Business Statistics 1st Edition Donnelly Test Bank

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Business Statistics (Donnelly)

Chapter 2 Displaying Descriptive Statistics

1) A frequency distribution is a table that shows the number of data observations that fall into specific intervals.

Answer: TRUE

Diff: 1

Keywords: frequency distribution

Reference: Page 23

2) Continuous data are values based on observations that can be counted and are typically represented by whole

numbers.

Answer: FALSE

Diff: 1

Keywords: discrete data Reference: Page 24

3) Continuous data is often the result of measuring observations rather than counting them.

Answer: TRUE

Diff: 1

Keywords: continuous data

Reference: Page 24

4) Discrete data can have an infinite number of values within a specific interval.

Answer: FALSE

Diff: 2

Keywords: discrete data Reference: Page 24

5) The only limitation in the number of continuous values within an interval is the level of precision of the measuring instrument.

Answer: TRUE

Diff: 1

Keywords: continuous data

Reference: Page 24

6) The sum of the relative frequencies for the relative frequency distribution should be equal to or very close to 1.0 due to rounding.

Answer: TRUE

Diff: 1

Keywords: relative frequency distributions

Reference: Page 25

7) The sum of the cumulative relative frequencies for the cumulative relative frequency distribution should be equal to or very close to 1.0 due to rounding.

Answer: FALSE

Diff: 2

Keywords: cumulative relative frequency distributions

Reference: Page 25

2-

8) A symmetrical distribution is one in which the right side of the distribution looks like the mirror image of the left side of the distribution.

Answer: TRUE

Diff: 1

Keywords: symmetrical distributions

Reference: Page 28

9) The goal of constructing a frequency distribution is to identify a useful pattern in the data and often there is more than one acceptable way to accomplish this with grouped quantitative data.

Answer: TRUE

Diff: 1

Keywords: frequency distribution, grouped quantitative data

Reference: Page 30

10) When creating a frequency distribution with grouped qualitative data and 45 data points, five classes should be set up using the $2^k > n$ rule.

Answer: FALSE

Diff: 1

Keywords: frequency distribution, grouped quantitative data

Reference: Page 30

11) When constructing a frequency distribution with grouped qualitative data, occasionally you will end up with k + 1 or k - 1 classes to cover the entire data set.

Answer: TRUE

Diff: 1

Keywords: frequency distribution, grouped quantitative data

Reference: Page 31

12) Fifty employees at CSC Corporation responded to a survey asking for the number of minutes they commute to work in the morning. Eighteen employees indicated that their commutes are 15 to less than 20 minutes. The relative frequency for this class in a frequency distribution would be 0.18.

Answer: FALSE

Diff: 1

Keywords: frequency distribution, grouped quantitative data

Reference: Page 31

13) Fifty employees at CSC Corporation responded to a survey asking for the number of minutes they commute to work in the morning. Management would like to know the proportion of employees whose commute is less than 30 minutes. A cumulative relative frequency distribution using grouped data would provide the information to answer this question.

Answer: TRUE

Diff: 1

Keywords: cumulative relative frequency distributions

14) A fast food restaurant would like to examine the wait time for customers who use the drive-thru window. The following class boundaries are appropriate to construct a frequency distribution for this data.

Number of Minutes	
0-2	
2-4	
4-6	
6-8	

Answer: FALSE

Diff: 2

Keywords: frequency distribution, grouped quantitative data

Reference: Page 31

15) Equal-size classes refer to classes for a frequency distribution using grouped quantitative data that do not overlap.

Answer: FALSE

Diff: 1

Keywords: frequency distribution, grouped quantitative data

Reference: Page 32

16) Empty classes for a frequency distribution using grouped quantitative data result from class widths that are too wide.

Answer: FALSE

Diff: 1

Keywords: frequency distribution, grouped quantitative data

Reference: Page 32

17) If the class sizes are not equal for a frequency distribution using grouped quantitative data, patterns in the distribution could be misleading.

Answer: TRUE

Diff: 1

Keywords: frequency distribution, grouped quantitative data

Reference: Page 32

18) Under no circumstances should open-ended classes be used for a frequency distribution using grouped quantitative data.

Answer: FALSE

Diff: 1

Keywords: frequency distribution, grouped quantitative data

Reference: Page 32

19) The estimated class width for a frequency distribution using grouped quantitative data should be rounded to an integer value to make the class boundaries more readable.

Answer: TRUE

Diff: 1

Keywords: frequency distribution, grouped quantitative data

20) Histograms displaying continuous data have gaps between their bars.

Answer: FALSE

Diff: 1

Keywords: histograms, continuous data

Reference: Page 32

21) Histograms displaying discrete data usually have gaps between their bars.

Answer: TRUE

Diff: 1

Keywords: histograms, continuous data

Reference: Page 32

22) Income and age are examples of data that are technically discrete but are normally displayed in a continuous

format.

Answer: TRUE

Diff: 1

Keywords: discrete data, continuous data

Reference: Page 36

23) The cumulative percentage polygon is a line graph that plots the cumulative relative frequency distribution.

Answer: TRUE

Diff: 1

Keywords: cumulative percentage polygon

Reference: Page 37

24) Quantitative data are values that are categorical, describing a characteristic such as gender or level of

education.

Answer: FALSE

Diff: 1

Keywords: cumulative percentage polygon

Reference: Page 37

25) A histogram is the appropriate type of graph to display both quantitative and qualitative data.

Answer: FALSE

Diff: 1

Keywords: qualitative data

Reference: Page 45

26) Bar charts can display data either horizontally or vertically.

Answer: TRUE

Diff: 1

Keywords: bar charts Reference: Page 43

27) Clustered bar charts are preferred over stacked bar charts when you are comparing data within categories, such as which team scored more points in 2009 when compared to 2010.

Answer: TRUE

Diff: 1

Keywords: clustered bar charts

28) Clustered bar charts are preferred over stacked bar charts when you are displaying totals in each category, such as what team scored the most points over the two-year period.

Answer: FALSE

Diff: 1

Keywords: stacked bar charts

Reference: Page 47

29) Pareto charts are a specific type of bar chart used in quality control programs by businesses to graphically display the causes of problems.

Answer: TRUE

Diff: 1

Keywords: Pareto charts Reference: Page 48

30) Pareto charts display the categories in an increasing order with the least problematic categories shown first.

Answer: FALSE

Diff: 2

Keywords: Pareto charts Reference: Page 48

31) Pie charts are an excellent tool for comparing proportions for qualitative (categorical) data.

Answer: TRUE

Diff: 1

Keywords: pie charts Reference: Page 51

32) Each category of a pie chart occupies a segment of the pie that represents the cumulative relative frequency of that category.

Answer: FALSE

Diff: 1

Keywords: pie charts Reference: Page 51

33) When constructing a pie chart, all categories in the data set must be included in the pie.

Answer: TRUE

Diff: 1

Keywords: pie charts Reference: Page 52

34) Choose a pie chart rather than a bar chart if you want to compare the relative sizes of the classes to one another and together they comprise all possible categories.

Answer: TRUE

Diff: 1

Keywords: pie charts Reference: Page 53 35) Choose a pie chart rather than a bar chart if you want to highlight the actual data values and when the classes combined don't form a whole.

Answer: FALSE

Diff: 1

Keywords: pie charts Reference: Page 53

36) Contingency tables help us identify relationships between two or more variables.

Answer: TRUE

Diff: 1

Keywords: contingency tables

Reference: Page 56

37) The stem and leaf display is a graphical technique that can used to display qualitative data.

Answer: FALSE

Diff: 1

Keywords: stem and leaf display

Reference: Page 60

38) A stem and leaf display allows you to observe individual data values while a histogram groups data values

together.

Answer: TRUE

Diff: 1

Keywords: stem and leaf display

Reference: Page 60

39) The dependent variable on scatter plots is placed on the horizontal axis on the graph.

Answer: FALSE

Diff: 2

Keywords: scatter plot, independent variable

Reference: Page 64

40) The independent variable on scatter plots is placed on the vertical axis on the graph.

Answer: FALSE

Diff: 2

Keywords: scatter plot, independent variable

Reference: Page 64

41) The dependent variable in a scatter plot is influenced by changes in the independent variable.

Answer: TRUE

Diff: 2

Keywords: scatter plot, independent variable, dependent variable

Reference: Page 63

42) A data set is known as a times series when each data point is associated with a specific point in time.

