Business Statistics For Contemporary Decision Making 10th edition Black Test Bank

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File: ch02, Chapter 2: Charts and Graphs

True/False

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

Ans: True
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

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

Ans: False
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

3. A cumulative frequency distribution provides a running total of the frequencies through the classes of a frequency distribution.

Ans: True
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

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

Ans: False
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

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5. 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.

Ans: False
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

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

Ans: False
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

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

Ans: True
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

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

Ans: True
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

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9. One advantage of a stem and leaf plot over a frequency distribution is that the values of the original data are retained.

Ans: True
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

10. For a company in a gardening supplies business, the best graphical presentation of the percentage of the total budget spent in each different expense category is the stem and leaf plot.

Ans: False
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Hard
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

11. In a histogram, the tallest bar(s) represents the class or classes with the highest cumulative frequency.

Ans: False
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

12. Dot Plots are mainly used to display a large data set.

Ans: False
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

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

Ans: False
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Easy
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

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

Ans: True
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Easy
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

15. A Pareto chart and a pie chart are both types of qualitative graphs.

Ans: True
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Easy
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

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

Ans: False
Response: See section 2.4 Charts and Graphs for Two Variables.
Difficulty: Medium
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data.

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

Ans: True

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Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data.

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

Ans: True
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Easy
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data.

19. A cross tabulation is a graph that separately displays the frequency counts for two variables.

Ans: False
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data.

20. A scatter plot indicates that two variables are unrelated as their data are scattered.

Ans: False
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data.

21. When looking at a scatter plot, if a trend can be discerned between changes in one variable that appear to be related to changes in the other variable, there is likely a relationship between the two variables.

Ans: False
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data.

22. To consider historical data as part of their decisions, management often uses time-series data.

Ans: True
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Easy

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Learning objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data.

23. The point of "cleaning" time-series data is to be sure all the data are accurate.

Ans: False
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data.

24. Time-series data should be shown from oldest time period to the most recent.

Ans: True
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data.

25. To compare two series of data during the same time period, the graph should show the first and then show the second after that, all in one line.

Ans: False
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data.

26. To show differences between different series during the same time periods, different trend lines, each in a different color, and all using the same x axis for graphing.

Ans: True
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data.

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27. Visualization of time-series data is considered descriptive business analytics.

Ans: True
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data.

Multiple Choice

28. 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

Ans: c
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

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

Score	Frequency
30-under 40	1

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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

Ans: e
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

30. 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

Ans: c
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

31. 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

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b) 0.30
c) 0.10
d) 0.20
e) 0.40

Ans: b
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

32. 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

Ans: b
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

33. 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

Ans: d
Response: See section 2.1 Frequency Distributions

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Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

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

Ans: c
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

35. 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

Ans: c
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

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36 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
d) 5
e) 9

Ans: e
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

37. 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

Ans: b
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

38. 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

Ans: d
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

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

Ans: e
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

40. 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 were 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.

Ans: c
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

41. 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 34	-

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34-under 35	-
35-under 38	-

Before data were collected, someone questioned the validity of this arrangement. Which of the following represents a problem with this set of intervals?
a) The intervals are too wide.
b) More classes are needed as the numbers are in the thousands.
c) The first interval should start at 0.
d) The second and the third interval overlap.
e) The third interval is smaller than the others.

Ans: e
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

42. 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 were 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.

Ans: d
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

43. Abel Alonzo, Director of Human Resources, is exploring employee absenteeism at Harrison Haulers, Inc. 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

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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.

Ans: b
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

44. Abel Alonzo, Director of Human Resources, is exploring employee absenteeism at Harrison Haulers, Inc.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 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.

Ans: a
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

45. Consider the relative frequency distribution given below:

Class Interval	Relative Frequency
20-under 40	0.2
40-under 60	0.3

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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

Ans: a
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

46. 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?
a) 30
b) 50
c) 18
d) 12
e) 15

Ans: c
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

47. 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

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d) 54
e) 100

Ans: d
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

48. 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

Ans: b
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

49. 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

Ans: a
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

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50. 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

Ans: c
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

51. 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

Ans: b
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

52. 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

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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

Ans: b
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

53. 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

Ans: c
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

54. 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

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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

Ans: d
Response: See section 2.1 Frequency Distributions
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

55. Consider the following stem and leaf plot:

Stem	Leaf
1	0, 2, 5, 7
2	2, 3, 4, 4
3	0, 4, 6, 6, 9
4	5, 8, 8, 9
5	2, 7, 8

Suppose that a frequency distribution was developed from this plot, and there were 5 classes (10-under 20, 20-under 30, etc.). What would the frequency be for class 30-under 40?
a) 3
b) 4
c) 6
d) 7
e) 5

Ans: e
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

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56. Consider the following stem and leaf plot:

Stem	Leaf
1	0, 2, 5, 7
2	2, 3, 4, 8
3	0, 4, 6, 6, 9
4	5, 8, 8, 9
5	2, 7, 8

Suppose that a frequency distribution was developed from this plot, and there were 5 classes (10-under 20, 20-under 30, etc.). What would be the relative frequency of the class 20-under 30?
a) 0.4
b) 0.25
c) 0.20
d) 4
e) 0.50

Ans: c
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

57. Consider the following stem and leaf plot:

Stem	Leaf
1	0, 2, 5, 7
2	2, 3, 4, 8
3	0, 4, 6, 6, 9
4	5, 8, 8, 9
5	2, 7, 8

Suppose that a frequency distribution was developed from this plot, and there were 5 classes (10-under 20, 20-under 30, etc.). What was the highest number in the data set?
a) 50
b) 58
c) 59
d) 78
e) 98

Ans: b
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Easy
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

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58. Consider the following stem and leaf plot:

Stem	Leaf
1	0, 2, 5, 7
2	2, 3, 4, 8
3	0, 4, 6, 6, 9
4	5, 8, 8, 9
5	2, 7, 8

Suppose that a frequency distribution was developed from this plot, and there were 5 classes (10-under 20, 20-under 30, etc.). What was the lowest number in the data set?
a) 0
b) 10
c) 7
d) 2
e) 1

Ans: b
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Easy
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

59. Consider the following stem and leaf plot:

Stem	Leaf
1	0, 2, 5, 7
2	2, 3, 4, 8
3	0, 4, 6, 6, 9
4	5, 8, 8, 9
5	2, 7, 8

Suppose that a frequency distribution was developed from this, and there were 5 classes (10-under 20, 20-under 30, etc.). What is the cumulative frequency for the 30-under 40 class interval?
a) 5
b) 9
c) 13
d) 14
e) 18

