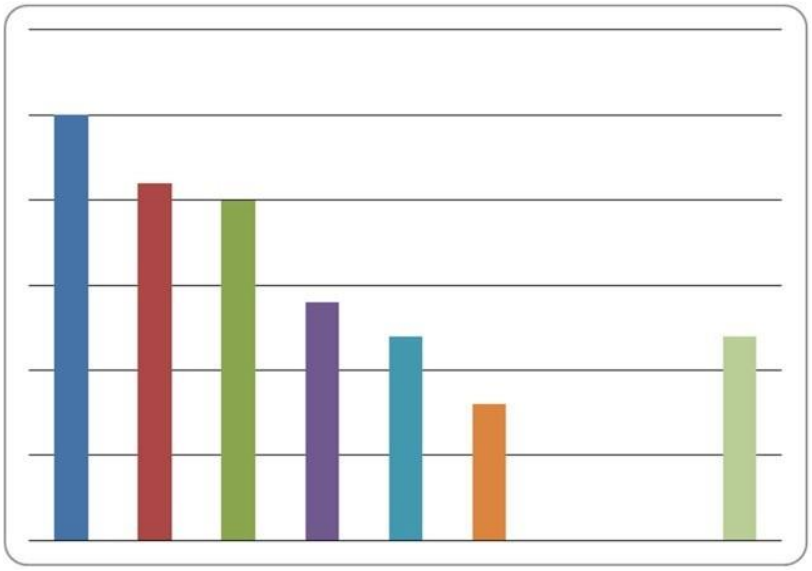
Business Statistics and Analytics in Practice 9th edition Bowerman Test Bank

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.

Answer:



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 accumulation of various reasons.
Difficulty: 2 Medium
Topic: Graphically Summarizing Qualitative Data
Learning Objective: 02-02 Construct and interpret Pareto charts.
Bloom's: Apply
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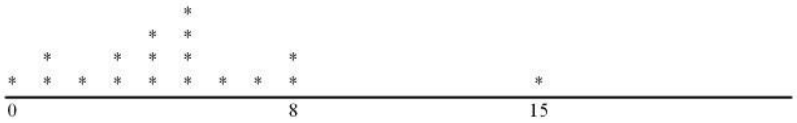
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120) The following data consist of the number of sick days taken by the 100 employees at a small manufacturing company for the past 18 months. Construct a dot plot of these data and describe the distribution.

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

Answer:



Data are skewed to the right with one outlier.

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