Answer: TRUE

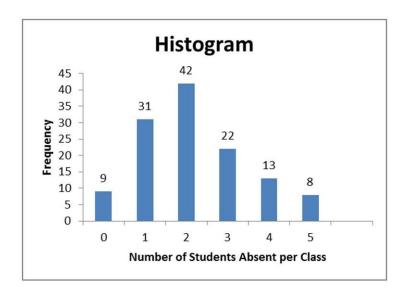
Diff: 1

Keywords: time series Reference: Page 65

43) When graphing a time series, the convention is to place the time data on the vertical axis of the graph.
Answer: FALSE
Diff: 2
Keywords: time series
Reference: Page 65
Treference: 1 uge of
44) A is a table that shows the number of data observations that fall into specific intervals.
-
A) histogram
B) frequency distribution
C) percent polygon
D) Pareto chart
Answer: B
Diff: 1
Keywords: frequency distribution
Reference: Page 22
Reference. 1 age 22
data are values based on observations that can be counted and are typically represented by values
45) data are values based on observations that can be counted and are typically represented by whole
numbers.
A) Discrete
B) Continuous
C) Nominal
D) Time series
Answer: A
Diff: 1
Keywords: frequency distribution
Reference: Page 24
46) are values that can take on any real numbers, including numbers that contain decimal
points. This data is often the result of measuring observations rather than counting them.
A) Discrete
B) Cross-sectional
C) Ordinal
D) Continuous
Answer: D
Diff: 1
Keywords: continuous data
Reference: Page 24
47) A(n) is a category in a frequency distribution.
A) polygon
B) ogive
C) class
D) histogram
Answer: C
Diff: 1
Keywords: class
Reference: Page 24

48) display the proportion of observations of each class relative to the total number of
observations.
A) Frequency distributions
B) Cumulative relative frequency distributions
C) Relative frequency distributions
D) Histograms
Answer: C
Diff: 1
Keywords: relative frequency distributions
Reference: Page 25
49) totals the proportion of observations that are less than or equal to the class at which you are looking.
A) Frequency distributions
B) Cumulative relative frequency distributions
C) Relative frequency distributions
D) Histograms
Answer: B
Diff: 1
Keywords: cumulative relative frequency distributions
Reference: Page 25
50) A is a graph showing the number of observations in each class of a frequency distribution. A) frequency distribution B) relyear
B) polygon C) relative frequency distribution
C) relative frequency distribution
D) histogram Answer: D
Diff: 1
Keywords: histogram
Reference: Page 26
1010101100. 1 450 20

51) A statistics professor kept attendance records and recorded the number of absent students per class. This data is displayed in the following histogram with the frequency of each number of absent students shown above the bars.



How many total absent students does this data represent?

A) 42

B) 100

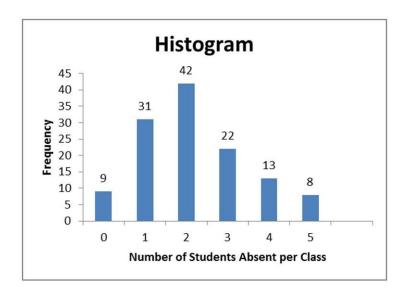
C) 125

D) 160

Answer: C

Diff: 2

Keywords: histogram Reference: Page 26 52) A statistics professor kept attendance records and recorded the number of absent students per class. This data is displayed in the following histogram with the frequency of each number of absent students shown above the bars.



How many statistics classes had three or more students absent?

A) 8

B) 13

C) 22

D) 43

Answer: D Diff: 2

Keywords: histogram Reference: Page 26

53) The class _____ is the breadth, or range, of numbers we plan to put into each class of a frequency distribution using grouped quantitative data.

A) boundary

B) frequency

C) width

Diff: 1

D) number

Answer: C

Keywords: class width, frequency distribution, grouped data

54) The class represent the minimum and maximum values for each class of a frequency distribution using grouped quantitative data. A) boundaries B) frequencies C) widths D) numbers Answer: A Diff: 1 Keywords: class boundary, frequency distribution, grouped data Reference: Page 31
55) Class are the number of observations for each class of a frequency distribution using grouped quantitative data. A) boundaries B) frequencies C) widths D) numbers
Answer: B Diff: 1
Keywords: class frequency, frequency distribution, grouped data Reference: Page 31
56) Which of the following is not a rule for constructing a frequency distribution using grouped quantitative data?
A) Use equal-size classes.
B) Use mutually exclusive classes.
C) Avoid empty classes.
D) Avoid close-ended classes.
Answer: D Diff: 1
Keywords: frequency distribution, grouped data
Reference: Page 32
57) Consider the following frequency distribution.
NII

Number of Minutes	Frequency
0 to less than 5	6
5 to less than 10	9
8 to less than 13	14
13 to less than 18	2

Which rule for constructing a frequency distribution using grouped quantitative data has been violated?

- A) Use equal-size classes.
- B) Use mutually exclusive classes.
- C) Avoid empty classes.
- D) No rule has been violated.

Answer: B Diff: 1

Keywords: frequency distribution, grouped data

58) Consider the following frequency distribution.

Number of Minutes	Frequency
0 to less than 5	3
5 to less than 10	11
10 to less than 15	10
15 to less than 20	7

Which rule for constructing a frequency distribution using grouped quantitative data has been violated?

- A) Use equal-size classes.
- B) Use mutually exclusive classes.
- C) Avoid empty classes.
- D) No rule has been violated.

Answer: D Diff: 1

Keywords: frequency distribution, grouped data

Reference: Page 32

59) Consider the following frequency distribution.

Number of Customers	Frequency
0-2	10
3-5	7
6-10	12
11-15	5

Which rule for constructing a frequency distribution using grouped quantitative data has been violated?

- A) Use equal-size classes.
- B) Use mutually exclusive classes.
- C) Avoid empty classes.
- D) No rule has been violated.

Answer: A Diff: 1

Keywords: frequency distribution, grouped data

Reference: Page 32

60) A data set has 60 observations with a minimum value equal to 30 and a maximum value equal to 72. The number of classes using the $2^k > n$ rule is

A) 5.B) 6.

C) 7.

D) 8.

Answer: B

Keywords: frequency distribution, grouped data

61) A data set has 60 observations with a minimum value equal to 30 and a maximum value equal to 72. The
estimated class width using the $2^k > n$ rule to determine the number of classes is
A) 7.
B) 9.
C) 10.
D) 12.
Answer: A
Diff: 1

Keywords: frequency distribution, grouped data

Reference: Page 32

62) _____ classes are classes with boundaries that do not overlap.

- A) Equal-size
- B) Open-ended
- C) Mutually exclusive
- D) Close-ended Answer: C

Diff: 1

Keywords: frequency distribution, grouped data

Reference: Page 32

63) The following frequency distribution displays the weekly sales of a certain brand of television at an electronics store.

Number Sold	Frequency
1-5	3
6-10	7
11-15	14
16-20	22
21-25	4

What is the width of each class in this distribution?

- A) 1
- B) 2
- C) 5
- D) 25

Answer: C Diff: 1

Keywords: frequency distribution, grouped data

64) The following frequency distribution displays the weekly sales of a certain brand of television at an electronics store.

Number Sold	Frequency
1-5	3
6-10	7
11-15	14
16-20	22
21-25	4

How many weeks of data are included in this frequency distribution?

A) 25

B) 50

C) 75

D) 100

Answer: B Diff: 1

Keywords: frequency distribution, grouped data

Reference: Page 32

65) The following frequency distribution displays the weekly sales of a certain brand of television at an electronics store.

Number Sold	Frequency
1-5	3
6-10	7
11-15	14
16-20	22
21-25	4

What is the probability that between 11 to 15 televisions will be sold next week?

A) 0.28

B) 0.36

C) 0.44

D) 0.50 Answer: A Diff: 1

Keywords: frequency distribution, grouped data

66) The following frequency distribution displays the weekly sales of a certain brand of television at an electronics store.

Number Sold	Frequency
1-5	3
6-10	7
11-15	14
16-20	22
21-25	4

What is the probability that 20 or fewer televisions will be sold next week?

A) 0.54

B) 0.66

C) 0.80

D) 0.92

Answer: D Diff: 1

Keywords: frequency distribution, grouped data

Reference: Page 32

67) The following frequency distribution displays the weekly sales of a certain brand of television at an electronics store.

Number Sold	Frequency
1-5	3
6-10	7
11-15	14
16-20	22
21-25	4

What is the probability that between 6 and 15 televisions will be sold next week?

A) 0.14

B) 0.42

C) 0.58

D) 0.66 Answer: B Diff: 1

Keywords: frequency distribution, grouped data

68) The following distribution shows the frequency of the asking price, in thousands of dollars, for current homes on the market in a particular city.