Ans: c
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium

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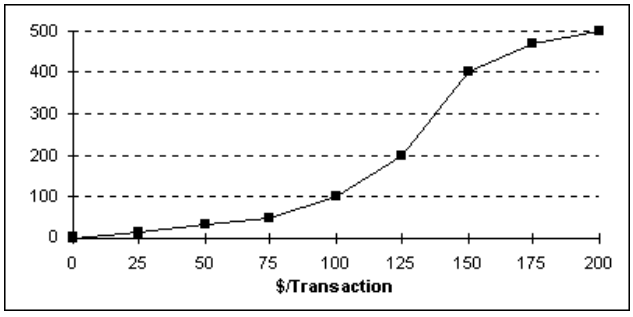
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Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

60. The following represent the ages of students in a class:
19, 23, 21, 19, 19, 20, 22, 31, 21, 20
If a stem and leaf plot were to be developed from this, how many stems would there be?
a) 2
b) 3
c) 4
d) 5
e) 10

Ans: b
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

61. 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.



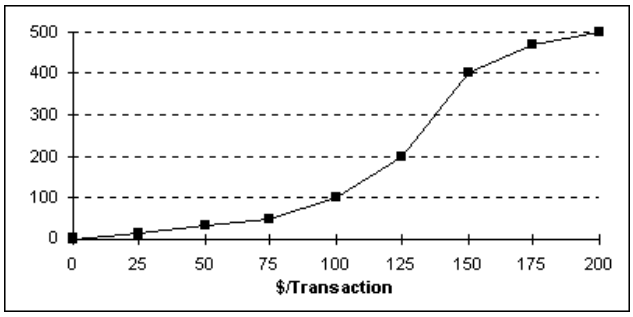
The total number of sales transactions on Saturday was _____.
a) 200
b) 500
c) 300
d) 100
e) 400

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Ans: b
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Easy
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

62. 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.



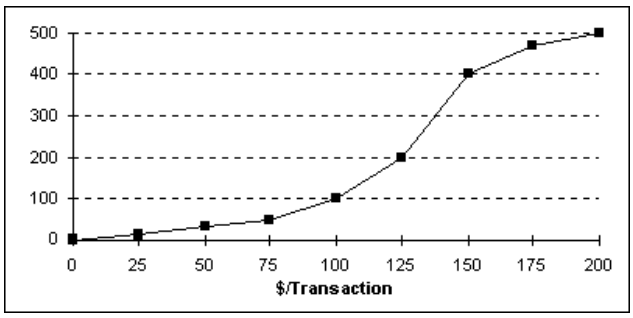
The percentage of sales transactions on Saturday that were under $100 each was _____.
a) 100
b) 10
c) 80
d) 20
e) 15

Ans: d
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

63. 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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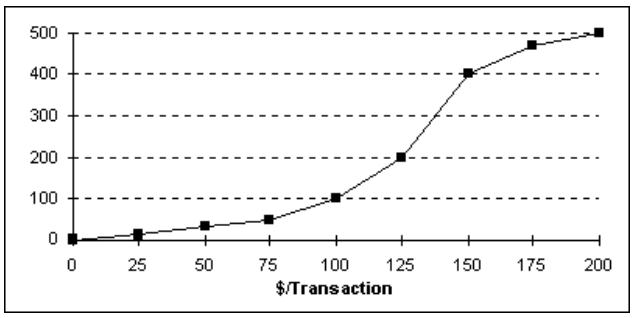
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The percentage of sales transactions on Saturday that were at least $100 each was _____.
a) 100
b) 10
c) 80
d) 20
e) 15

Ans: c
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

64. 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 _____.

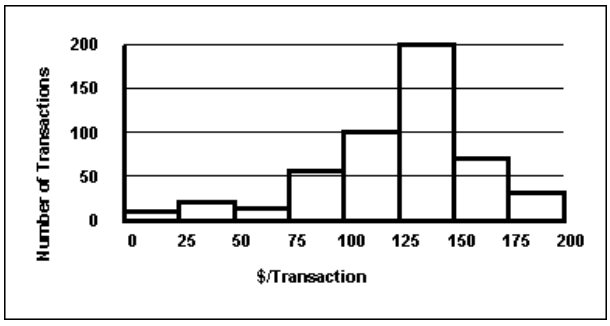
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a) 20
b) 40
c) 60
d) 80
e) 10

Ans: c
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Hard
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

65. 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.



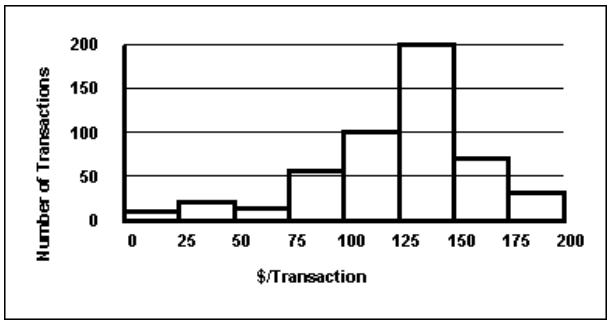
On Friday, the approximate number of sales transactions in the 75-under 100 category was _____.
a) 10
b) 100
c) 150
d) 200
e) 60

Ans: e
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

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66. 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.



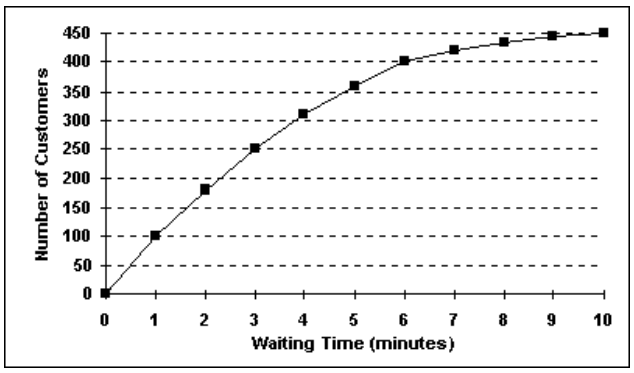
On Friday, the approximate number of sales transactions between $150 and $175 was _____.
a) 75
b) 200
c) 300
d) 400
e) 500

Ans: a
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

67. 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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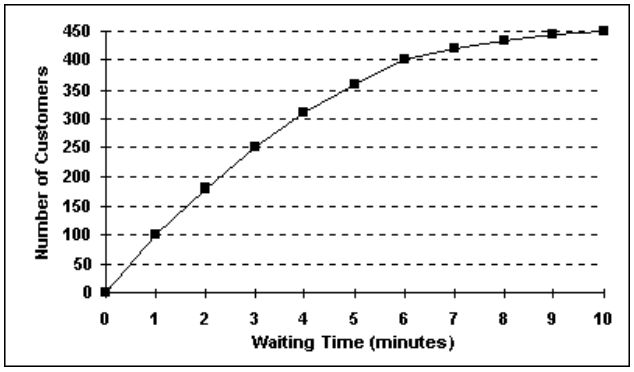
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The total number of walk-in customers included in the study was _____.
a) 100
b) 250
c) 300
d) 450
e) 500

Ans: d
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Easy
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

68. 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.



