Test Bank for Essentials of Business Statistics Canadian Edition 1st Black

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CHAPTER 2

ORGANIZING AND VISUALIZING DATA

CHAPTER LEARNING OBJECTIVES

1. Organize categorical data into frequency tables, percent frequency tables, and cumulative frequency tables, and understand how two-variable data sets can be organized using a cross-tabulation chart.

2. Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.

3. Construct a frequency distribution from a set of data, and explain what the distribution represents.

4. Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.

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TRUE-FALSE STATEMENTS

1. A graphical representation of a frequency distribution is called a pie chart.

Answer: False

Difficulty: Easy
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Communication
Bloomcode: Knowledge

2. In contrast to quantitative data graphs that are plotted along a numerical scale, categorical graphs are plotted using non-numerical categories.

Answer: False

Difficulty: Easy
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Communication
Bloomcode: Knowledge

3. A Pareto chart and a pie chart are both types of categorical graphs.

Answer: True

Difficulty: Easy
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Communication
Bloomcode: Knowledge

4. A summary of data in which raw data are grouped into different intervals and the number of items in each group is listed is called a frequency distribution.

Answer: True

Difficulty: Easy
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Communication

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Bloomcode: Knowledge

5. If the individual class frequency is divided by the total frequency, the result is the median frequency.

Answer: False

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Comprehension

6. A cumulative frequency distribution provides a running total of the frequencies in the classes.

Answer: True

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Communication
Bloomcode: Knowledge

7. The difference between the highest number and the lowest number in a set of data is called the differential frequency.

Answer: False

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Communication
Bloomcode: Knowledge

8. For any given data set, a frequency distribution with a larger number of classes will always be better than the one with a smaller number of classes.

Answer: False

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Reflective Thinking

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Bloomcode: Comprehension

9. One rule that must always be followed in constructing frequency distributions is that the adjacent classes must overlap.

Answer: False

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Communication
Bloomcode: Knowledge

10. A cumulative frequency polygon is also called an ogive.

Answer: True

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Communication
Bloomcode: Knowledge

11. A histogram can be described as a type of vertical bar chart.

Answer: True

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Communication
Bloomcode: Knowledge

12. In a histogram, the tallest bar represents the class with the highest cumulative frequency.

Answer: False

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data

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AACSB: Reflective Thinking
Bloomcode: Comprehension

13. A scatter plot shows how the numbers in a data set are scattered around their average.

Answer: False

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Communication
Bloomcode: Knowledge

14. A scatter plot is a two-dimensional graph plot of data containing pairs of observations on two numerical variables.

Answer: True

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Communication
Bloomcode: Knowledge

15. A scatter plot is useful for examining the relationship between two numerical variables.

Answer: True

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Communication
Bloomcode: Knowledge

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MULTIPLE CHOICE QUESTIONS

16. A summary of data in which raw data are grouped into categories and the number of items in each category is listed is called a
a) frequency table.
b) summary statistics.
c) grouped frequency.
d) table of content.
e) none of the above

Answer: a

Difficulty: Easy
Learning Objective: Organize categorical data into frequency tables, percent frequency tables, and cumulative frequency tables, and understand how two variable data sets can be organized using a cross-tabulation chart.
Section Reference: 2.1 Organizing Categorical Data
AACSB: Communication
Bloomcode: Knowledge

17. Which of the following statements is/are true?
I. Cross tabulation is a two-dimensional table that displays the frequency for two categorical variables.
II. Cross tabulation can be referred to as a contingency table.
III. Excel calls contingency table as pivot table.
a) I only
b) II only
c) III only
d) I and III only
e) all of the above

Answer: e

Difficulty: Medium
Learning Objective: Organize categorical data into frequency tables, percent frequency tables, and cumulative frequency tables, and understand how two variable data sets can be organized using a cross-tabulation chart.
Section Reference: 2.1 Organizing Categorical Data
AACSB: Reflective Thinking
Bloomcode: Comprehension

18. The table below shows the number of students registered in Accounting 101, Finance 101, Marketing 101 and Statistics 101.

Course	Number of students
Accounting 101	240
Finance 101	160
Marketing 101	320

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Statistics 101	80

What percent of the students is registered in Statistics 101?
a) 30%
b) 20%
c) 40%
d) 10%
e) 100%

Answer: d

Difficulty: Medium
Learning Objective: Organize categorical data into frequency tables, percent frequency tables, and cumulative frequency tables, and understand how two variable data sets can be organized using a cross-tabulation chart.
Section Reference: 2.1 Organizing Categorical Data
AACSB: Analytic
Bloomcode: Application

19. A sample of 188 workers were asked whether they bring bagged lunch to work or buy lunch. The contingency table below displays the results by job type and their lunch choice.

	Lunch Choice		
Job Type	Bagged Lunch	Buy Lunch	Total
Management	45	42	87
Non-management	57	44	101
Total	103	86	188

How many of the workers surveyed were non-management and brought a bagged lunch?
a) 45
b) 57
c) 86
d) 103
e) 188

Answer: b

Difficulty: Medium
Learning Objective: Organize categorical data into frequency tables, percent frequency tables, and cumulative frequency tables, and understand how two variable data sets can be organized using a cross-tabulation chart.
Section Reference: 2.1 Organizing Categorical Data
AACSB: Analytic
Bloomcode: Application

20. A sample of 188 workers were asked whether they bring bagged lunch to work or buy lunch. The contingency table below displays the results by gender and their lunch choice.

	Lunch Choice		
Gender	Bagged Lunch	Buy Lunch	Total
Management	45	42	87
Non-management	57	44	101

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Total	103	86	188

What proportion of the workers surveyed were management and buy lunch?
a) 0.22
b) 0.24
c) 0.30
d) 0.46
e) 0.55

Answer: a

Difficulty: Medium
Learning Objective: Organize categorical data into frequency tables, percent frequency tables, and cumulative frequency tables, and understand how two variable data sets can be organized using a cross-tabulation chart.
Section Reference: 2.1 Organizing Categorical Data
AACSB: Analytic
Bloomcode: Application

21. Categorical data
a) are always nonnumeric.
b) may be either numeric or nonnumeric.
c) are always numeric.
d) indicate how many or how much.
e) none of the above

Answer: b

Difficulty: Medium
Learning Objective: Organize categorical data into frequency tables, percent frequency tables, and cumulative frequency tables, and understand how two variable data sets can be organized using a cross-tabulation chart.
Section Reference: 2.1 Organizing Categorical Data
AACSB: Communication
Bloomcode: Knowledge

22. Categorical data can be represented graphically by a(n)
a) histogram.
b) frequency polygon.
c) ogive.
d) bar chart.
e) none of the above

Answer: d

Difficulty: Easy

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Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Communication
Bloomcode: Knowledge

23. Categorical data can be represented graphically by a(n)
a) histogram.
b) frequency polygon.
c) ogive.
d) pie chart.
e) none of the above

Answer: d

Difficulty: Easy
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Communication
Bloomcode: Knowledge

24. Which of the following would be most helpful in constructing a pie chart?
a) cumulative percent
b) relative frequency
c) ogive
d) frequency
e) none of the above

Answer: b

Difficulty: Medium
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Reflective Thinking
Bloomcode: Comprehension

25. The relative frequency of a category is computed by
a) dividing the frequency of the category by the sample size.
b) multiplying the frequency of the category by the sample size.
c) dividing the sample size by the frequency of the category.
d) frequency of the category.
e) none of the above

Answer: a

Difficulty: Medium

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Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Communication
Bloomcode: Knowledge

26. A graph that can be used to represent data on two categorical variables simultaneously is called a(n)
a) Pareto chart.
b) ogive.
c) two variable bar chart.
d) contingency table.
e) histogram.

Answer: c

Difficulty: Medium
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Communication
Bloomcode: Knowledge

27. An instructor has decided to graphically represent the grades on a test. The instructor uses a plus/minus grading system (i.e. she gives grades of A-, B+, etc.). Which of the following would provide the most information for the students?
a) a histogram
b) bar chart
c) a cumulative frequency distribution
d) a frequency distribution
e) a scatter plot

Answer: b

Difficulty: Medium
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Reflective Thinking
Bloomcode: Comprehension

28. The staffs of the Accounting and the Quality Control departments rated their respective supervisor's leadership style as either (1) authoritarian or (2) participatory. Sixty-eight percent of the accounting staff rated their supervisor "authoritarian," and thirty-two percent rated him "participatory." Forty percent of the quality control staff rated their supervisor "authoritarian," and sixty percent rated her "participatory." The best graphic depiction of these data would be two ___.
a) histograms

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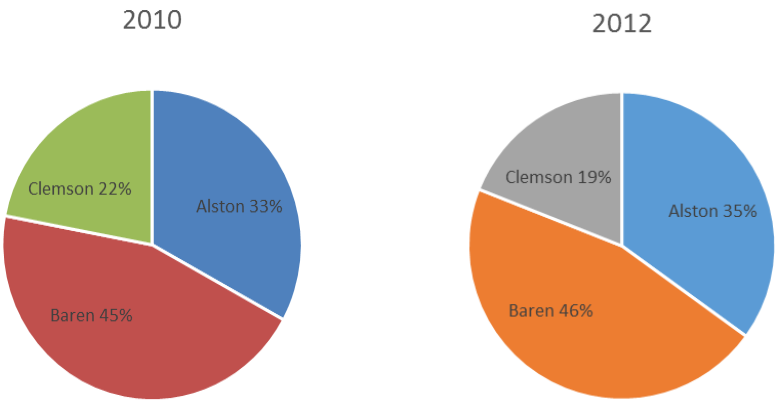
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b) frequency polygons
c) ogives
d) pie charts
e) scatter plots

Answer: d

Difficulty: Hard
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Analytic
Bloomcode: Application

29. The 2010 and 2012 market share data of the three competitors (Alston, Baren, and Clemson) in an oligopolistic industry are presented in the following pie charts.