Asking Price	Frequency
\$350 to under \$400	12
\$400 to under \$450	9
\$450 to under \$500	17
\$500 to under \$550	11
\$550 to under \$600	6

What is the width of each class, in thousands of dollars, for this distribution?

A) \$10

B) \$20

C) \$40

D) \$50 Answer

Answer: D Diff: 1

Keywords: frequency distribution, grouped data

Reference: Page 32

69) The following distribution shows the frequency of the asking price, in thousands of dollars, for current homes on the market in a particular city.

Asking Price	Frequency
\$350 to under \$400	12
\$400 to under \$450	9
\$450 to under \$500	17
\$500 to under \$550	11
\$550 to under \$600	6

How many homes are currently on the market in this city?

A) 55

B) 50

C) 32

D) 17

Answer: A Diff: 1

Keywords: frequency distribution, grouped data

70) The following distribution shows the frequency of the asking price, in thousands of dollars, for current homes on the market in a particular city.

Asking Price	Frequency
\$350 to under \$400	12
\$400 to under \$450	9
\$450 to under \$500	17
\$500 to under \$550	11
\$550 to under \$600	6

What is the probability that a randomly selected home in this city will have an asking price between \$350,000 and under \$400,000?

A) 0.164

B) 0.218

C) 0.309

D) 0.333 Answer: B Diff: 1

Keywords: frequency distribution, grouped data

Reference: Page 32

71) The following distribution shows the frequency of the asking price, in thousands of dollars, for current homes on the market in a particular city.

Asking Price	Frequency
\$350 to under \$400	12
\$400 to under \$450	9
\$450 to under \$500	17
\$500 to under \$550	11
\$550 to under \$600	6

What is the probability that a randomly selected home in this city will have an asking price under \$550,000?

A) 0.505

B) 0.691

C) 0.891

D) 0.950

Answer: C Diff: 1

Keywords: frequency distribution, grouped data

72) The following distribution shows the frequency of the asking price, in thousands of dollars, for current homes on the market in a particular city.

Asking Price	Frequency
\$350 to under \$400	12
\$400 to under \$450	9
\$450 to under \$500	17
\$500 to under \$550	11
\$550 to under \$600	6

What is the probability that a randomly selected home in this city will have an asking price of \$500,000 or more?

A) 0.309

B) 0.657

C) 0.891

D) 0.914 Answer: A

Diff: 1

Keywords: frequency distribution, grouped data

Reference: Page 32

- 73) Bins in Excel represent the
- A) lower boundary of each class in a frequency distribution.
- B) upper boundary of each class in a frequency distribution.
- C) width of each class in a frequency distribution.
- D) number of classes in a frequency distribution.

Answer: B Diff: 1

Keywords: frequency distribution, grouped data, bins

Reference: Page 35

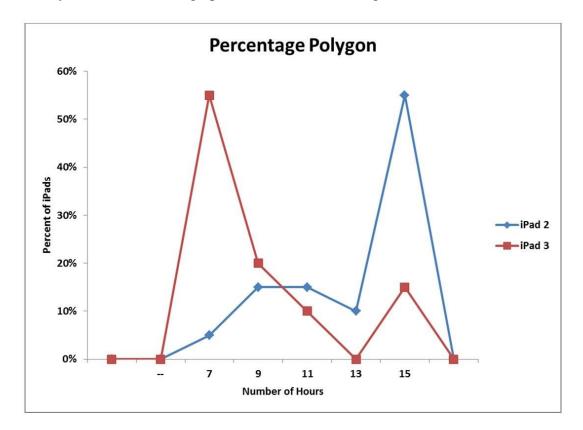
- 74) When you want to compare the shape of two or more distributions on one graph, a _____ is your best choice
- A) frequency distribution
- B) histogram
- C) percentage polygon
- D) relative frequency distribution

Answer: C Diff: 1

Keywords: percentage polygon

75) The	graphs the midpoint of each class as a line rather than a column.
A) bar chart	
B) histogram	
C) scatter plot	
D) percentage poly	ygon
Answer: D	
Diff: 1	
Keywords: percer	ntage polygon
Reference: Page 3	36
76) The	is a line graph that plots the cumulative relative frequency distribution.
76) TheA) ogive	is a line graph that plots the cumulative relative frequency distribution.
	is a line graph that plots the cumulative relative frequency distribution.
A) ogive	is a line graph that plots the cumulative relative frequency distribution.
A) ogiveB) histogram	
A) ogiveB) histogramC) scatter plot	
A) ogiveB) histogramC) scatter plotD) percentage poly	
A) ogiveB) histogramC) scatter plotD) percentage polyAnswer: A	

77) The following graph is a percent polygon showing the battery life, in hours, for a sample of iPad 2s and iPad 3s. The diamond markers represent the iPad 2 battery life while the square markers represent the iPad 3 battery life. Based on this graph, which of the following statements is true?

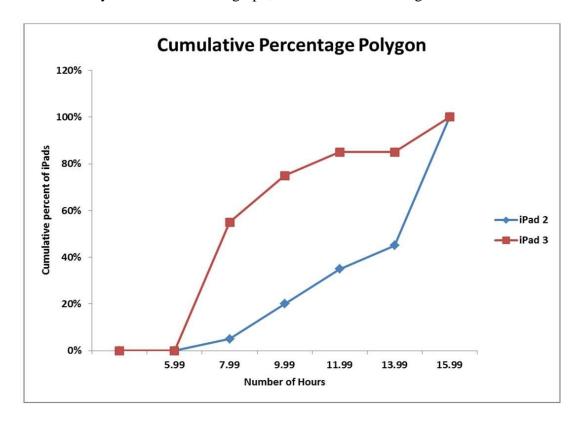


- A) The battery life of the iPad 3 tends to be longer than the battery life of the iPad 2.
- B) The battery life of the iPad 3 tends to be about the same as the battery life of the iPad 2.
- C) The battery life of the iPad 2 tends to be longer than the battery life of the iPad 3.
- D) The difference in battery life between the iPad 2 and iPad 3 cannot be detected with this graph.

Answer: C Diff: 2

Keywords: percent polygon

78) The following graph is a cumulative percent polygon showing the battery life, in hours, for a sample of iPad 2s and iPad 3s. The diamond markers represent the iPad 2 battery life while the square markers represent the iPad 3 battery life. Based on this graph, which of the following statements is true?

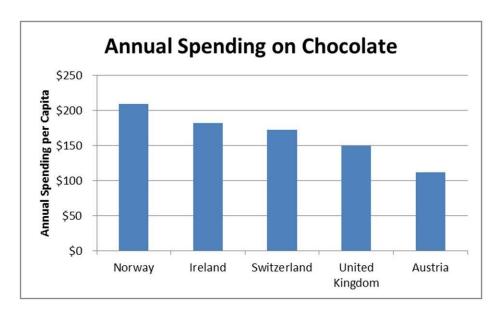


- A) Approximately 20% of the iPad 2 batteries lasted more than 10 hours.
- B) Approximately 20% of the iPad 2 batteries lasted less than 10 hours.
- C) Approximately 60% of the iPad 3 batteries lasted more than 8 hours.
- D) Approximately 80% of the iPad 3 batteries lasted less than 8 hours.

Answer: B Diff: 2

Keywords: percent polygon

79) The following chart shows the annual spending per person on chocolate in 2011.



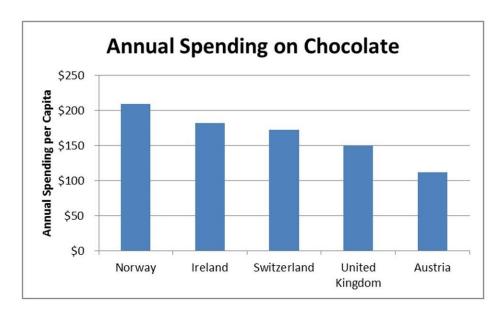
This chart is an example of a

- A) horizontal bar chart.
- B) stacked bar chart.
- C) clustered bar chart.
- D) vertical bar chart.

Answer: D Diff: 1

Keywords: vertical bar charts

80) The following chart shows the annual spending per person on chocolate in 2011.



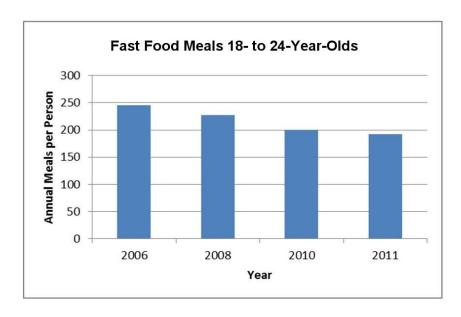
Which of the following statements is **not** correct?