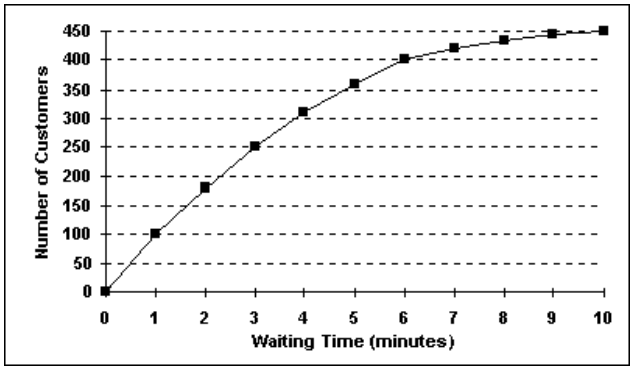
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The percentage of walk-in customers waiting one minute or less was _____.
a) 22
b) 11
c) 67
d) 10
e) 5

Ans: a
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

69. 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.



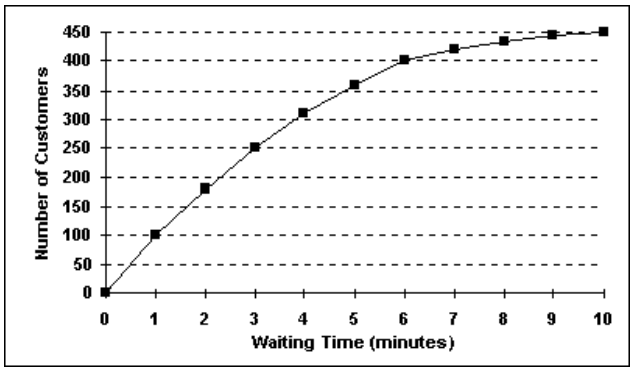
The percentage of walk-in customers waiting more than 6 minutes was _____.
a) 22
b) 11
c) 67
d) 10
e) 75

Ans: b
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

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70. 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
c) 37
d) 10
e) 67

Ans: e
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

71. 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.

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

Ans: d
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

72. 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.



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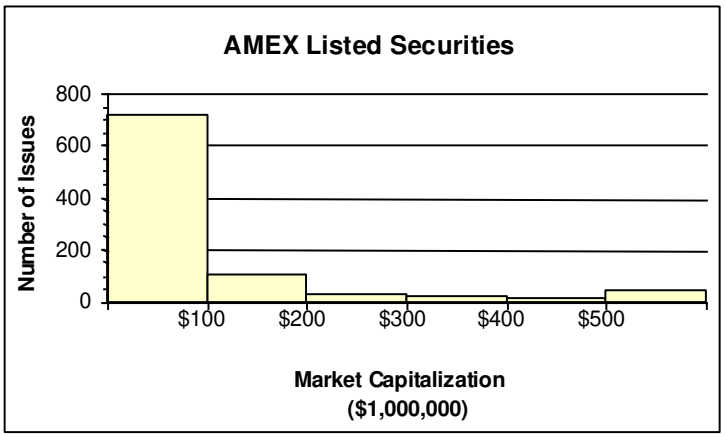
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Approximately ____ drive up ATM customers waited at least 7 minutes.
a) 20
b) 30
c) 100
d) 180
e) 200

Ans: b
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

73. 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 2019.

Commented [u1]: Enlarged chart below and same chart in question 65 is also made larger, per suggestion



Approximately _____ corporations had capitalization exceeding $200,000,000.
a) 50
b) 100
c) 700
d) 800
e) 890

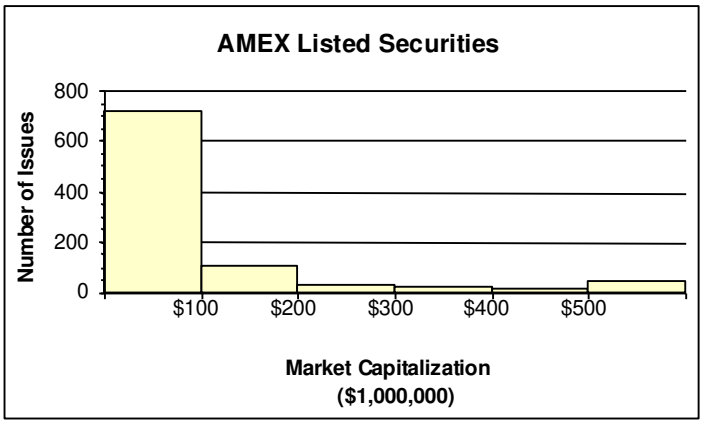
Ans: b
Response: See section 2.2 Quantitative Data Graphs

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Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

74. 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

Ans: d
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

75. 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?

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a) A histogram
b) A bar chart
c) A cumulative frequency distribution
d) A frequency distribution
e) A scatter plot

Ans: b
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Medium
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

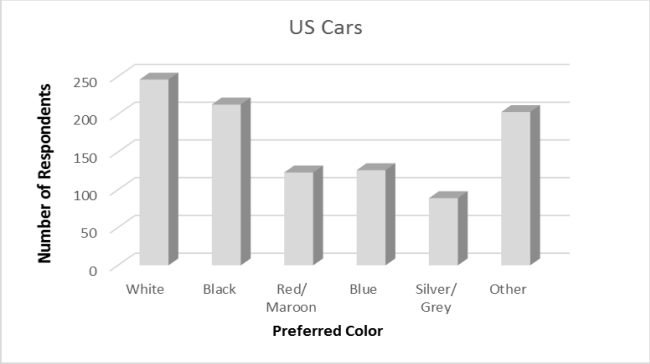
76. The staff of the accounting and the quality control departments rated their respective supervisor's leadership style as either (1) authoritarian or (2) participatory. Sixty-eight percent of the accounting staff rated their supervisor "authoritarian," and thirty-two percent rated him/her "participatory." Forty percent of the quality control staff rated their supervisor "authoritarian," and sixty percent rated him/her "participatory." The best graphic depiction of these data would be two _____.
a) histograms
b) frequency polygons
c) ogives
d) pie charts
e) scatter plots