Which of the following is true?
a) Only Baren share.
b) Only Clemson lost market share.
c) Alston lost market share.
d) Baren lost market share.
e) All companies lost market share.

Answer: b

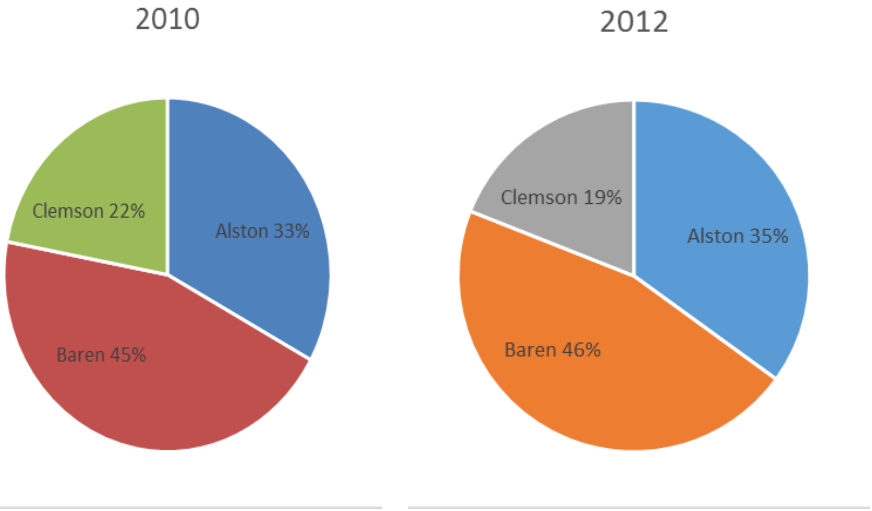
Difficulty: Medium
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Analytic
Bloomcode: Application

30. The 2010 and 2012 market share data of the three competitors (Alston, Baren, and Clemson) in an oligopolistic industry are presented in the following pie charts. Total sales for this industry were $1.5 billion in 2010 and $1.8 billion in 2012. Clemson's sales in 2010 were

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___.



a) $330 million
b) $630 million
c) $675 million
d) $828 million
e) $928 million

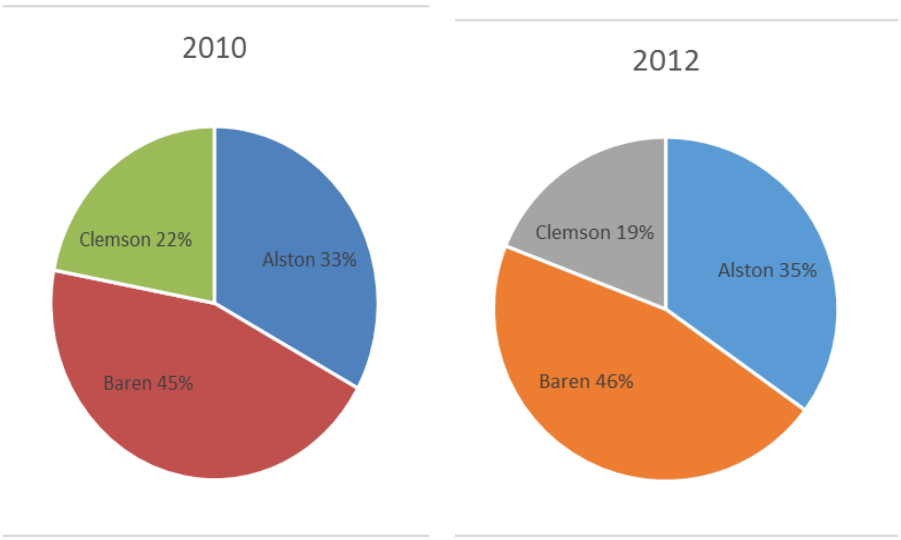
Answer: a

Difficulty: Medium
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Analytic
Bloomcode: Application

31. The 2010 and 2012 market share data of the three competitors (Alston, Baren, and Clemson) in an oligopolistic industry are presented in the following pie charts. Total sales for this industry were $1.5 billion in 2010 and $1.8 billion in 2012. Baren's sales in 2010 were ___.

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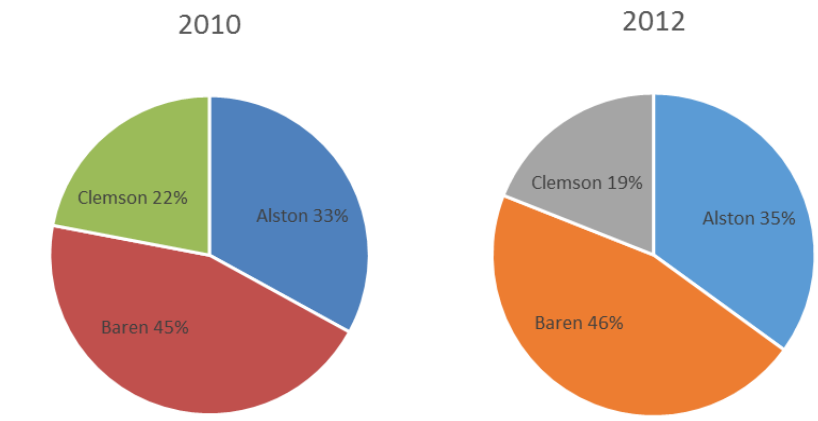


a) $342 million
b) $630 million
c) $675 million
d) $828 million
e) $928 million

Answer: c

Difficulty: Medium
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Analytic
Bloomcode: Application

32. The 2010 and 2012 market share data of the three competitors (Alston, Baren, and Clemson) in an oligopolistic industry are presented in the following pie charts:



Which of the following may be a **false** statement?
a) Sales revenues declined at Clemson.
b) Only Clemson lost market share.
c) Alston gained market share.

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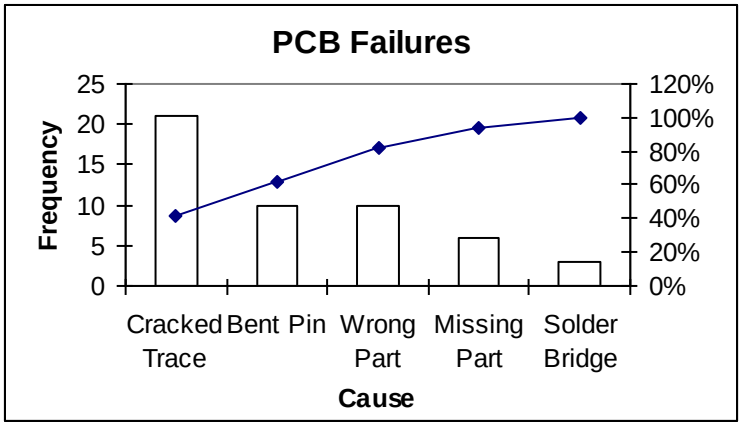
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d) Baren gained market share.
e) Both Alston and Baren gained market share.

Answer: a

Difficulty: Hard
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Analytic
Bloomcode: Application

33. The following graphic of PCB Failures is a ___.



a) scatter plot
b) Pareto chart
c) pie chart
d) cumulative histogram chart
e) line diagram

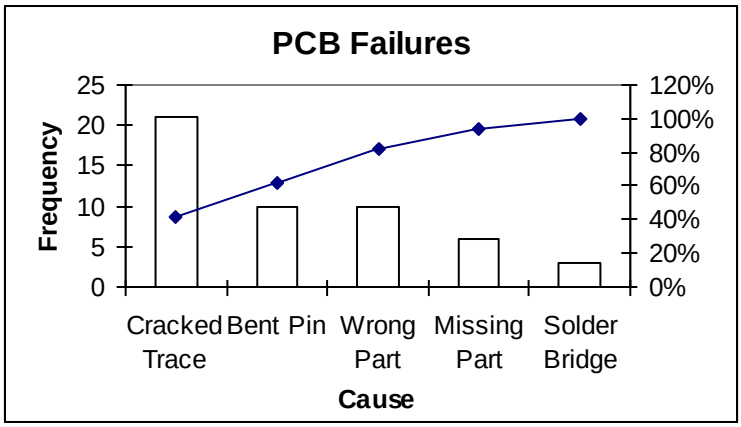
Answer: b

Difficulty: Medium
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Reflective Thinking
Bloomcode: Comprehension

34. According to the following graphic, the most common cause of PCB Failures is a ___.

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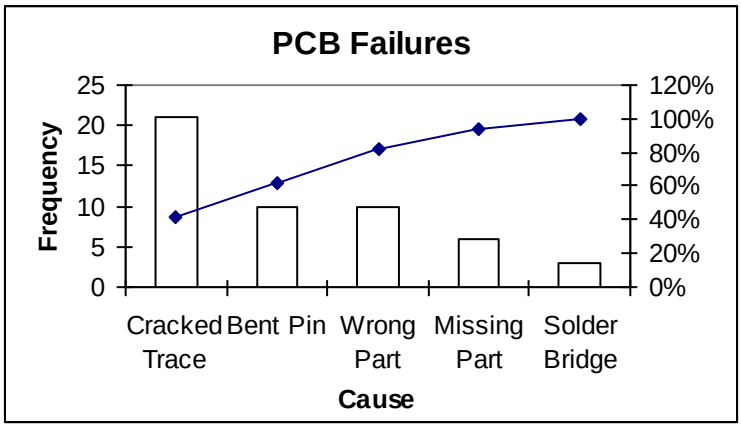


a) cracked trace
b) bent pin
c) missing part
d) solder bridge
e) wrong Part

Answer: a

Difficulty: Medium
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Analytic
Bloomcode: Application