- A) Norway has the largest spending per capital on chocolate in 2011.
- B) The United Kingdom has more spending per capita than Ireland on chocolate in 2011.
- C) Austria has the lowest spending per capital on chocolate in 2011.
- D) Ireland has less spending per capita than Norway on chocolate in 2011.

Answer: B Diff: 1

Keywords: vertical bar charts

81) The following chart shows the average number of fast food meals consumed per year by 18- to 24-year-olds.



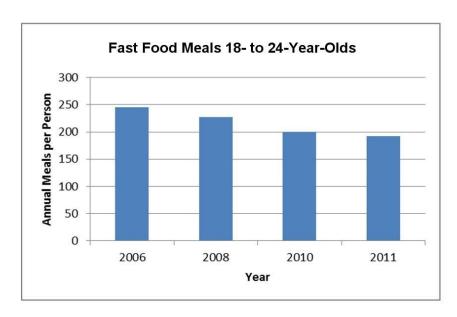
This chart is an example of a

- A) horizontal bar chart.
- B) vertical bar chart.
- C) stacked bar chart.
- D) Pareto chart.

Answer: B Diff: 1

Keywords: vertical bar charts

82) The following chart shows the average number of fast food meals consumed per year by 18- to 24-year-olds.



Which of the following statements is **not** correct?

- A) The average number of meals consumed per person has decreased over time.
- B) The lowest average number of meals consumed per person occurred in 2011.
- C) The highest average number of meals consumed per person occurred in 2011.
- D) The highest average number of meals consumed per person occurred in 2006.

Answer: C Diff: 1

Keywords: vertical bar charts

83) The following chart shows the average market price for five brands of cars in March 2012.



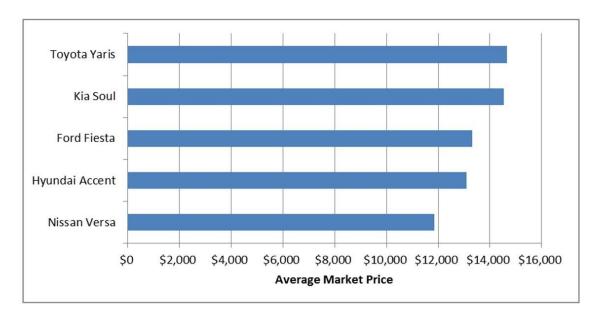
This chart is an example of a

- A) horizontal bar chart.
- B) stacked bar chart.
- C) clustered bar chart.
- D) vertical bar chart.

Answer: A Diff: 1

Keywords: horizontal bar charts

84) The following chart shows the average market price for five brands of cars in March 2012.



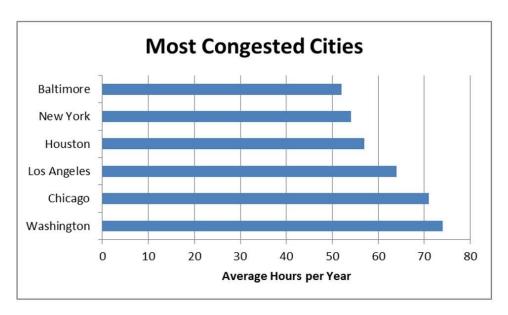
Which of the following statements is **not** correct?

- A) The Nissan Versa has the lowest average market value.
- B) The Kia Soul has a higher average market price than the Ford Fiesta.
- C) The Hyundai Accent has a lower average market price than the Toyota Yaris.
- D) The Hyundai Accent has a lower average market price than the Nissan Versa.

Answer: D Diff: 1

Keywords: vertical bar charts

85) The following chart shows the average number of hours commuters spend in traffic delays per year at the six most congested cities in the U.S.



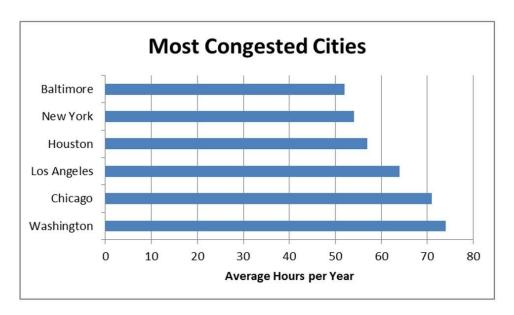
This chart is an example of a

- A) stacked bar chart.
- B) horizontal bar chart.
- C) Pareto chart.
- D) vertical bar chart.

Answer: B Diff: 1

Keywords: horizontal bar charts

86) The following chart shows the average number of hours commuters spend in traffic delays per year at the six most congested cities in the U.S.



Which of the following statements is **not** correct?

- A) Chicago commuters have the highest average number of hours spent per year in traffic delays.
- B) Baltimore commuters have the lowest average number of hours spent per year in traffic delays.
- C) Houston commuters have a higher average number of hours spent per year in traffic delays when compared to New York commuters.
- D) Los Angeles commuters have a lower average number of hours spent per year in traffic delays when compared to Washington commuters.

Answer: A Diff: 1

Keywords: vertical bar charts

Reference: Page 45

- 87) _____ group several values side by side within the same category in a vertical direction.
- A) Stacked bar charts
- B) Clustered bar charts
- C) Pie charts
- D) Scatter plots

Answer: B Diff: 1

Keywords: clustered bar charts

88) group several values in a single column within the same category in a vertical direction. A) Stacked bar charts B) Clustered bar charts C) Pie charts D) Scatter plots Answer: A Diff: 1 Keywords: stacked bar charts Reference: Page 47
89) are a specific type of bar chart used in quality control programs by businesses to graphically display the causes of problems. A) Stacked bar charts B) Clustered bar charts C) Pie charts
D) Pareto charts Answer: D
Diff: 1 Keywords: Pareto charts Reference: Page 48
90) Pareto charts also plot the cumulative relative frequency as a line on the chart. This line is known as a(n) A) scatter plot. B) ogive. C) histogram. D) frequency distribution. Answer: B Diff: 1 Keywords: Pareto charts, ogive Reference: Page 48
91) Use a chart if you want to compare the relative sizes of the classes in a frequency distribution and together they comprise all possible categories. A) horizontal bar B) vertical bar C) Pareto D) pie
Answer: D Diff: 1 Keywords: pie charts Reference: Page 53

92) The following table shows the percentage of e-mails that are sent each day of the business week according to an Intermedia survey.

Day	Percentage
Monday	15%
Tuesday	23%
Wednesday	22%
Thursday	21%
Friday	19%

Which of the following best displays this data?

- A) horizontal bar chart
- B) vertical bar chart
- C) pie chartD) histogram

Answer: C Diff: 1

Keywords: pie charts Reference: Page 53

93) The following table shows the percentage of U.S. energy consumption according to sources in 2009.

Source	Percentage
Petroleum	37%
Natural Gas	25%
Coal	21%
Nuclear	9%
All renewable	8%

Which of the following best displays this data?

- A) horizontal bar chart
- B) vertical bar chart
- C) pie chart
- D) histogram Answer: C

Diff: 1

Keywords: pie charts Reference: Page 53

- 94) _____ provide a format to display observations that have more than one value associated with them.
- A) Histograms
- B) Contingency tables
- C) Frequency distributions
- D) Pie charts Answer: B Diff: 1

Keywords: contingency tables

- 95) In Excel, contingency tables are known as
- A) pivot tables.
- B) bins.
- C) frequency distributions.
- D) bar charts. Answer: A Diff: 1

Keywords: contingency tables

Reference: Page 57

96) Porter Automotive is a car dealership that sells Buicks and Hondas. The following data shows the number of buyers this month according to the brand of car they purchased as well as their age group.

Age	Buick	Honda
Under 40 years old	6	9
40 years or older	17	11

This data is an example of a

- A) histogram.
- B) contingency table.
- C) relative frequency distribution.
- D) stem and leaf diagram.

Answer: B Diff: 1

Keywords: contingency tables

Reference: Page 56

- 97) A stem and leaf display most resembles a
- A) histogram.
- B) contingency table.
- C) relative frequency distribution.
- D) pie chart. Answer: A Diff: 1

Keywords: stem and leaf display

98) Consider the following stem and leaf display.

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

Which data value occurs most often?

A) 1 B) 5 C) 31 D) 59 Answer: C

Answer: C Diff: 1

Keywords: stem and leaf display

Reference: Page 61

99) Consider the following stem and leaf display.