Ans: d
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Hard
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

77. A recent survey of U.S. automobile owners showed the following preferences for exterior automobile colors:

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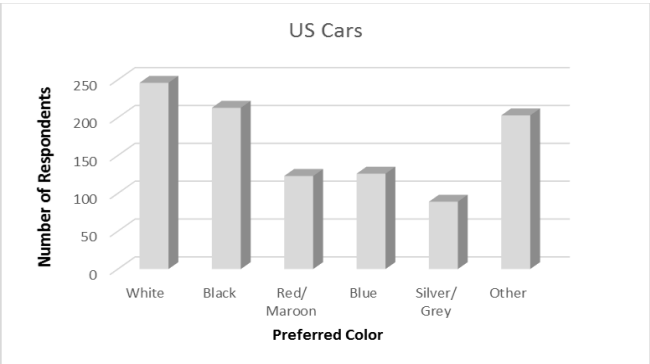


What type of graph is used to depict exterior automobile color preferences?

a. Frequency polygon
b. Pareto chart
c. Bar graph
d. Ogive
e. Histogram

Ans: c
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Easy
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

78. A recent survey of U.S. automobile owners showed the following preferences for exterior automobile colors:



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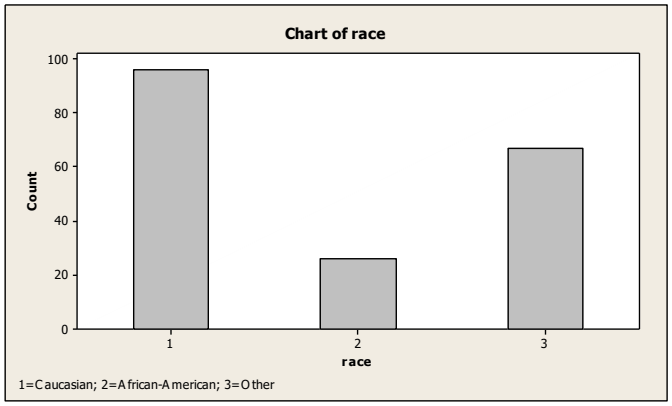
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What are the top two color preferences for automobiles?

a. White and Black
b. White and Red/ Maroon
c. White and Blue
d. White and Silver/Grey
e. Black and Other

Ans: a
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Easy
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

79. The following is a bar chart of the self-reported race for 189 pregnant women.



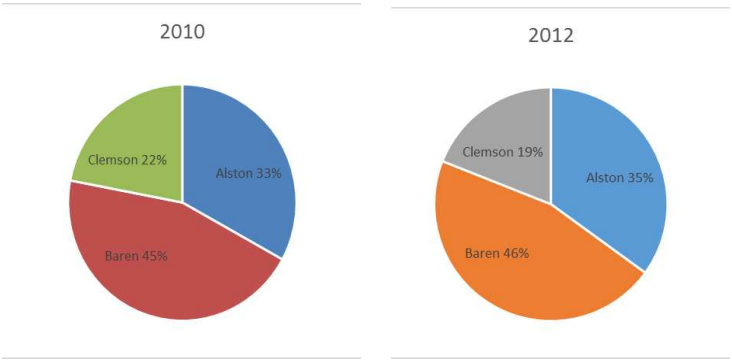
Approximately _____ percent of pregnant women are African-American
a) 20
b) 14
c) 5
d) 35
e) 50

Ans: b
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Medium
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

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



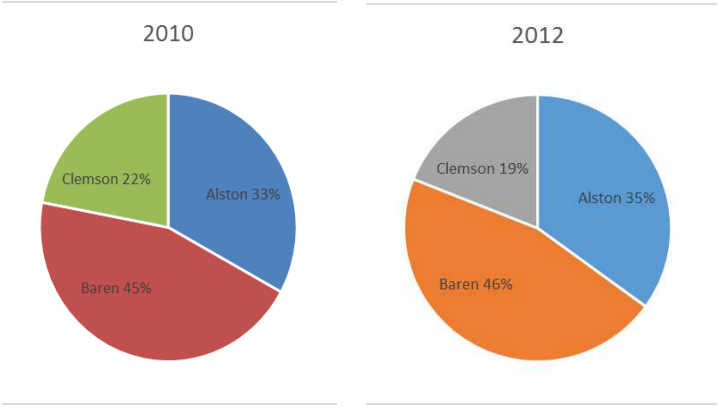
Which of the following is true?
a) Only Baren gained market share.
b) Only Clemson lost market share.
c) Alston lost market share.
d) Baren lost market share.
e) All companies lost market share

Ans: b
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Medium
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

81. The 2010 and 2012 market share data of 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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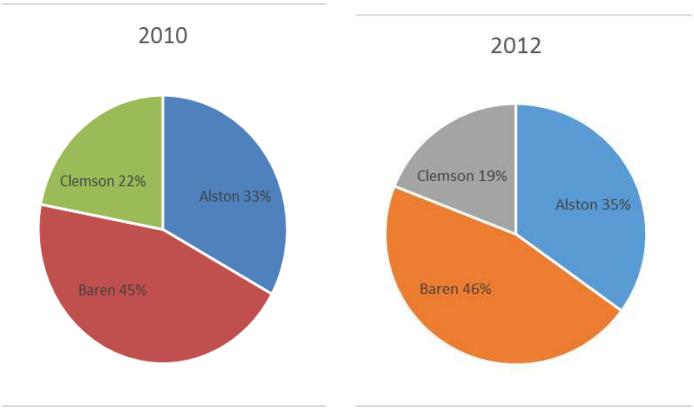
a) $330 million
b) $630 million
c) $675 million
d) $828 million
e) $928 million

Ans: a
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Medium
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

82. The 2010 and 2012 market share data of 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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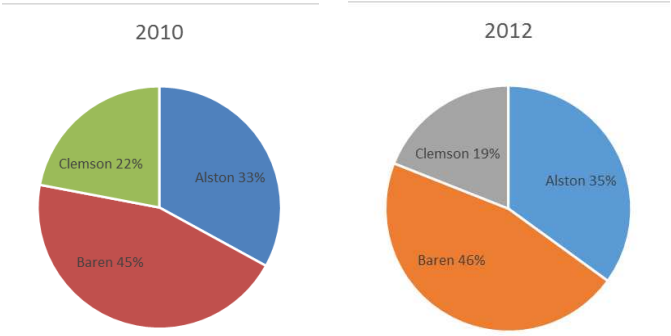
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a) $342 million
b) $630 million
c) $675 million
d) $828 million
e) $928 million