35. According to the following graphic, “Bent Pins” account for ___% of PCB Failures.



a) 10
b) 20
c) 30
d) 40
e) 50

Answer: b

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Difficulty: Hard
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data
AACSB: Analytic
Bloomcode: Application

36. An instructor made a frequency table of the scores his students got on a test:

Score	Frequency
30-under 40	1
40-under 50	4
50-under 60	5
60-under 70	10
70-under 80	20
80-under 90	10
90-under 100	5

The midpoint of the last class interval is ___.
a) 90
b) 5
c) 95
d) 100
e) 50

Answer: c

Difficulty: Easy
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

37. An instructor made a frequency table of the scores his students got on a test:

Score	Frequency
30-under 40	1
40-under 50	4
50-under 60	5
60-under 70	10
70-under 80	20
80-under 90	10
90-under 100	5

Approximately what percent of students got more than 70?
a) 36
b) 20
c) 50
d) 10
e) 64

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Answer: e

Difficulty: Easy
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

38. Consider the following frequency distribution:

Class Interval	Frequency
10-under 20	15
20-under 30	25
30-under 40	10

What is the midpoint of the first class?
a) 10
b) 20
c) 15
d) 30
e) 40

Answer: c

Difficulty: Easy
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

39. Consider the following frequency distribution:

Class Interval	Frequency
10-under 20	15
20-under 30	25
30-under 40	10

What is the relative frequency of the first class?
a) 0.15
b) 0.30
c) 0.10
d) 0.20
e) 0.40

Answer: b

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
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AACSB: Analytic

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Bloomcode: Application

40. Consider the following frequency distribution:

Class Interval	Frequency
10-under 20	15
20-under 30	25
30-under 40	10

What is the cumulative frequency of the second class interval?
a) 25
b) 40
c) 15
d) 50

Answer: b

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

41. The number of phone calls arriving at a switchboard each hour has been recorded, and the following frequency distribution has been developed.

Class Interval	Frequency
20-under 40	30
40-under 60	45
60-under 80	80
80-under 100	45

What is the midpoint of the last class?
a) 80
b) 100
c) 95
d) 90
e) 85

Answer: d

Difficulty: Easy
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

42. The number of phone calls arriving at a switchboard each hour has been recorded, and the following frequency distribution has been developed.

Class Interval	Frequency

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20-under 40	30
40-under 60	45
60-under 80	80
80-under 100	45

What is the relative frequency of the second class?
a) 0.455
b) 0.900
c) 0.225
d) 0.750
e) 0.725

Answer: c

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

43. The number of phone calls arriving at a switchboard each hour has been recorded, and the following frequency distribution has been developed.

Class Interval	Frequency
20-under 40	30
40-under 60	45
60-under 80	80
80-under 100	45

What is the cumulative frequency of the third class?
a) 80
b) 0.40
c) 155
d) 75
e) 105

Answer: c

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

44. A person has decided to construct a frequency distribution for a set of data containing 60 numbers. The lowest number is 23 and the highest number is 68. If 5 classes are used, the class width should be approximately ___.
a) 4
b) 12
c) 8

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d) 5
e) 9

Answer: e

Difficulty: Easy
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

45. A person has decided to construct a frequency distribution for a set of data containing 60 numbers. The lowest number is 23 and the highest number is 68. If 7 classes are used, the class width should be approximately ___.
a) 5
b) 7
c) 9
d) 11
e) 12

Answer: b

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

46. A frequency distribution was developed. The lower endpoint of the first class is 9.30, and the midpoint is 9.35. What is the upper endpoint of this class?
a) 9.50
b) 9.60
c) 9.70
d) 9.40
e) 9.80

Answer: d

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

47. The cumulative frequency for a class is 27. The cumulative frequency for the next (non-

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empty) class will be ___.
a) less than 27
b) equal to 27
c) next class frequency minus 27
d) 27 minus the next class frequency
e) 27 plus the next class frequency

Answer: e

Difficulty: Hard
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

48. The following class intervals for a frequency distribution were developed to provide information regarding the starting salaries for students graduating from a particular school:

Salary ($1,000s)	Number of Graduates
28-under 31	-
31-under 35	-
34-under 37	-
39-under 40	-

Before data was collected, someone questioned the validity of this arrangement. Which of the following represents a problem with this set of intervals?
a) There are too many intervals.
b) The class widths are too small.
c) Some numbers between 28,000 and 40,000 would fall into two different intervals.
d) The first and the second interval overlap.
e) There are too few intervals.

Answer: c

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data.
AACSB: Analytic
Bloomcode: Application

49. The following class intervals for a frequency distribution were developed to provide information regarding the starting salaries for students graduating from a particular school:

Salary ($1,000s)	Number of Graduates
28-under 31	-
31-under 35	-
34-under 37	-
39-under 40	-

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Before data was collected, someone questioned the validity of this arrangement. Which of the following represents a problem with this set of intervals?
a) There are too many intervals.
b) The class widths are too small.
c) The class widths are too large.
d) The second and the third interval overlap.
e) There are too few intervals.

Answer: d

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

50. Abel Alonzo, Director of Human Resources, is exploring employee absenteeism at the Harrison Haulers Plant during the last operating year. A review of all personnel records indicated that absences ranged from zero to twenty-nine days per employee. The following class intervals were proposed for a frequency distribution of absences.

Absences (Days)	Number of Employees
0-under 5	-
5-under 10	-
10-under 15	-
20-under 25	-
25-under 30	-

Which of the following represents a problem with this set of intervals?
a) There are too few intervals.
b) Some numbers between 0 and 29, inclusively, would not fall into any interval.
c) The first and second interval overlaps.
d) There are too many intervals.
e) The second and the third interval overlap.

Answer: b

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

51. Abel Alonzo, Director of Human Resources, is exploring employee absenteeism at the Harrison Haulers Plant during the last operating year. A review of all personnel records indicated that absences ranged from zero to twenty-nine days per employee. The following class intervals were proposed for a frequency distribution of absences.

Absences	Number of Employees

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(Days)	
0-under 10	-
10-under 20	-
20-under 30	-

Which of the following might represent a problem with this set of intervals?
a) There are too few intervals.
b) Some numbers between 0 and 29 would not fall into any interval.
c) The first and second interval overlaps.
d) There are too many intervals.
e) The second and the third interval overlap.

Answer: a

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

52. Consider the relative frequency distribution given below:

Class Interval	Relative Frequency
20-under 40	0.2
40-under 60	0.3
60-under 80	0.4
80-under 100	0.1

There were 60 numbers in the data set. How many numbers were in the interval 20-under 40?
a) 12
b) 20
c) 40
d) 10
e) 15

Answer: a

Difficulty: Easy
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

53. Consider the relative frequency distribution given below:

Class Interval	Relative Frequency
20-under 40	0.2
40-under 60	0.3
60-under 80	0.4
80-under 100	0.1

There were 60 numbers in the data set. How many numbers were in the interval 40-under 60?

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a) 30
b) 50
c) 18
d) 12
e) 15

Answer: c

Difficulty: Easy
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

54. Consider the relative frequency distribution given below:

Class Interval	Relative Frequency
20-under 40	0.2
40-under 60	0.3
60-under 80	0.4
80-under 100	0.1

There were 60 numbers in the data set. How many of the number were less than 80?
a) 90
b) 80
c) 0.9
d) 54
e) 100

Answer: d

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

55. Consider the following frequency distribution:

Class Interval	Frequency
100-under 200	25
200-under 300	45
300-under 400	30

What is the midpoint of the first class?
a) 100
b) 150
c) 25
d) 250
e) 200

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Answer: b

Difficulty: Easy
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data.
AACSB: Analytic
Bloomcode: Application

56. Consider the following frequency distribution:

Class Interval	Frequency
100-under 200	25
200-under 300	45
300-under 400	30

What is the relative frequency of the second class interval?
a) 0.45
b) 0.70
c) 0.30
d) 0.33
e) 0.50

Answer: a

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data.
AACSB: Analytic
Bloomcode: Application

57. Consider the following frequency distribution:

Class Interval	Frequency
100-under 200	25
200-under 300	45
300-under 400	30

What is the cumulative frequency of the second class interval?
a) 25
b) 45
c) 70
d) 100
e) 250

Answer: c

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic

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Bloomcode: Application

58. Consider the following frequency distribution:

Class Interval	Frequency
100-under 200	25
200-under 300	45
300-under 400	30

What is the midpoint of the last class interval?
a) 15
b) 350
c) 300
d) 200
e) 400

Answer: b

Difficulty: Easy
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

59. Pinky Bauer, Chief Financial Officer of Harrison Haulers, Inc., suspects irregularities in the payroll system and orders an inspection of "each and every payroll voucher issued since January 1, 2000." Each payroll voucher was inspected and the following frequency distribution was compiled.