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

Which of the following statements is correct?

- A) There are a total of 10 data values in this data set.
- B) The data value that occurs most often is 50.
- C) This largest data value is 59.
- D) The class 50-59 contains the most values.

Answer: D Diff: 1

Keywords: stem and leaf display

100) Consider the following stem and leaf display.
1(0) 2 4 4 1(5) 6 6 7 8 2(0) 0 0 1 1 1 2 2 2(5) 5 5 7 8 3(0) 0 1 3 4
Which data value occurs most often? A) 1 B) 21 C) 22 D) 200 Answer: B Diff: 1 Keywords: stem and leaf display Reference: Page 61
101) Consider the following stem and leaf display.
1(0) 2 4 4 1(5) 6 6 7 8 2(0) 0 0 1 1 1 2 2 2(5) 5 5 7 8 3(0) 0 1 3 4
Which of the following statements is correct? A) There are a total of 10 data values in this data set. B) The data value that occurs most often is 22. C) This largest data value is 34. D) The class 15-19 contains the most values. Answer: C Diff: 1 Keywords: stem and leaf display Reference: Page 61
102) provide a picture of the relationship between two data points that are paired together. A) Scatter plots B) Pareto charts C) Histograms D) Pie charts Answer: A Diff: 1 Keywords: scatter plots Reference: Page 61

103) A ______ is a special type of scatter plot in which the data points in the scatter plot are connected with a line.

A) bar chart

B) Pareto chart

C) line chart

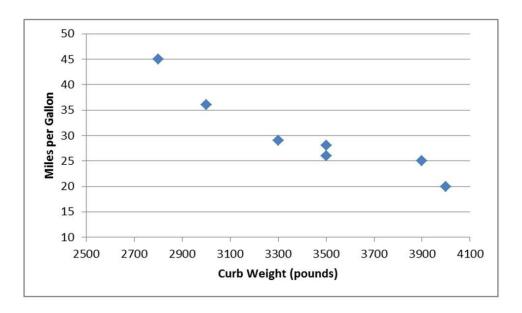
D) pie chart

Answer: C Diff: 1

Keywords: scatter plot, line chart

Reference: Page 64

104) The following graph shows the curb weight of seven cars, in pounds, along with their corresponding highway miles per gallon.



This graph is an example of a

A) line chart.

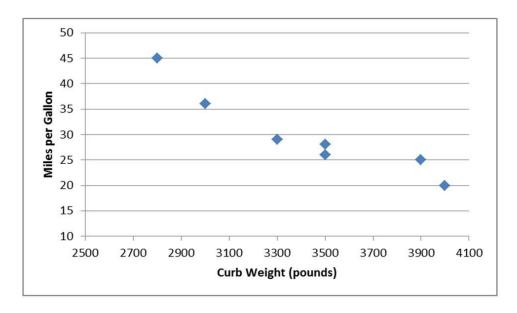
B) scatter plot.

C) Pareto chart.

D) histogram.

Answer: B Diff: 1

Keywords: scatter plots Reference: Page 64 105) The following graph shows the curb weight of seven cars, in pounds, along with their corresponding highway miles per gallon.

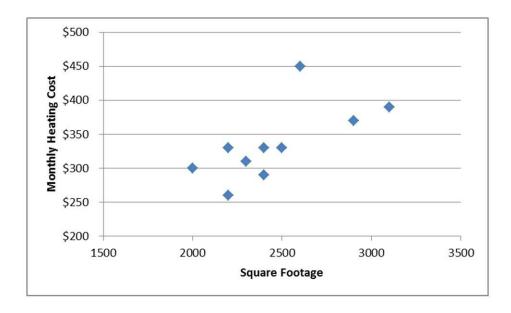


Which one of the following statements is correct?

- A) Curb weight is the dependent variable in the graph.
- B) Miles per gallon is the independent variable in the graph.
- C) As the curb weight increases, the highway miles per gallon tend to decrease.
- D) As the curb weight increases, the highway miles per gallon tend to increase.

Answer: C Diff: 1

Keywords: scatter plots Reference: Page 64 106) The following graph shows the square footage of 10 homes along with their corresponding heating cost for the most recent month.



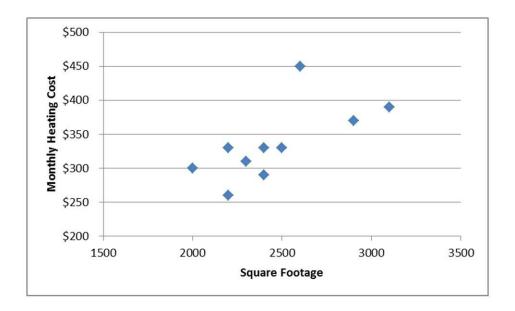
This graph is an example of a

- A) line chart.
- B) horizontal bar chart.
- C) Pareto chart.
- D) scatter plot.

Answer: D

Diff: 1

Keywords: scatter plots Reference: Page 64 107) The following graph shows the square footage of 10 homes along with their corresponding heating cost for the most recent month.

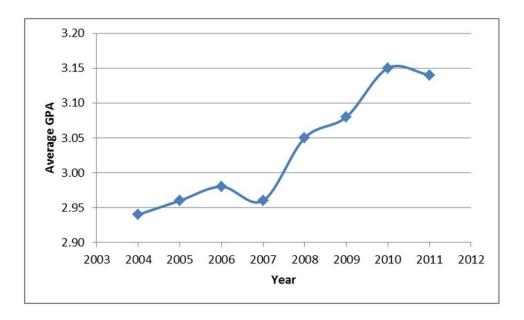


Which one of the following statements is **not** correct?

- A) Monthly heating cost is the dependent variable in the graph.
- B) Square footage is the independent variable in the graph.
- C) As the square footage of the home increases, the monthly heating cost tends to increase.
- D) As the square footage of the home increases, the monthly heating cost tends to decrease.

Answer: D Diff: 1

Keywords: scatter plots Reference: Page 64 108) The following graph shows the average grade point average for a particular college from 2004 until 2011.



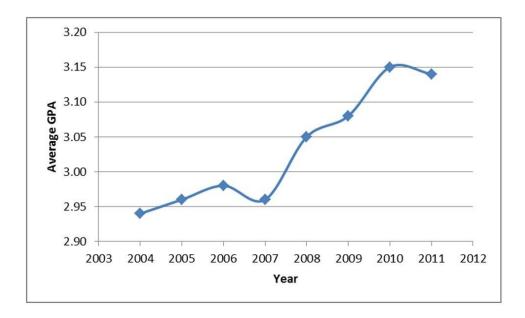
This graph is an example of a

- A) line chart.
- B) vertical bar chart.
- C) Pareto chart.
- D) histogram.

Answer: A

Diff: 1

109) The following graph shows the average grade point average for a particular college from 2004 until 2011.

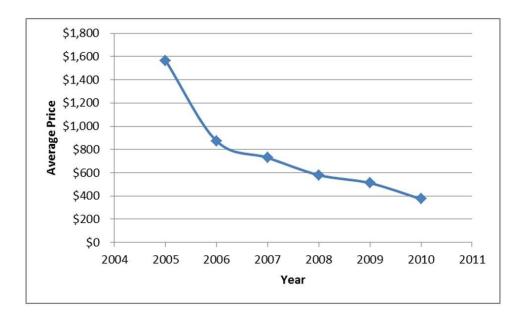


Which one of the following statements is correct?

- A) Average GPA is the dependent variable in the graph.
- B) Year is the dependent variable in the graph.
- C) Historically, the Average GPA of the college tends to decrease.
- D) There appears to be no relationship between Year and Average GPA.

Answer: A Diff: 1

110) The following graph shows the average price of LCD TVs from 2005 until 2010.



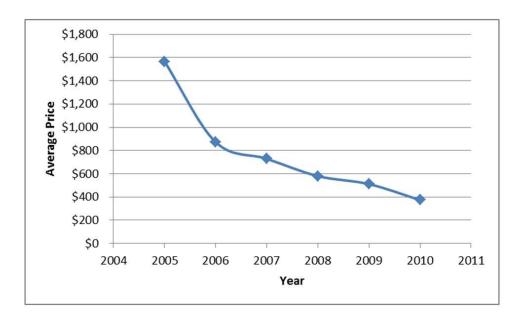
This graph is an example of a

- A) histogram.
- B) vertical bar chart.
- C) Pareto chart.
- D) line chart.

Answer: D

Diff: 1

111) The following graph shows the average price of LCD TVs from 2005 until 2010.



Which one of the following statements is correct?