Ans: c
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Medium
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

83. The 2010 and 2012 market share data of 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?

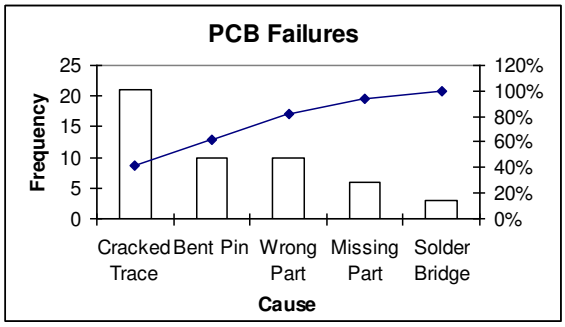
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a) Sales revenues declined at Clemson.
b) Only Clemson lost market share.
c) Alston gained market share.
d) Baren gained market share.
e) Both Alston and Baren gained market share

Ans: a
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Hard
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

84. The following graphic of PCB Failures is a _____.



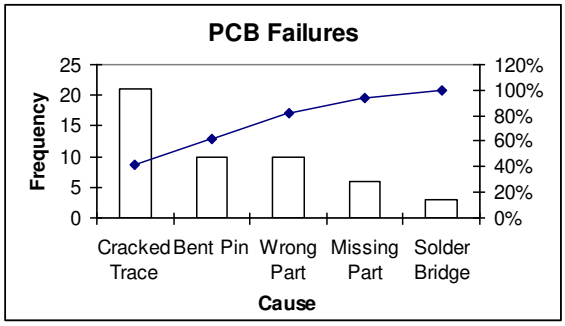
a) Scatter Plot
b) Pareto Chart
c) Pie Chart
d) Cumulative Histogram Chart
e) Line diagram

Ans: b
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Easy
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed.

85. According to the following graphic, the most common cause of PCB Failures is a _____.

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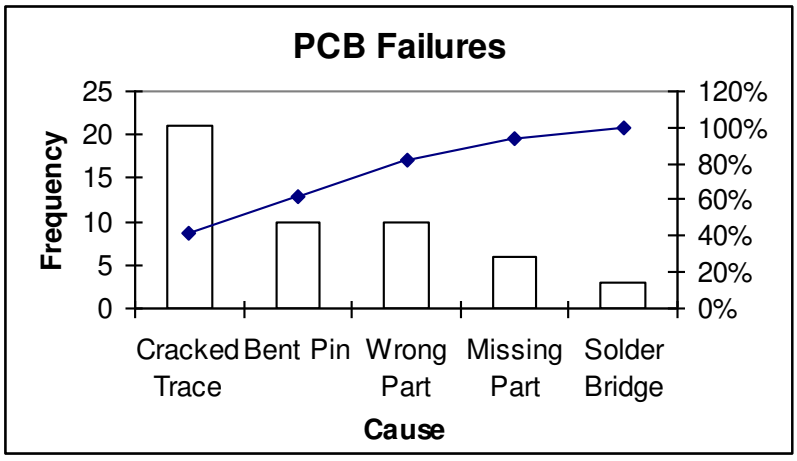


a) Cracked Trace
b) Bent Pin
c) Missing Part
d) Solder Bridge
e) Wrong Part

Ans: a
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Easy
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed

86. According to the following graphic, "Bent Pins" account for ____% of PCB Failures.

Commented [u2]: Made chart below larger per suggestion



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

Ans: b
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Hard
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed

87. Suppose a market survey of 200 consumers was conducted to determine the likelihood of each consumer purchasing a new computer next year. Data were collected based on the age of the consumer and are shown below:

Age Bracket	**Intent to Purchase Computer within 1 year**
<25	54
25-34	57
35-44	49
45-54	29
>55	11
Total Surveyed	**200**

Using the table above, which of the following statements is true about the surveyed consumers?

a. More of the surveyed consumers likely to purchase a computer next year are younger.
b. More of the surveyed consumers likely to purchase a computer next year are older.
c. The surveyed consumers likely to purchase a computer are evenly distributed among the age brackets.
d. The largest group of surveyed consumers likely to purchase a new computer next year are between 25 and 34 years old.
e. None of the above statements are true.

Ans: d
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Easy
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data.

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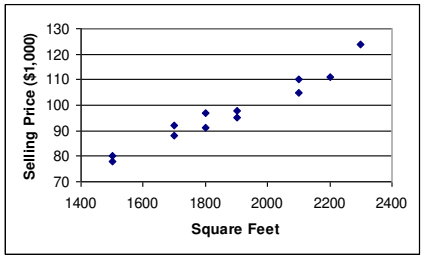
88. Suppose a market survey of 200 consumers was conducted to determine the likelihood of each consumer purchasing a new computer next year. The data were collected based on the income level of the consumer and are shown below:

Income Level	Intent to Purchase Computer within 1 year
<$30K	40
$30K - $59K	43
$60K - $89K	38
$90 - $119K	40
$120K	39
Total Surveyed	200

Using the table above, which of the following statements is true?
a. More of the surveyed consumers likely to purchase a computer next year are wealthier.
b. The surveyed consumers likely to purchase a computer are distributed across all income levels.
c. Among surveyed consumer likely to purchase a computer in the next year, the smallest group was among the most wealthy.
d. Less of the surveyed consumers likely to purchase a new computer next year have income more than $120K.
e. None of the above statements are true.

Ans: b
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: easy
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data.

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



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

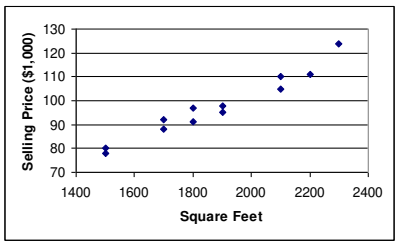
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e) cumulative frequency distribuion

Ans: a
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Easy
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data.

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



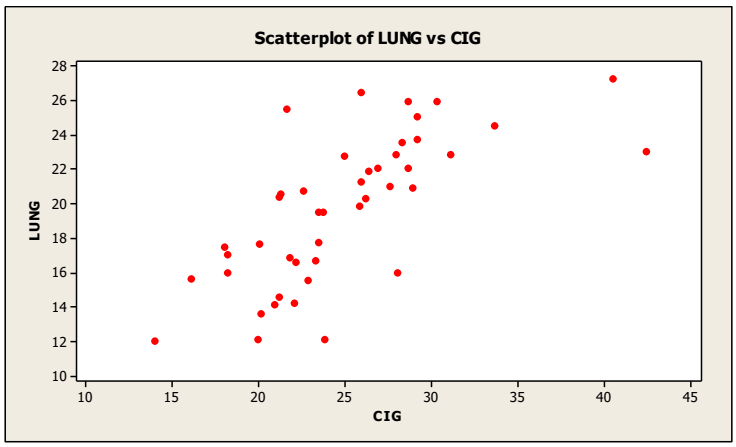
a) an inverse relation between the two variables
b) no relation between the two variables
c) a direct relation between the two variables
d) a negative exponential relation between the two variables
e) a sinusoidal relationship between the two variables

Ans: c
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data.