Errors per Voucher	Number of Vouchers
0-under 2	500
2-under 4	400
4-under 6	300
6-under 8	200
8-under 10	100

The relative frequency of the first class interval is ___.
a) 0.50
b) 0.33
c) 0.40
d) 0.27
e) 0.67

Answer: b

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

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60. Pinky Bauer, Chief Financial Officer of Harrison Haulers, Inc., suspects irregularities in the payroll system and orders an inspection of "each and every payroll voucher issued since January 1, 2000." Each payroll voucher was inspected and the following frequency distribution was compiled.

Errors per Voucher	Number of Vouchers
0-under 2	500
2-under 4	400
4-under 6	300
6-under 8	200
8-under 10	100

The cumulative frequency of the second class interval is ___.
a) 1,500
b) 500
c) 900
d) 1,000
e) 1,200

Answer: c

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

61. Pinky Bauer, Chief Financial Officer of Harrison Haulers, Inc., suspects irregularities in the payroll system and orders an inspection of "each and every payroll voucher issued since January 1, 2000." Each payroll voucher was inspected and the following frequency distribution was compiled.

Errors per Voucher	Number of Vouchers
0-under 2	500
2-under 4	400
4-under 6	300
6-under 8	200
8-under 10	100

The midpoint of the first class interval is ___.
a) 500
b) 2
c) 1.5
d) 1
e) 250

Answer: d

Difficulty: Easy
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data

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AACSB: Analytic
Bloomcode: Application

62. Scott Brim, Chief Financial Officer of Space Mall, Inc., wants to better understand the biest business hours during the weekend. There are door sensors that approximately count the number of people who enter the mall. The table below presents the average number of people coming in during the weekend, for the last month:

Hour	Number of People
9-under 10	350
10-under 11	400
11-under 12	300
12-under 1	650
1-under 2	550
2-under 3	400
3-under 4	350
4-under 5	450
5-under 6	250
6-under 7	300
7-under 8	200
8-under 9	300

The relative frequency of the fourth class interval is ___.
a) 0.07
b) 0.08
c) 0.14
d) 0.15
e) 0.38

Answer: c

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Application

63. In a frequency distribution, the first class interval begins at 18. The midpoint of the first class interval is 19.5, and the last class interval ends at 51. How many class intervals are there?
a) 11
b) 17
c) 22
d) 33
e) 34

Answer: a

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.

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Section Reference: 2.3 Organizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Application

64. In a frequency distribution, the first class interval begins at 18. The midpoint of the first class interval is 19.5, and the midpoint of the last class interval is 49.5. How many class intervals are there?
a) 11
b) 17
c) 22
d) 33
e) 34

Answer: a

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Application

65. The class mark is the ___, and it is ___.
a) total number of class intervals in a frequency distribution; usually between 5 and 15
b) range of the observed values; the difference between the max and min values
c) width of the class intervals; approximately equal to the range divided by the number of classes
d) midpoint of each class interval; geometric mean of the class interval endpoints
e) midpoint of each class interval; arithmetic mean of the class interval endpoints

Answer: e

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Knowledge

66. Your company is doing market research to assess the feasibility of a new product. The market research team gathers pricing information of all the existing products that would compete with your company's product. The most expensive brand is priced at $22.95, and the least expensive one at $20.59. If a class width of 0.25 is used, then the class mark of the first class interval will be
a) 20.50.
b) 20.59.
c) 20.63.
d) 21.75.

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e) 23.09.

Answer: c

Difficulty: Hard
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Application

67. Your company is doing market research to assess the feasibility of a new product. The market research team gathers pricing information of all the existing products that would compete with your company's product. The most expensive brand is priced at $22.95, and the least expensive one at $20.59. If a class width of 0.25 is used, then the number of classes will be
a) 9.
b) 9.4.
c) undetermined, so you can choose either 9 or 10.
d) undetermined, so you must choose another class width.
e) 10.

Answer: e

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Knowledge

68. Your company is doing market research to assess the feasibility of a new product. The market research team gathers pricing information of the 60 existing products in the market that would compete with your company's product. The most expensive brand is priced at $22.95, and the least expensive one at $20.59. If the relative frequency of the first class is 0.05 and the cumulative frequency for the second class is 10, then the relative frequency for the second class is
a) 0.05.
b) 0.11.
c) 0.12.
d) 0.17.
e) 1.67.

Answer: c

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data

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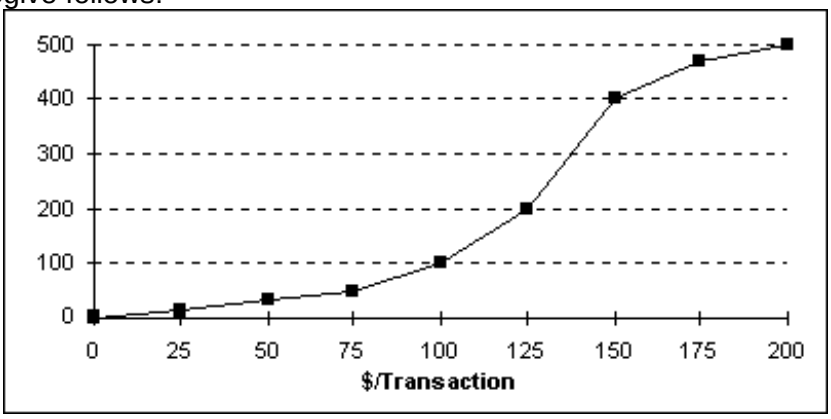
AACSB: Reflective Thinking
Bloomcode: Application

69. Given two class intervals and their respective frequencies and relative frequencies, the ratio of the frequencies ___ the ratio of the relative frequencies.
a) is less than
b) is the same as
c) is larger than
d) could be less, equal, or larger than
e) less than or equal to

Answer: b

Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Knowledge

70. Each day, the office staff at Oasis Quick Shop prepares a frequency distribution and an ogive of sales transactions by dollar value of the transactions. Saturday's cumulative frequency ogive follows:



The total number of sales transactions on Saturday was ___.
a) 200
b) 500
c) 300
d) 100
e) 400

Answer: b

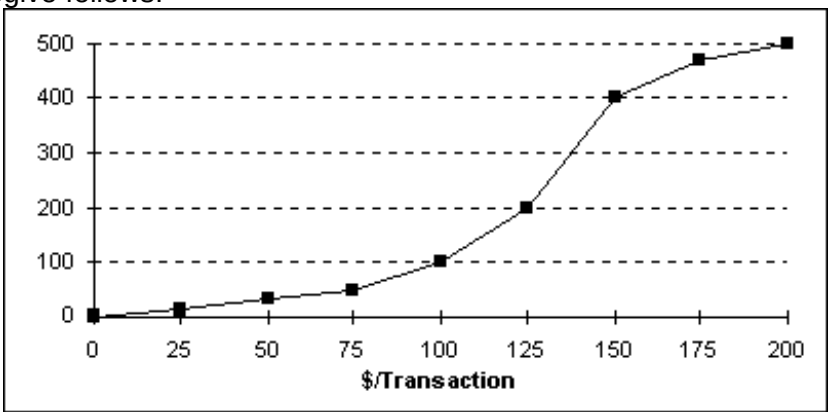
Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data

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AACSB: Analytic
Bloomcode: Application

71. Each day, the office staff at Oasis Quick Shop prepares a frequency distribution and an ogive of sales transactions by dollar value of the transactions. Saturday's cumulative frequency ogive follows:



The percentage of sales transactions on Saturday that were under $100 each was ___.
a) 100
b) 10
c) 80
d) 20
e) 15

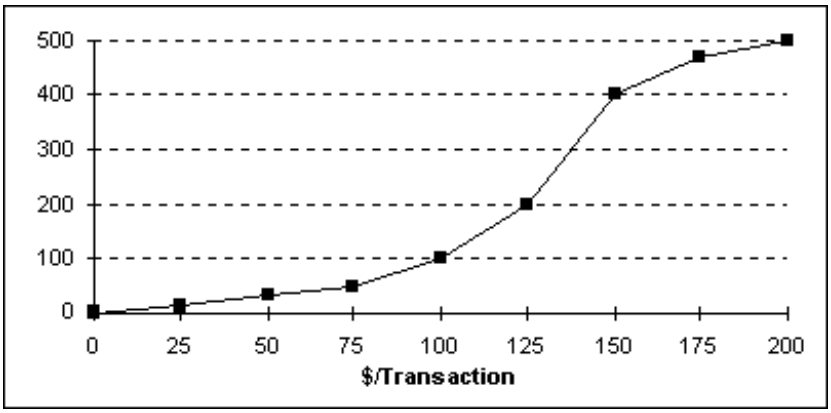
Answer: d

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

72. Each day, the office staff at Oasis Quick Shop prepares a frequency distribution and an ogive of sales transactions by dollar value of the transactions. Saturday's cumulative frequency ogive follows:

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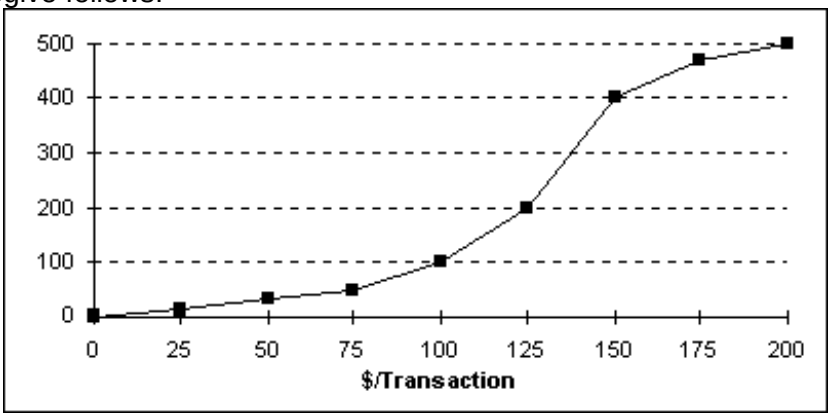