- A) Year is the dependent variable in the graph.
- B) Average Price is the independent variable in the graph.
- C) Historically, the average price of LCD TVs tends to increase.
- D) Historically, the average price of LCD TVs tends to decrease.

Answer: D Diff: 1

Keywords: scatter plots Reference: Page 64

112) The following data shows the number of students that came to office hours per day for a particular faculty member.

0	0	0	0	0	0	0	0	0	0	1	1	1
1	1	1	1	2	2	2	2	3	3	3	4	

Construct a frequency distribution for this data.

Answer:

Number of Students	Frequency
0	10
1	7
2	4
3	3
4	1
Total	25

Diff: 1

Keywords: frequency distribution

113) The following data shows the number of students that came to office hours per day for a particular faculty member.

0	0	0	0	0	0	0	0	0	0	1	1	1
1	1	1	1	2	2	2	2	3	3	3	4	

Construct a relative frequency distribution for this data and determine the probability that one student will come to office hours today.

Answer:

Number of		Relative
Students	Frequency	Frequency
0	10	0.40
1	7	0.28
2	4	0.16
3	3	0.12
4	1	0.04
Total	25	1.00

P(x = 1) = 0.28

Diff: 1

Keywords: relative frequency distributions

Reference: Page 23

114) The following data shows the number of students that came to office hours per day for a particular faculty member.

0	0	0	0	0	0	0	0	0	0	1	1	1
1	1	1	1	2	2	2	2	3	3	3	4	

Construct a cumulative relative frequency distribution for this data and determine the probability that fewer than three students will come to office hours today.

Answer:

			Cumulative
Number of		Relative	Relative
Students	Frequency	Frequency	Frequency
0	10	0.40	0.40
1	7	0.28	0.68
2	4	0.16	0.84
3	3	0.12	0.96
4	1	0.04	1.00
Total	25	1.00	

P(x < 3) = 0.84

Diff: 1

Keywords: cumulative relative frequency distributions

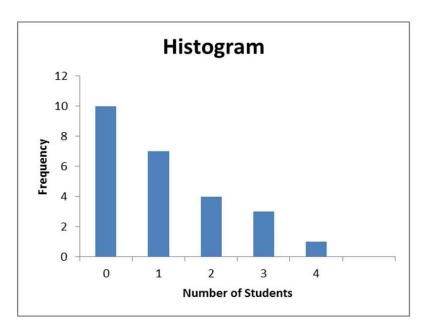
115) The following data shows the number of students that came to office hours per day for a particular faculty member.

0	0	0	0	0	0	0	0	0	0	1	1	1
1	1	1	1	2	2	2	2	3	3	3	4	

Construct a histogram for this data.

Answer:

Number of Students	Frequency
0	10
1	7
2	4
3	3
4	1
Total	25



Diff: 1

Keywords: frequency distribution

116) The following data show the number of pairs of men's New Balance sneakers that were sold over the last 25 weeks at a discount shoe store.

Construct a frequency distribution for this data.

Answer: Set k = 5 because 25 = 32 > 25.

Estimated Class Width = $\frac{24 - 1}{5}$ = 4.6 \approx 5

Number of Pairs	Frequency
1-5	2
6-10	5
11-15	9
16-20	6
21-25	3
Total	25

Diff: 1

Keywords: frequency distribution, grouped data

Reference: Page 32

117) The following data show the number of pairs of men's New Balance sneakers that were sold over the last 25 weeks at a discount shoe store.

Construct a relative frequency distribution for this data and determine the probability that between 6 to 10 pairs of New Balance shoes will be sold next week.

Answer: Set k = 5 because 25 = 32 > 25.

Estimated Class Width = $\frac{24 - 1}{5}$ = 4.6 \approx 5

		Relative
Number of Pairs	Frequency	Frequency
1-5	2	0.08
6-10	5	0.20
11-15	9	0.36
16-20	6	0.24
21-25	3	0.12
Total	25	1.00

 $P(6 \le x \le 10) = 0.20$

Diff: 1

Keywords: relative frequency distribution, grouped data

118) The following data show the number of pairs of men's New Balance sneakers that were sold over the last 25 weeks at a discount shoe store.

1	4	6	6	8	8	9	11	11	11	12	12	14
14	14	15	17	17	17	19	19	20	21	24	24	

Construct a cumulative relative frequency distribution for this data and determine the probability that 15 or fewer pairs of New Balance shoes will be sold next week.

Answer: Set k = 5 because 25 = 32 > 25.

Estimated Class Width = $\frac{24-1}{5}$ = 4.6 \approx 5

		Relative	Cumulative Relative
Number of Pairs	Frequency	Frequency	Frequency
1-5	2	0.08	0.08
6-10	5	0.20	0.28
11-15	9	0.36	0.64
16-20	6	0.24	0.88
21-25	3	0.12	1.00
Total	25	1.00	

 $P(x \le 15) = 0.64$

Diff: 1

Keywords: relative frequency distribution, grouped data

119) The following data show the number of pairs of men's New Balance sneakers that were sold over the last 25 weeks at a discount shoe store.

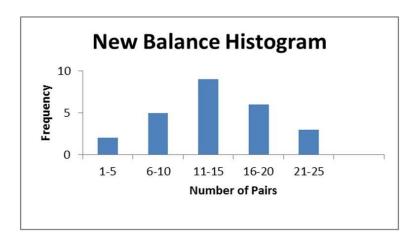
1	4	6	6	8	8	9	11	11	11	12	12	14
14	14	15	17	17	17	19	19	20	21	24	24	

Construct a histogram for this data.

Answer: Set k = 5 because 25 = 32 > 25.

Estimated Class Width =
$$\frac{24-1}{5}$$
 = 4.6 \approx 5

Number of Pairs	Frequency
1-5	2
6-10	5
11-15	9
16-20	6
21-25	3
Total	25



Diff: 1

Keywords: relative frequency distribution, grouped data

120) The following data show the monthly rental for a random sample of one-bedroom apartments in York, Pennsylvania.

\$660 \$600 \$615 \$660 \$675 \$680 \$690 \$700 \$720 \$725 \$775 \$775 \$780 \$780 \$755 \$760 \$780 \$785 \$810 \$840

Construct a frequency distribution for this data.

Answer: Set k = 5 because 25 = 32 > 20

Estimated Class Width = $\frac{\$840 - \$600}{5}$ = $\$48 \approx \50

Monthly Rent	Frequency
\$600 to under \$650	2
\$650 to under \$700	5
\$700 to under \$750	3
\$750 to under \$800	8
\$800 to under \$850	2
Total	20

Diff: 1

Keywords: frequency distribution, grouped data

Reference: Page 32

121) The following data show the monthly rental for a random sample of one-bedroom apartments in York, Pennsylvania.

\$600 \$675 \$615 \$660 \$660 \$680 \$690 \$700 \$720 \$725 \$755 \$775 \$775 \$780 \$780 \$780 \$785 \$810 \$840 \$760

Construct a relative frequency distribution for this data and determine the probability a randomly selected one-bedroom apartment will rent between \$700 and less than \$750 per month.

Answer: Set k = 5 because 25 = 32 > 20

Estimated Class Width = $\frac{\$840 - \$600}{5}$ = $\$48 \approx \50

Monthly Rent	Frequency	Relative Frequency
\$600 to under \$650	2	0.10
\$650 to under \$700	5	0.25
\$700 to under \$750	3	0.15
\$750 to under \$800	8	0.40
\$800 to under \$850	2	0.10
Total	20	1.00

 $P(\$700 \le x < \$750) = 0.15$

Diff: 1

Keywords: relative frequency distribution, grouped data

122) The following data show the monthly rental for a random sample of one-bedroom apartments in York, Pennsylvania.

Construct a cumulative relative frequency distribution for this data and determine the probability a randomly selected one-bedroom apartment will rent for less than \$700 per month.

Answer: Set k = 5 because 25 = 32 > 20

Estimated Class Width =
$$\frac{\$840 - \$600}{5} = \$48 \approx \$50$$

		Relative	Cumulative Relative
Monthly Rent	Frequency	Frequency	Frequency
\$600 to under \$650	2	0.10	0.10
\$650 to under \$700	5	0.25	0.35
\$700 to under \$750	3	0.15	0.50
\$750 to under \$800	8	0.40	0.90
\$800 to under \$850	2	0.10	1.00
Total	20	1.00	

P(x < \$700) = 0.35

Diff: 1

Keywords: cumulative relative frequency distributions, grouped data

123) The following data show the monthly rental for a random sample of one-bedroom apartments in York, Pennsylvania.