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

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a) a weak negative relationship between the two variables
b) a somewhat positive relationship 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 relationship between the two variables
e) no relationship between the two variables

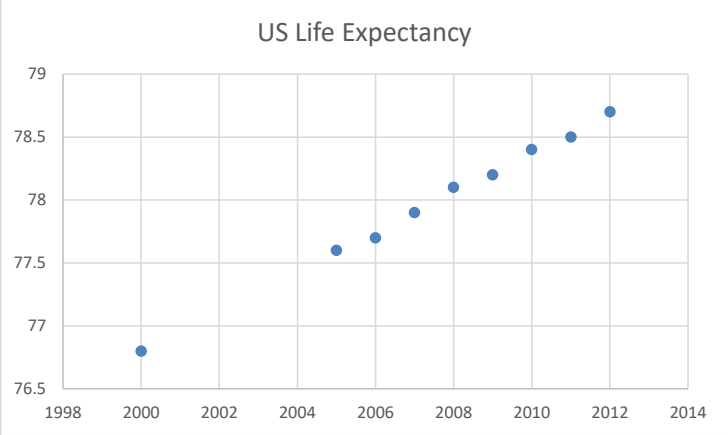
Ans: b
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data

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

Commented [u3]: I corrected the incorrect spelling in the graph's title, but it does not follow in track changes

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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 had a shorter life expectancy 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. All of these statements are true.

Ans: b
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
Learning objective: 2.4 Recognize basic trends in two-variable scatter plots of numerical data

93. 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
2009	78.2	8.4
2010	78.4	9.5

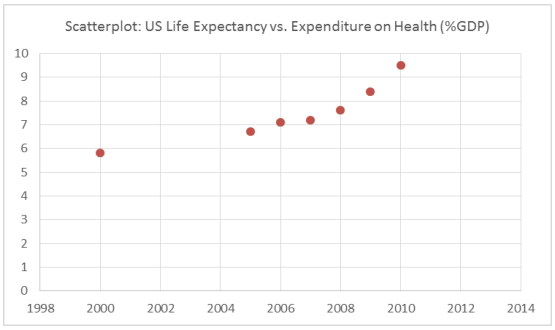
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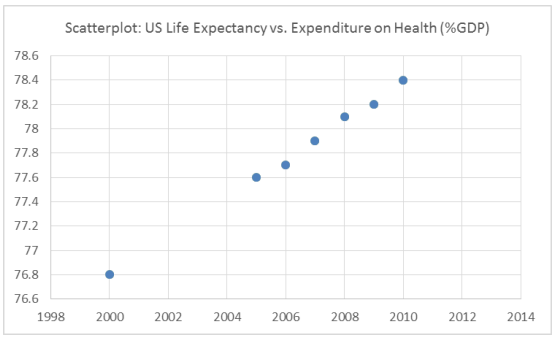
Which of the following scatterplots best depicts the relationship between life expectancy and expenditures on health as a percent of GDP?

Commented [u4]: In each graph title, the work "expenditures" should be plural

a.



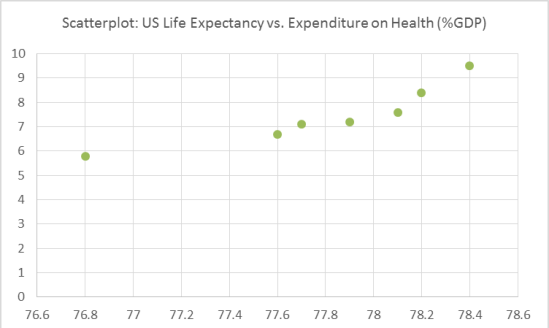
b.



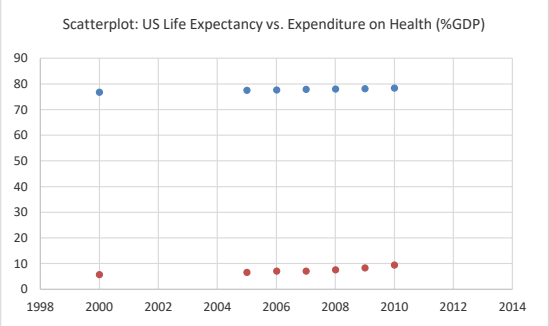
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c.



d.



Ans: c
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
Learning objective: 2.4 Recognize basic trends in two variable scatter plots of numerical data

94. A retail shoe company would like to consider key elements that might impact the sales related a specific store's location in the town. If placed on a scatter plot, which two variables would be helpful in helping management with this information?
a) Sales and weather
b) Sales and square footage
c) Sales and nearest grocery store
d) Sales and average age of customers
e) Sales and nearest shopping mall

Ans: e
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
Learning objective: Recognize basic trends in two variable scatter plots of numerical data

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95. If both variables being analyzed are nominal data, the best method to reveal any potential connections between them would be with a _____.
a) bar chart
b) scatter plot
c) cross tabulation
d) two pie charts
e) line graphs

Ans: c
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
Learning objective: Recognize basic trends in two variable scatter plots of numerical data

96. Two other names for cross tabulations are _____ and _____.
a) frequencies, contingency tables
b) contingency tables, pivot tables
c) scatter tables, pivot tables
d) cross plots, frequencies
e) Pareto charts, cross plots

Ans: b
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
Learning objective: Recognize basic trends in two variable scatter plots of numerical data

97. Scott Brim, Chief Financial Officer of Space Mall, Inc., wants to better understand the busiest business hours during the weekend. There are door sensors that approximate 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 each hour:

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

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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

Ans: c
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
AACSB: Reflective thinking
Bloom's level: Application
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

98. 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

Ans: a
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
AACSB: Reflective thinking
Bloom's level: Application
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

99. 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

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Ans: a
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
AACSB: Reflective thinking
Bloom's level: Application
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

100. 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

Ans: e
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
AACSB: Reflective thinking
Bloom's level: Knowledge
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

101. 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) 20.72
d) 21.75
e) 23.09

Ans: c
Response: See section 2.1 Frequency Distributions
Difficulty: Hard
AACSB: Reflective thinking
Bloom's level: Application
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