The percentage of sales transactions on Saturday that were at least $100 each was ___.
a) 100
b) 10
c) 80
d) 20
e) 15

Answer: c

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

73. Each day, the office staff at Oasis Quick Shop prepares a frequency distribution and an ogive of sales transactions by dollar value of the transactions. Saturday's cumulative frequency ogive follows:



The percentage of sales transactions on Saturday that were between $100 and $150 was ___.
a) 20%
b) 40%
c) 60%
d) 80%
e) 10%

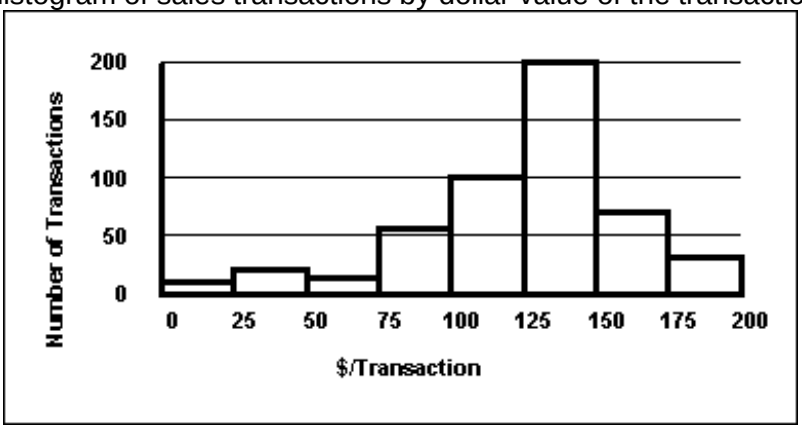
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Answer: c

Difficulty: Hard
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

74. Each day, the manager at Jamie's Auto Care Shop prepares a frequency distribution and a histogram of sales transactions by dollar value of the transactions. Friday's histogram follows:



On Friday, the approximate number of sales transactions in the 75-under 100 category was ___.
a) 50
b) 100
c) 150
d) 200
e) 60

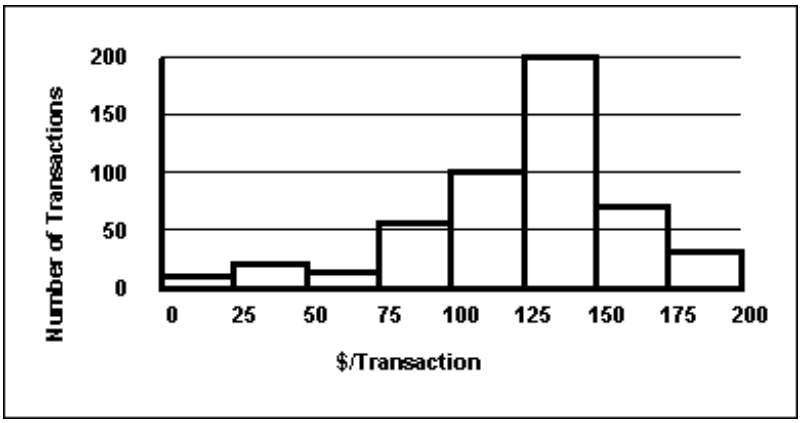
Answer: e

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

75. Each day, the manager at Jamie's Auto Care prepares a frequency distribution and a histogram of sales transactions by dollar value of the transactions. Friday's histogram follows:

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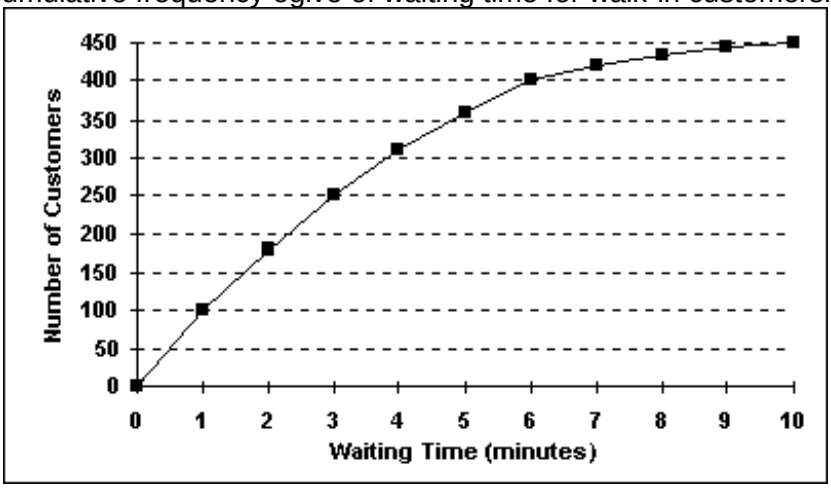


On Friday, the approximate number of sales transactions between $150 and $175 was ___.
a) 75
b) 200
c) 300
d) 400
e) 500

Answer: a

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

76. The staff of Mr. Wayne Wertz, VP of Operations at Portland Peoples Bank, prepared a cumulative frequency ogive of waiting time for walk-in customers.



The total number of walk-in customers included in the study was ___.
a) 100
b) 250
c) 300

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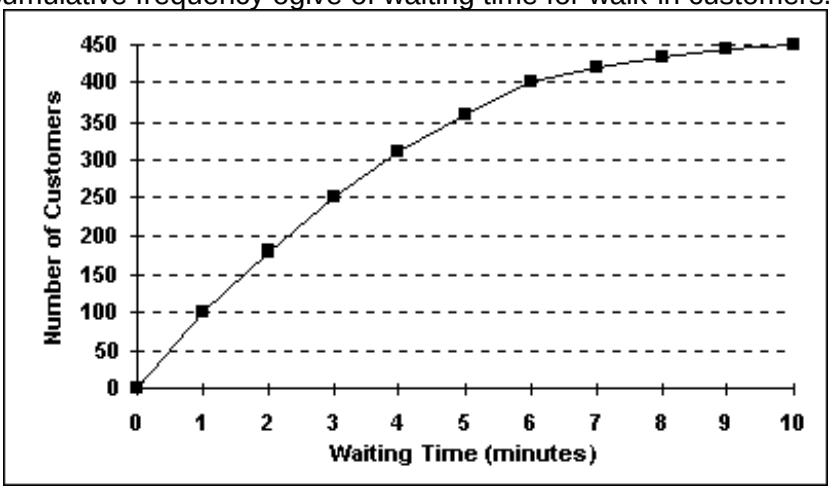
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d) 450
e) 500

Answer: d

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

77. The staff of Mr. Wayne Wertz, VP of Operations at Portland Peoples Bank, prepared a cumulative frequency ogive of waiting time for walk-in customers.



The percentage of walk-in customers waiting one minute or less was ___.
a) 22%
b) 11%
c) 67%
d) 10%
e) 5%

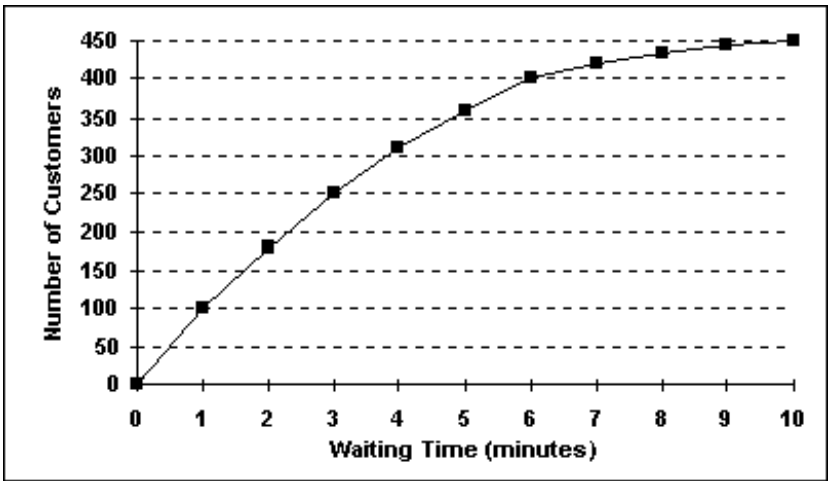
Answer: a

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

78. The staff of Mr. Wayne Wertz, VP of Operations at Portland Peoples Bank, prepared a cumulative frequency ogive of waiting time for walk-in customers.