\$600	\$615	\$660	\$660	\$675	\$680	\$690	\$700	\$720	\$725
\$755	\$760	\$775	\$775	\$780	\$780	\$780	\$785	\$810	\$840

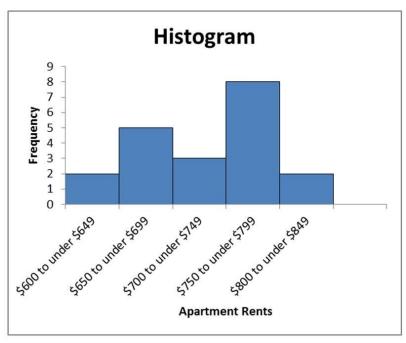
Construct a histogram for this data.

Answer:

Set
$$k = 5$$
 because $25 = 32 > 20$

Estimated Class Width =
$$\frac{\$840 - \$600}{5} = \$48 \approx \$50$$

Monthly Rent	Frequency
\$600 to under \$650	2
\$650 to under \$700	5
\$700 to under \$750	3
\$750 to under \$800	8
\$800 to under \$850	2
Total	20



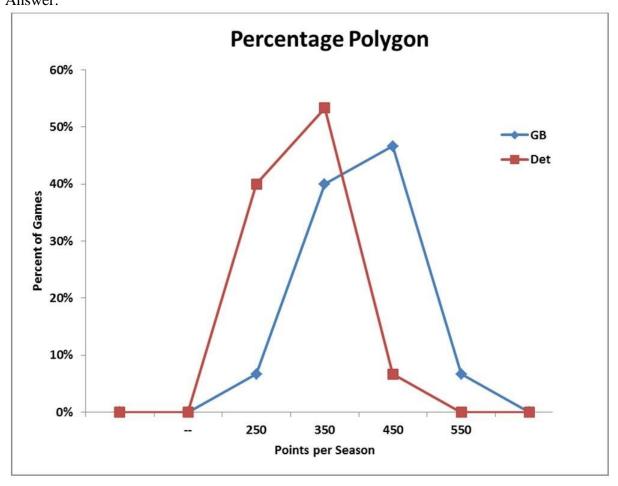
Diff: 1

Keywords: frequency distribution, grouped data

124) The following table shows the number of points scored by the Green Bay Packers and the Detroit Lions of the National Football League for each season from 1997 until 2011.

Green	Bay						
560	388	461	419	435	301	298	424
442	398	390	353	357	408	422	
Detro	it						
474	362	262	268	346	305	254	296
270	306	270	307	322	306	379	

Use four classes, each with a class width of 100. Start classes with 201-300, 301-400, and so on, and construct a percentage polygon. What conclusions can you draw comparing these two teams? Answer:



Green Bay tended to score more points per season than Detroit during this time span.

Diff: 2

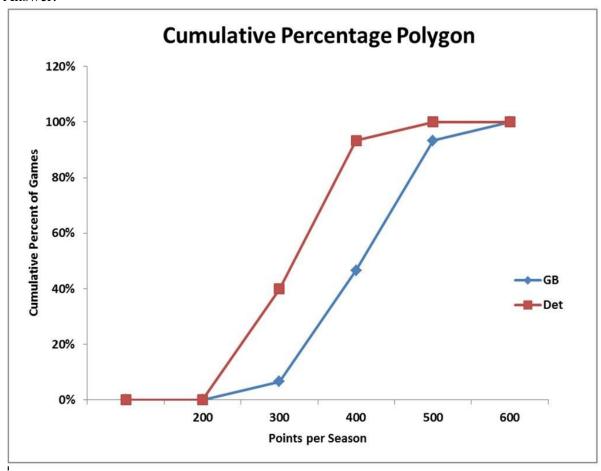
Keywords: percent polygon

125) The following table shows the number of points scored by the Green Bay Packers and the Detroit Lions of the National Football League for each season from 1997 until 2011.

Green	Bay						
560	388	461	419	435	301	298	424
442	398	390	353	357	408	422	
Detro	it						
474	362	262	268	346	305	254	296
270	306	270	307	322	306	379	

Use four classes, each with a class width of 100. Start classes with 201-300, 301-400, and so on, and construct a cumulative percentage polygon. What conclusions can you draw comparing these two teams?

Answer:



Green Bay tended to score more points per season than Detroit during this time span.

Diff: 2

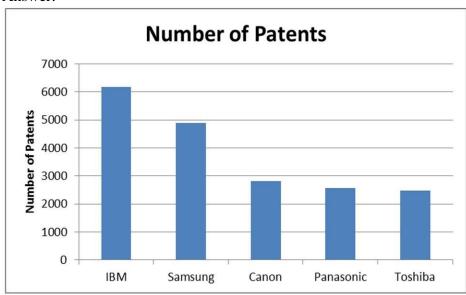
Keywords: cumulative percentage polygon

126) The following table shows the number of patents that various corporations filed in 2011.

Company	Number of Patents
IBM	6,180
Samsung	4,894
Canon	2,821
Panasonic	2,559
Toshiba	2,483

Construct the type of chart that would be most appropriate if the goal was to compare the number of patents among companies.

Answer:

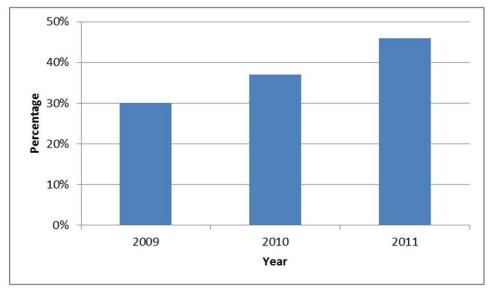


Diff: 2

Keywords: bar charts Reference: Page 43 127) The following table shows the percentage of enterprise companies issuing personal computers running the MAC OS X operating system.

Year	Percentage
2009	30%
2010	37%
2011	46%

Construct the type of chart that would be most appropriate if the goal was to compare the percentages over time. Answer:



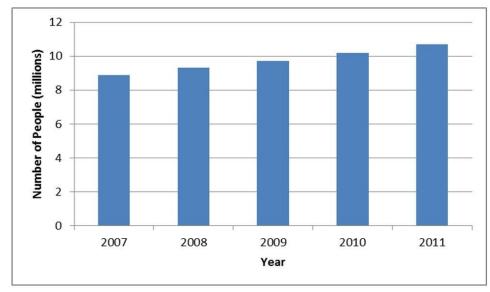
Diff: 2

Keywords: bar charts Reference: Page 43 128) The following table shows the number of people collecting Social Security disability benefits, in millions, over a five-year period.

Year	Number of People (millions)
2007	8.9
2008	9.3
2009	9.7
2010	10.2
2011	10.7

Construct the type of chart that would be most appropriate if the goal was to compare the number of people collecting Social Security disability benefits over time.

Answer:



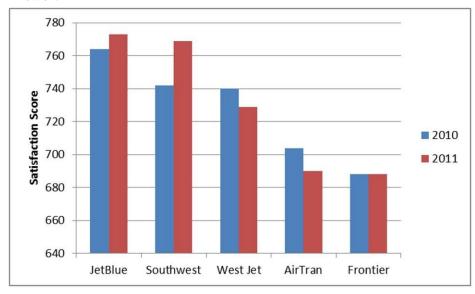
Diff: 2

Keywords: bar charts Reference: Page 43 129) The following table shows customer satisfaction scores for five airlines in 2010 and 2011.

Airline	2010	2011
JetBlue	764	773
Southwest	742	769
West Jet	740	729
AirTran	704	690
Frontier	688	688

Construct the type of chart that would be most appropriate if the goal was to investigate changes in satisfaction scores for each airline between the two years.

Answer:



Diff: 1

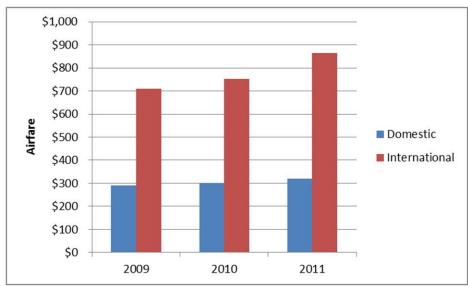
Keywords: clustered bar charts

130) The following table shows the average roundtrip airfare for domestic and international flights for each of three years.

Year	Domestic	International
2009	\$291	\$710
2010	\$302	\$753
2011	\$320	\$863

Construct the type of chart that would be most appropriate if the goal was to compare the domestic and international airfare.