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102. 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

Ans: e
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
AACSB: Reflective thinking
Bloom's level: Knowledge
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

103. 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

Ans: c
Response: See section 2.1 Frequency Distributions
Difficulty: Hard
AACSB: Reflective thinking
Bloom's level: Application
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

104. 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

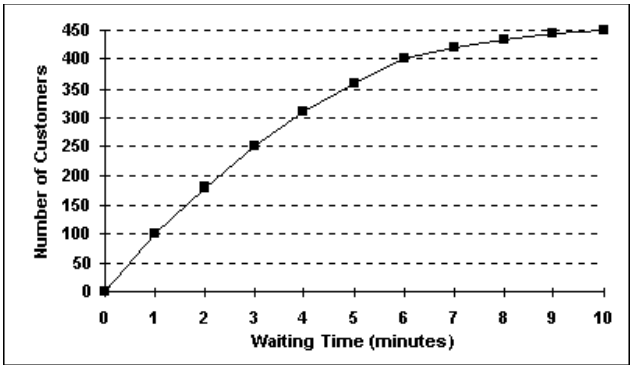
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e) less than or equal to

Ans: b
Response: See section 2.1 Frequency Distributions
Difficulty: Medium
AACSB: Reflective thinking
Bloom's level: Knowledge
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

105. 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 ogive for waiting times during the last three months. What percentage of customers had waiting times exceeding 6 minutes?



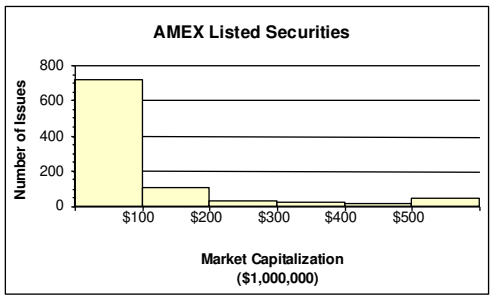
a) 7%
b) 8%
c) 11%
d) 12%
e) 89%

Ans: c
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
AACSB: Reflective thinking
Bloom's level: Application
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

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106. 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.



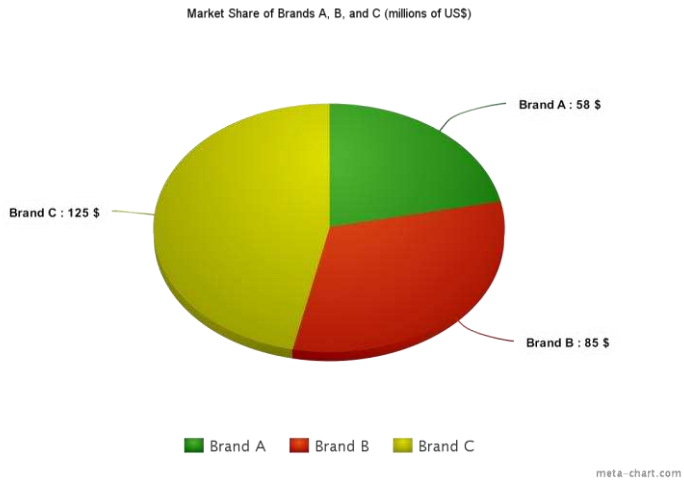
Approximately _____% of corporations had capitalization not exceeding $200,000,000.
a) 15
b) 20
c) 75
d) 80
e) 85

Ans: e
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
AACSB: Reflective thinking
Bloom's level: Application
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

107. The following pie chart shows the market share of the only three brands in a market at the end of last year:

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If by the end of the current year, brand C increases its market share to 51%, brand B maintains its market share, and total market sales increase by 15%, then this year's sales for brand A will be
a) 67
b) 65
c) 55
d) 53
e) 50

Ans: d
Response: See section 2.3 Qualitative Data Graphs
Difficulty: Hard
AACSB: Reflective thinking
Bloom's level: Application
Learning Objective: 2.3: Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed

108. 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 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.

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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.

Ans: c
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: Medium
AACSB: Reflective thinking
Bloom's level: Application
Learning Objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data

109. The following time-series data shows the average number of vacation days taken each year by employees.

2010	22
2011	25
2012	26
2013	29
2014	24
2015	21
2016	22
2017	20
2018	19

Which of the following would be indicated if these data were shown through a visualization of these data?
a) The average increased with each year shown.
b) The average increased and then generally decreased during these years.
c) The average decreased with each year shown.
d) The average was highest in 2012 then declined since then.
e) The average was lowest in 2015 and increased since then.

Ans: b
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

110. The following time-series data shows the average number of vacation days taken each year by employees.

2010	22
2011	25
2012	26
2013	29

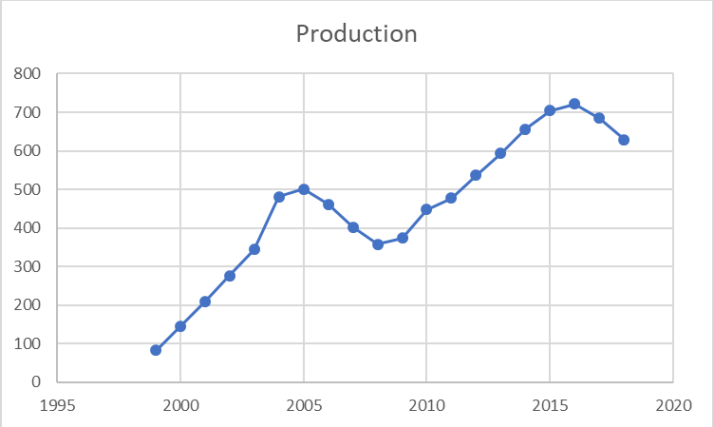
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2014 24
2015 21
2016 22
2017 20
2018 19
The most effective visualization of these data would be:
a) a pie chart going chronologically clockwise.
b) a bar chart with most recent year to the left.
c) a line chart with most recent year to the right.
d) a bar chart with the highest average to the left
e) a line chart with the highest average to the right.

Ans: c
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

111. A shirt production company has tracked their production since the company started in 1999. The graph of their annual production is shown.



During these years, production has generally _____.
a) increased in these years.
b) declined in most of the years shown.
c) increased in every year since 1999.
d) decreased in most of those years.
e) increased and declined without a discernable trend.