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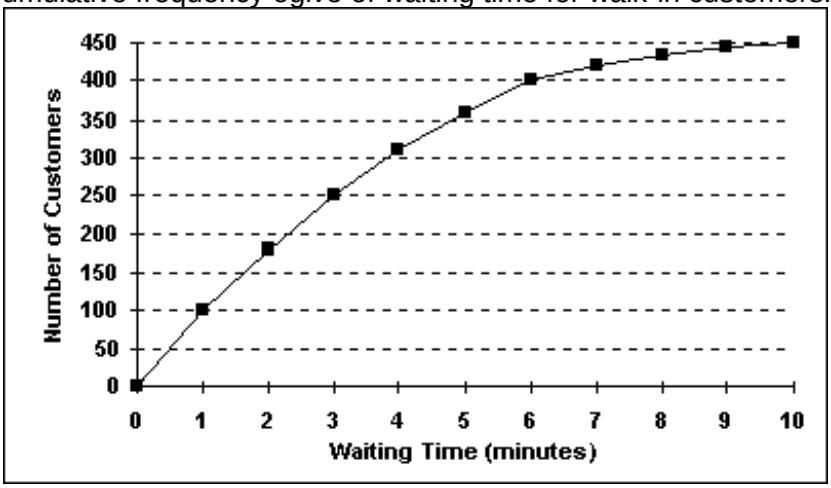


The percentage of walk-in customers waiting more than 6 minutes was ___.
a) 22%
b) 11%
c) 67%
d) 10%
e) 75%

Answer: b

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

79. The staff of Mr. Wayne Wertz, VP of Operations at Portland Peoples Bank, prepared a cumulative frequency ogive of waiting time for walk-in customers.



The percentage of walk-in customers waiting between 1 and 6 minutes was ___.
a) 22%
b) 11%

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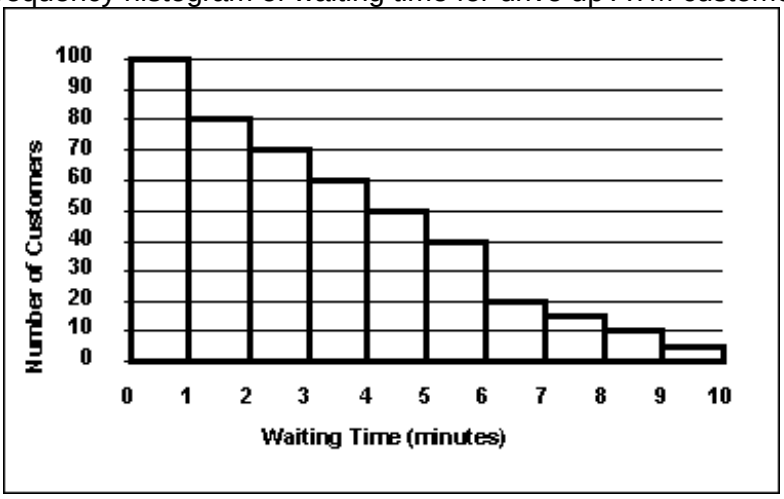
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c) 37%
d) 10%
e) 67%

Answer: e

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

80. The staff of Mr. Wayne Wertz, VP of Operations at Portland Peoples Bank, prepared a frequency histogram of waiting time for drive up ATM customers.



Approximately ___ drive up ATM customers waited less than 2 minutes.
a) 20
b) 30
c) 100
d) 180
e) 200

Answer: d

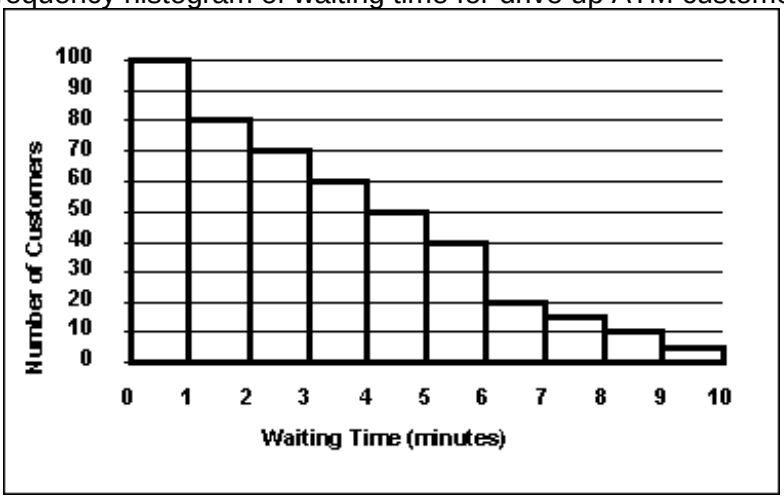
Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

81. The staff of Mr. Wayne Wertz, VP of Operations at Portland Peoples Bank, prepared a

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frequency histogram of waiting time for drive up ATM customers.

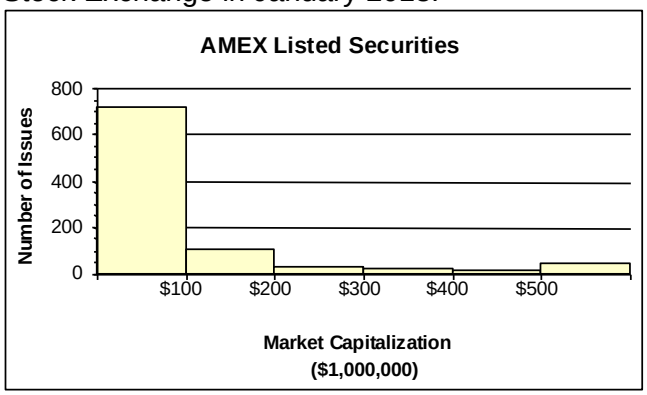


Approximately ___ drive up ATM customers waited at least 7 minutes.
a) 20
b) 30
c) 100
d) 180
e) 200

Answer: b

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

82. The staff of Ms. Tamara Hill, VP of Technical Analysis at Blue Sky Brokerage, prepared a frequency histogram of market capitalization of the 937 corporations listed on the American Stock Exchange in January 2013.



Approximately ___ corporations had capitalization exceeding $200,000,000.
a) 50
b) 100

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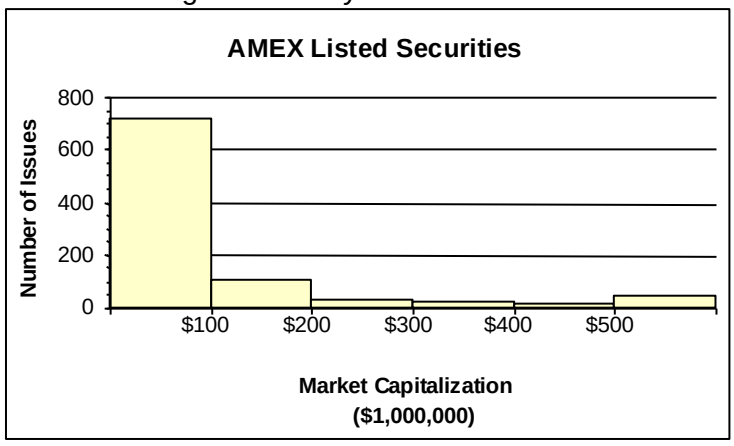
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c) 700
d) 800
e) 890

Answer: b

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

83. The staff of Ms. Tamara Hill, VP of Technical Analysis at Blue Sky Brokerage, prepared a frequency histogram of market capitalization of the 937 corporations listed on the American Stock Exchange in January 2013.



Approximately ___ corporations had capitalizations of $200,000,000 or less.
a) 50
b) 100
c) 700
d) 800
e) 900

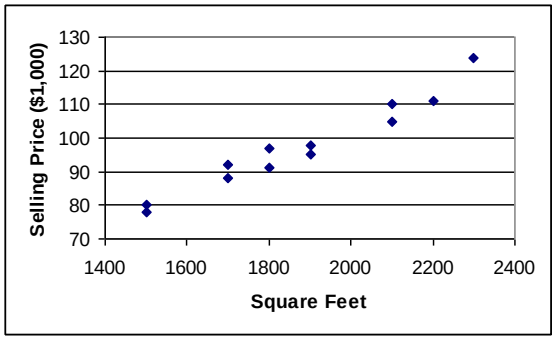
Answer: d

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

84. The following graphic of residential housing data (selling price and size in square feet) is a ___.

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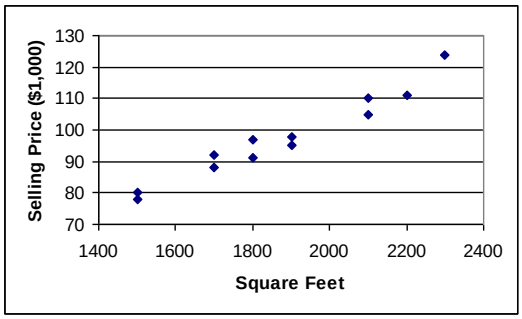


a) scatter plot
b) Pareto chart
c) pie chart
d) cumulative histogram
e) cumulative frequency distribuion

Answer: a

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Comprehension

85. The following graphic of residential housing data (selling price and size in square feet) indicates ___.



a) an inverse relation between the two variables
b) no relation between the two variables
c) a direct relation between the two variables
d) a negative exponential relation between the two variables
e) a sinusoidal relationship between the two variables

Answer: c

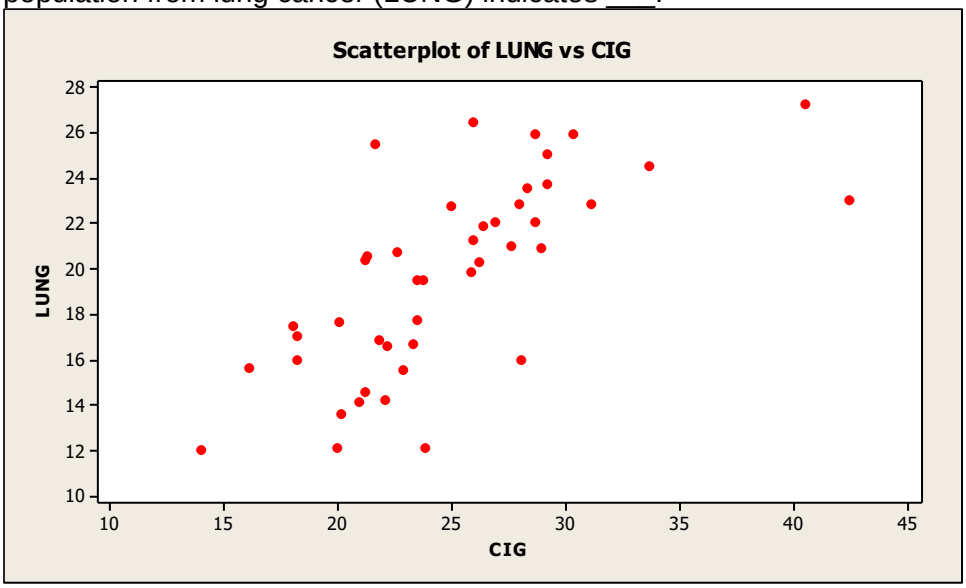
Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.