Answer:



Diff: 2

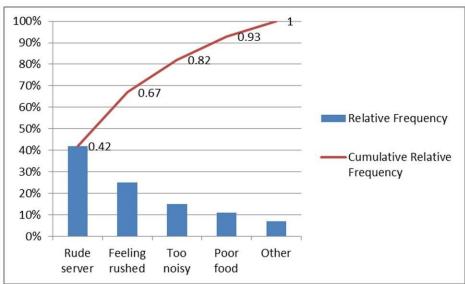
Keywords: clustered bar charts

131) The following table shows the number of complaints recorded at a restaurant over the past several years.

Complaint	Frequency
Rude server	42
Feeling rushed	25
Too noisy	15
Poor food	11
Other	7

Construct a Pareto chart to display this data.

Answer:



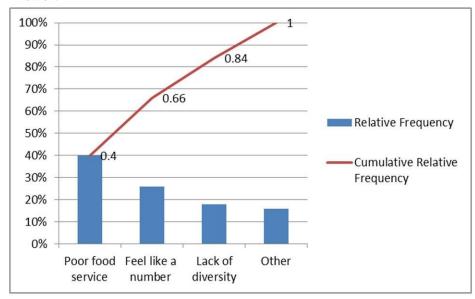
Diff: 2

Keywords: Pareto charts Reference: Page 48 132) The following table shows the number of complaints recorded at a college from the student body this past school year.

Complaint	Frequency
Poor food service	20
Feel like a number	13
Lack of diversity	9
Other	8

Construct a Pareto chart to display this data.

Answer:



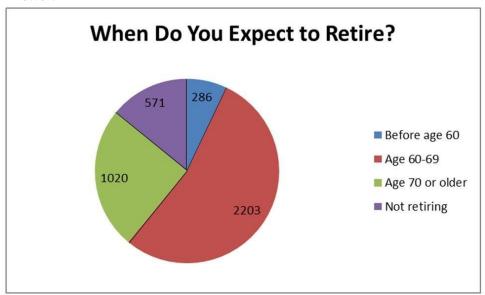
Diff: 2

Keywords: Pareto charts Reference: Page 48 133) A survey of 4,080 workers was asked when they expected to retire. The following table shows the frequency distribution of the respondents.

Response	Frequency
Before age 60	286
Age 60-69	2,203
Age 70 or older	1,020
Not retiring	571

Construct a chart that best displays this data.

Answer:



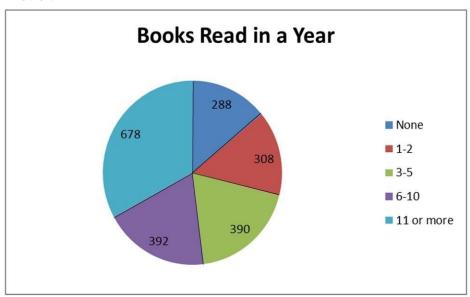
Diff: 2

134) A survey of 2,056 adults was asked how many books they typically read in a year. The following table shows the frequency distribution of the respondents.

Response	Frequency
None	288
1-2	308
3-5	390
6-10	392
11 or more	678

Construct a chart that best displays this data.

Answer:



Diff: 2

135) Costco is a warehouse store that has two types of membership — standard and executive. The following table shows the gender and type of membership of the last 20 customers at a particular store.

Membership	Gender	Membership	Gender
standard	male	standard	female
executive	female	standard	male
standard	female	standard	female
executive	male	standard	male
standard	male	standard	female
executive	male	executive	female
standard	male	executive	female
executive	female	executive	male
standard	male	executive	female
executive	female	executive	female

Construct a contingency table for this data.

Answer:

	Standard	Executive
Female	4	7
Male	6	3

Diff: 1

Keywords: contingency tables

136) Chris is a photographer and sells two types of photography for consignment in an art store — landscapes and flower close-ups. She also sells each in three print sizes — 8x10, 11x14, and 13x19 inches. The following table shows the number of prints of each type and size that have recently sold.

Type	Size	Туре	Size
landscape	13x19	flower	11x14
landscape	11x14	landscape	11x14
flower	11x14	landscape	8x10
flower	8x10	flower	8x10
landscape	13x19	landscape	11x14
flower	8x10	landscape	13x19
flower	11x14	flower	11x14
flower	13x19	landscape	11x14
landscape	13x19	landscape	13x19

Construct a contingency table for this data.

Answer:

	Landscape	Flower
8x10	1	3
11x14	4	4
13x19	5	1

Diff: 1

Keywords: contingency tables

Reference: Page 56

137) The following data represents the high ambient temperature for a particular city over the past 16 days.

52 56 56 58 59 60 62 65 69 73 73 74 76 76 77 78

Construct a stem and leaf display for this data.

Answer: 5 | 2 6 6 8 9

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

Diff: 1

Keywords: stem and leaf display

Reference: Page 60

138) The following data represents the satisfaction scores from customers at a hotel on a 1-100 scale.

83 77 81 81 82 83 84 84 87 87 89 90 92 92 92 93 93 96 97

Construct a stem and leaf display for this data, splitting the stems in half.

Answer: 7(5) | 7 7 8(0) | 1 1 2 3 3 4 4

8(5) | 7 7 9

9(0) | 0 2 2 2 3 3

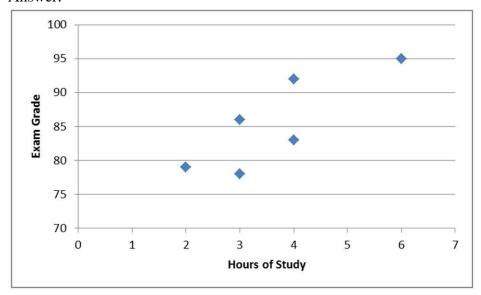
9(5) | 6 7 Diff: 1

Keywords: stem and leaf display

139) The following table shows the number of hours that six students studied for their statistics exam and their corresponding exam grades.

Hours of Study	Exam Grade
3	86
6	95
4	92
4	83
3	78
2	79

Construct a scatter plot to display this data. What conclusions can be drawn? Answer:



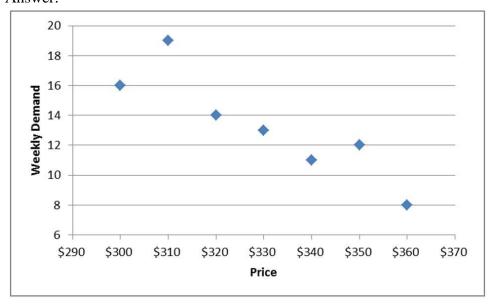
It appears that the students who studied longer, in general, did better on the exam.

Diff: 1

Keywords: scatter plots Reference: Page 62 140) The following table shows the weekly demand for a particular digital camera and the corresponding price of that camera during the week.

Weekly Demand	Price
16	\$300
19	\$310
14	\$320
13	\$330
11	\$340
12	\$350
8	\$360

Construct a scatter plot to display this data. What conclusions can be drawn? Answer:



It appears that as the price increases, demand for the camera decreases.

Diff: 1

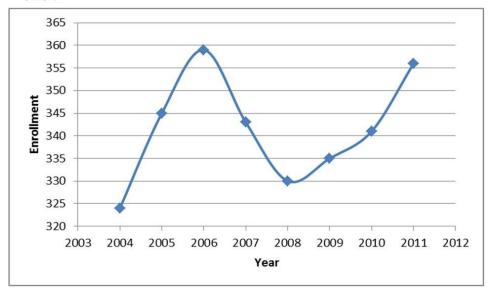
Keywords: scatter plots Reference: Page 62

141) The following table shows the enrollment at a private grade school from 2004 until 2011.

Year	Enrollment
2004	324
2005	345
2006	359
2007	343
2008	330
2009	335
2010	341
2011	356

Construct a line chart to display this data.

Answer:



Diff: 1

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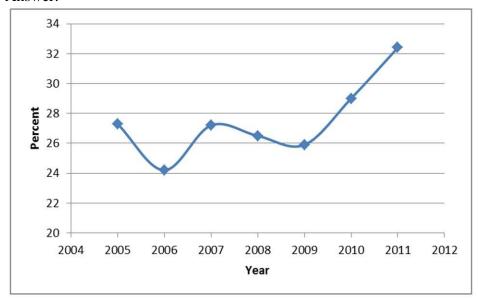
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142) The following table shows the percent of car sales that were SUVs from 2005 until 2011.

Year	Percent
2005	27.3
2006	24.2
2007	27.2
2008	26.5
2009	25.9
2010	29.0
2011	32.4

Construct a line chart to display this data.

Answer:



Diff: 1