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Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

86. The following graphic of cigarettes smoked (sold) per capita (CIG) and deaths per 100K population from lung cancer (LUNG) indicates ___.



a) a weak relation between the two variables
b) a pretty strong relation between the two variables
c) when the number of cigarettes smoked (sold) per capita (CIG) increases the deaths per 100K population from lung cancer (LUNG)decreases
d) a negative relation between the two variables
e) no relation between the two variables

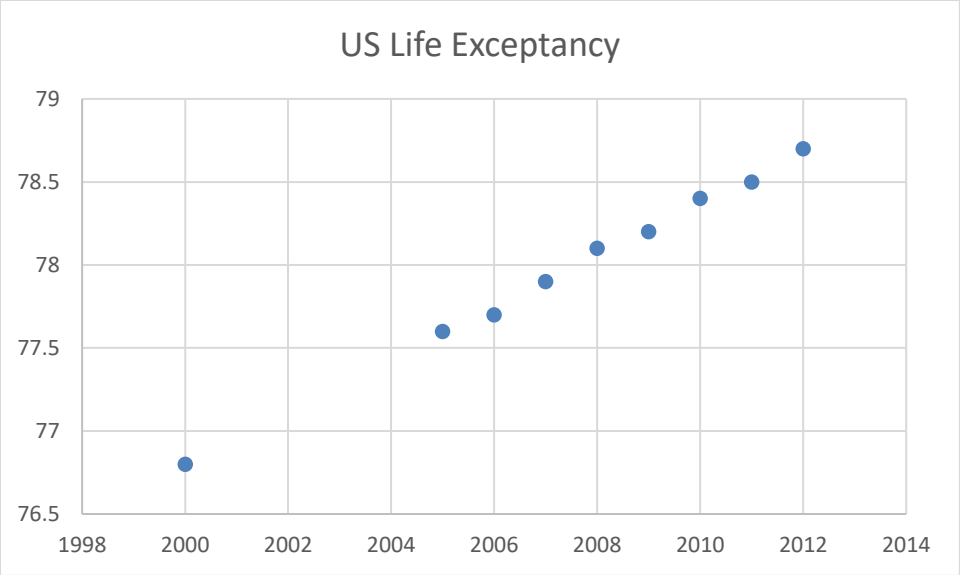
Answer: b

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

87. The United Nations Development Programme website provides comparative data by country on key metrics, such metrics as life expectancy over time. The chart below shows data on life expectancy over time in the United States.

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Which of the following statements are **not** true based on the scatterplot of U.S. Life Expectancy over time?
a) The life expectancy in the U.S. is increasing over time.
b) U.S. citizens lived fewer years in 2010 than they did in in 2008.
c) The scatterplot shows an increasing trend in life expectancy in the U.S.
d) Based on the scatterplot, one can assume the life expectancy in 2014 will be higher than 78 years.
e) Three of these statements are true.

Answer: b

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

88. The United Nations Development Programme website provides comparative data by country on key metrics. Two such metrics are life expectancy and expenditures on health as a percent of GDP. The table below shows data on life expectancy and health expenditures in the United States.

Year	U.S. Life Expectancy	Expenditure on Health (%GDP)
2000	76.8	5.8
2005	77.6	6.7
2006	77.7	7.1
2007	77.9	7.2
2008	78.1	7.6

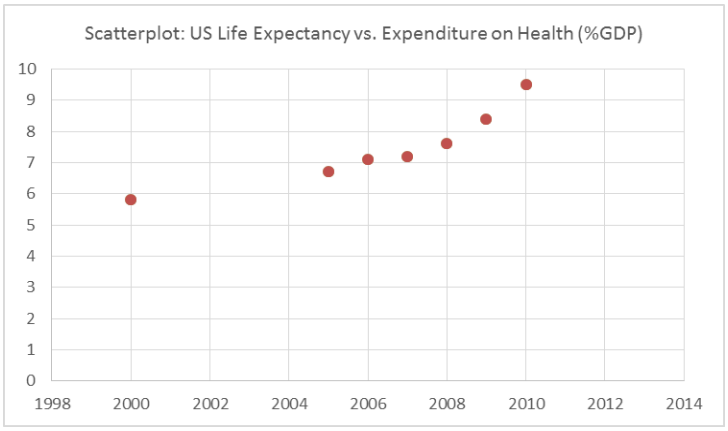
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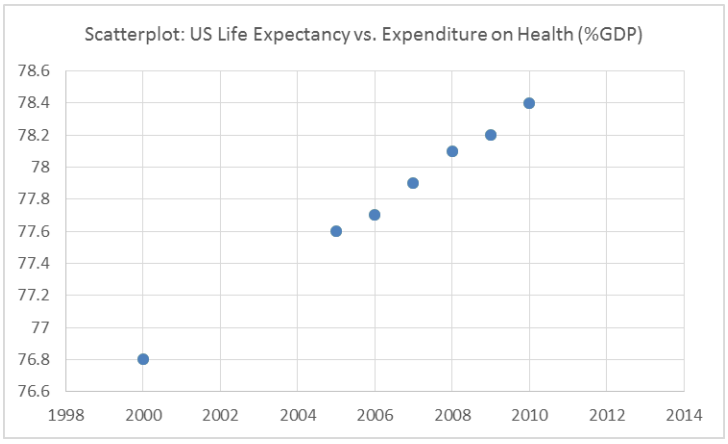
2009	78.2	8.4
2010	78.4	9.5

Which of the following scatterplots best depicts the relationship between life expectancy and expenditures on health as a percent of GDP?

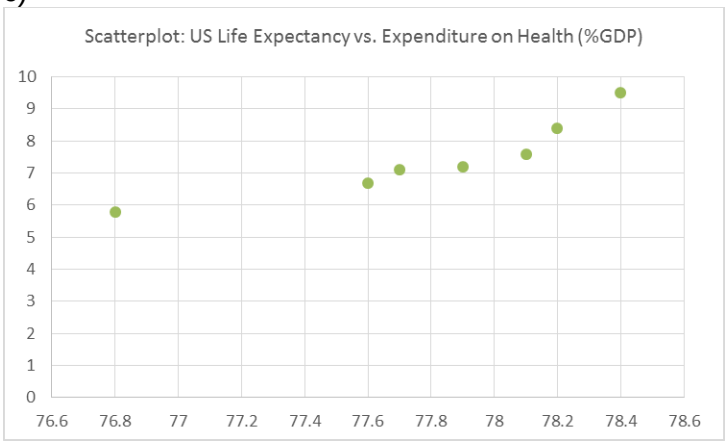
a)



b)



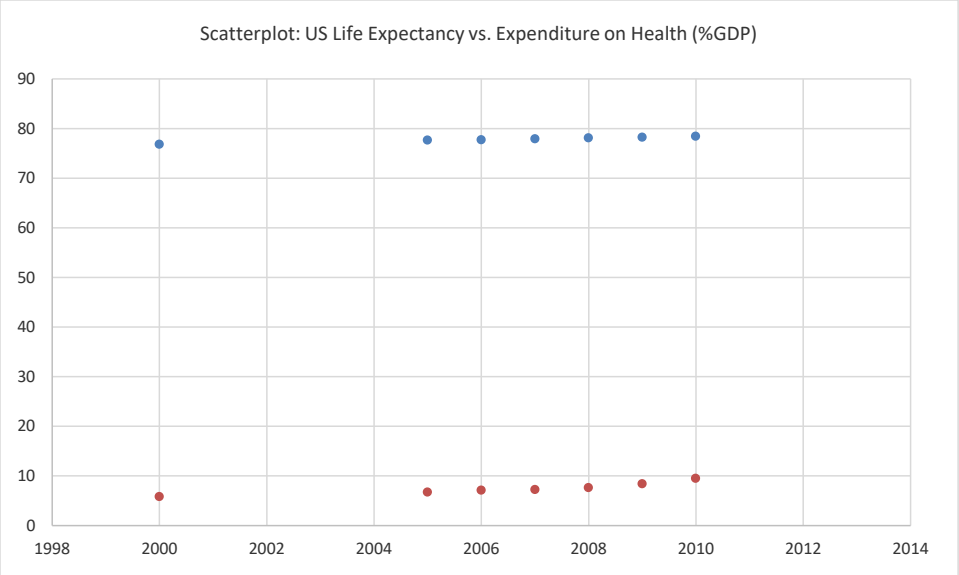
c)



d)

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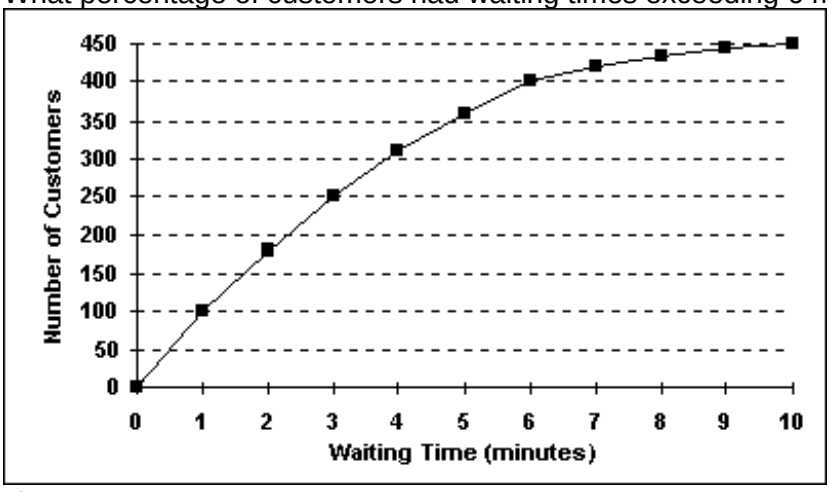
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Answer: c

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Application

89. The customer help center in your company receives calls from customers who need help with some of the customized software solutions your company provides. The staff prepare the following cumulative frequency polygon (ogive) for waiting times during the last three months. What percentage of customers had waiting times exceeding 6 minutes?



a) 7%
b) 8%
c) 11%
d) 12%

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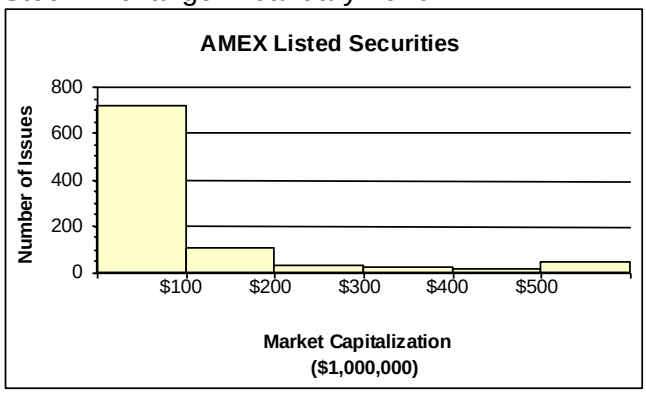
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e) 89%

Answer: c

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Application

90. The staff of Ms. Tamara Hill, VP of technical analysis at Blue Sky Brokerage, prepared a frequency histogram of market capitalization of the 937 corporations listed on the American Stock Exchange in January 2016.



Approximately ___% of corporations had capitalization **not** exceeding $200,000,000.
a) 15
b) 20
c) 75
d) 80
e) 85

Answer: e

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Application

91. Consider a scatterplot showing the relationship between years of formal education and life expectancy. Which of the following statements is **false?**
a) If more years of formal education are correlated with higher life expectancy, then the scatterplot would exhibit a positive slope.
b) If more years of formal education are not correlated with higher life expectancy, then the

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scatterplot would exhibit a flat slope.
c) If more years of formal education are not correlated with higher life expectancy, then the scatterplot would exhibit a flat or negative slope.
d) If more years of formal education are negatively correlated with higher life expectancy, then the scatterplot would exhibit a negative slope.
e) If other research shows a causal effect between years of formal education and higher life expectancy (additional years of formal education cause a higher life expectancy), then the scatterplot could not be flat.

Answer: c

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Reflective Thinking
Bloomcode: Application

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SHORT ANSWER QUESTIONS

92. There are four majors in the School of Business at your local university, Accounting, Finance, Marketing and Management. 240 students are in Accounting major, 160 in Finance major, 80 in marketing major and 320 are in Management major. Develop a relative frequency table for the data.

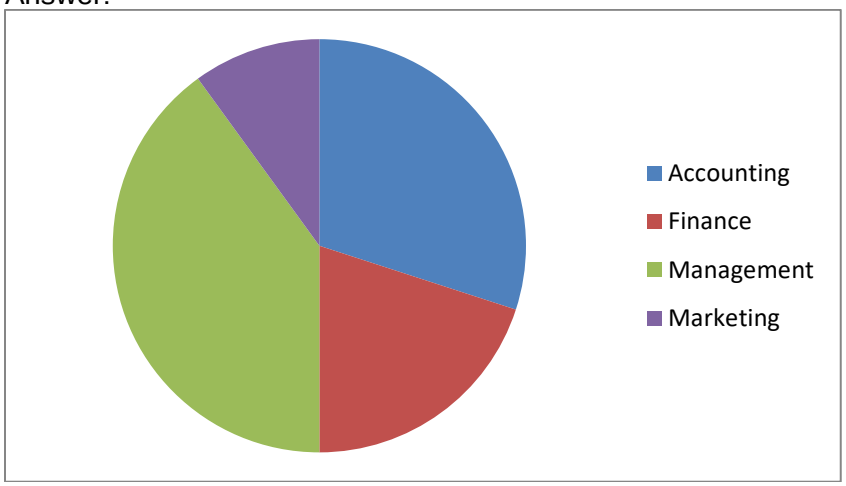
Answer:

Major	Number of Students	Relative Frequency
Accounting	240	0.3
Finance	160	0.2
Management	320	0.4
Marketing	80	0.1
Total	800	1.0

Difficulty: Medium
Learning Objective: Organize categorical data into frequency tables, percent frequency tables, and cumulative frequency tables, and understand how two variable data sets can be organized using a cross-tabulation chart.
Section Reference: 2.1 Organizing Categorical Data
AACSB: Analytic
Bloomcode: Analysis

93. There are four majors in the School of Business Administration at UDS, Accounting, Finance, Marketing and Management. 240 students are in Accounting major, 160 in Finance major, 80 in marketing major and 320 are in Management major. Develop a relative pie chart for the data.

Answer:



Difficulty: Medium
Learning Objective: Describe and construct different types of categorical data graphs, including pie charts, bar charts, and Pareto charts, and explain when these graphs should be used.
Section Reference: 2.2 Visualizing Categorical Data

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AACSB: Analytic
Bloomcode: Analysis

94. The total energy consumption (in kWh) for the month of July 2017 for a sample of 28 houses in a certain city is shown below:
573 466 622 539 480 653 512 784 438 841 592 482 605 553 492 733 536 428 545 477 624 510 672 434 581 506 570 487. Beginning the first class at 400 and using a class with of 50, develop a cumulative frequency distribution for the data.

Answer:

Class	Frequency	Cummulative Frequency
400-450	3	3
450-500	6	9
500-550	7	16
550-600	5	21
600-650	3	24
650-700	2	26
700-750	1	27
750-800	1	28

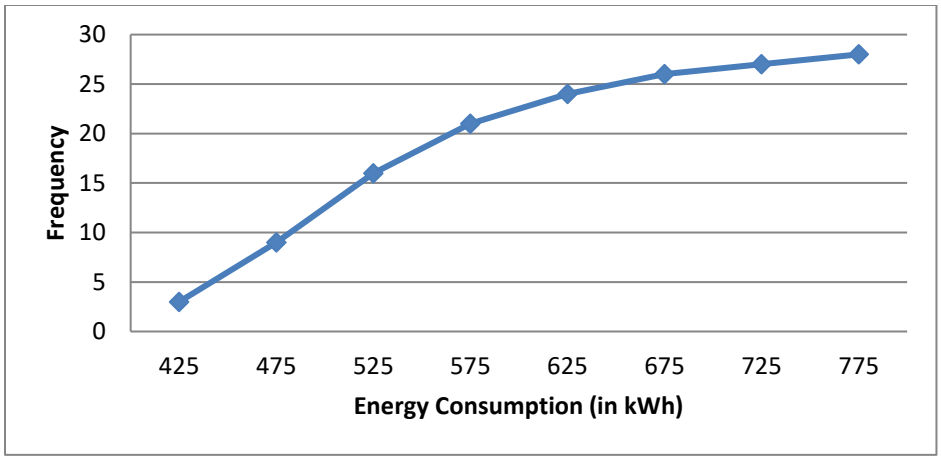
Difficulty: Medium
Learning Objective: Construct a frequency distribution from a set of data, and explain what the distribution represents.
Section Reference: 2.3 Organizing Quantitative Data
AACSB: Analytic
Bloomcode: Analysis

95. The total energy consumption (in kWh) for the month of July 2017 for a sample of 28 houses in a certain city is shown below:
573 466 622 539 480 653 512 784 438 841 592 482 605 553 492 733 536 428 545 477 624 510 672 434 581 506 570 487.
a) Beginning the first class at 400 and using a class with of 50, construct a cumulative frequency polygon (ogive) for the data.
b) What percentage of houses consumed at least 625 kWh in July 2017?

Answer:
a)

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b) approximately 18%

Difficulty: Medium
Learning Objective: Describe and construct different types of quantitative data graphs, including histograms, cumulative frequency histograms, and frequency polygons, and explain when these graphs should be used.
Section Reference: 2.4 Visualizing Quantitative Data
AACSB: Analytic
Bloomcode: Analysis

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