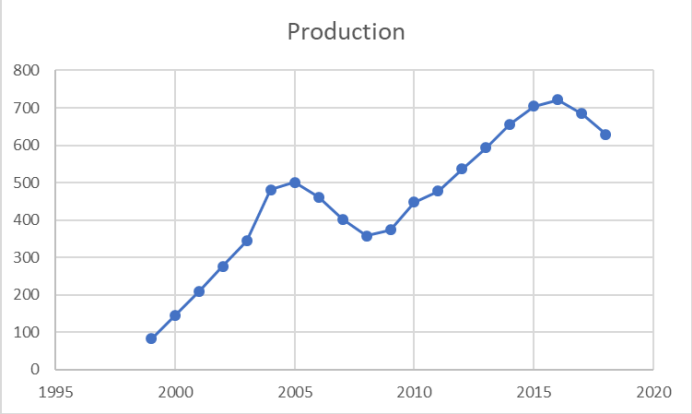
Ans: a
Response: See section 2.5 Visualizing Time-Series Data

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Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

112. A shirt production company has tracked their production since the company started in 1999. The graph of their annual production is shown.



After 2005, in what year did production recover and surpass the production level of 2005?
a) 2006
b) 2009
c) 2010
d) 2012
e) 2013

Ans: d
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

113. To show hourly sales throughout a day, a _____ chart would be most effective, and a _____ chart would be more effective at showing what products were sold during that day.
a) pie, line
b) line, line
c) pie, bar
d) line, pie
e) bar, pie

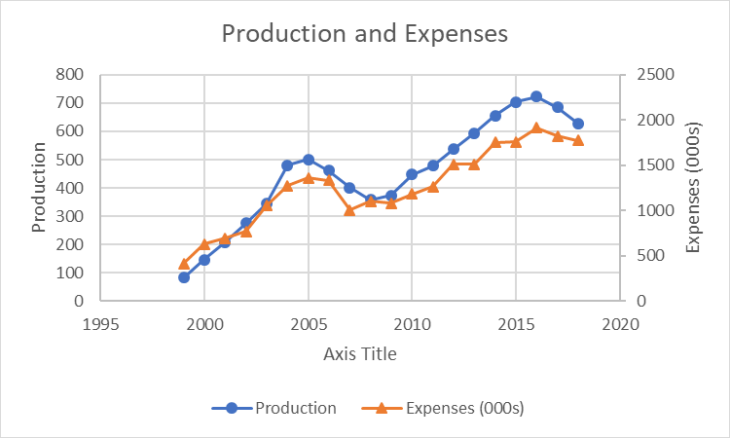
Ans: d

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Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

114. A shirt production company has tracked their production and expenses since the company started in 1999. The graph of both is shown.



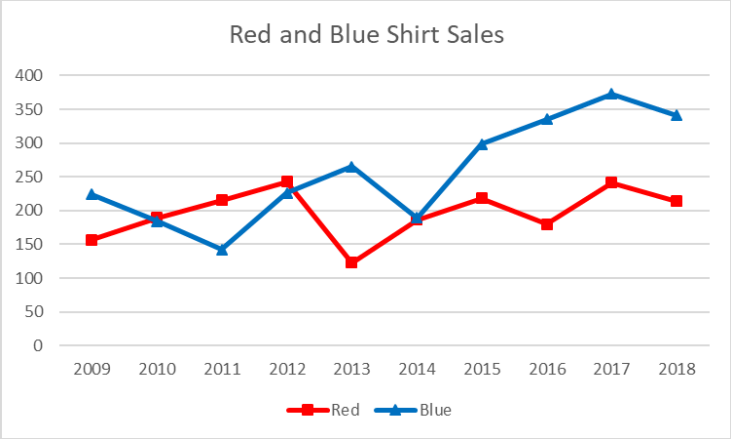
When comparing production and expenses during these years, what conclusion is not true?
a) Both series are generally decreasing.
b) Both series are generally increasing.
c) The time from 2005 to 2008 indicates a downward trend for both
d) The time from 2008 to 2018 indicates an upward trend for both
e) Expenses and production appear to follow similar trends

Ans: a
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

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115. A shirt production company has tracked their sales of red and blue shirts over the past few years. The graph of both is shown below.



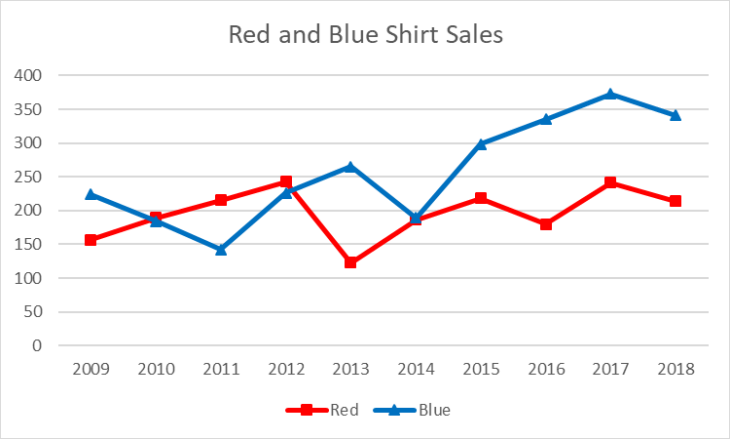
Which of the following is a true statement about the trends in sales?
a) Sales of red shirts are less than those of blue shirts in all the years before 2012.
b) Sales of blue shirts are trending upward from 2014 to 2017.
c) Sales of blue shirts are always higher than those of red shirts.
d) Red shirt sales show an increasing trend.
e) Sales of red shirts are always higher than those of blue shirts.

Ans: b
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

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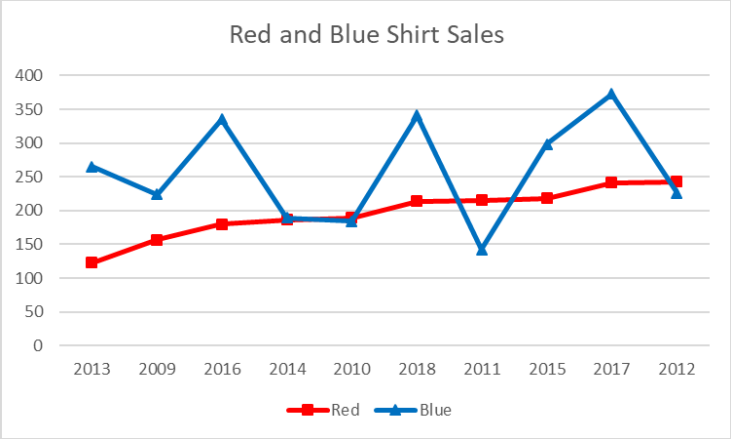
In what years were red shirt sales higher than blue shirt sales?
a) 2009 through 2012
b) 2010, 2011, and 2015
c) 2011, 2012, and 2013
d) 2013, 2015, 2016, 2017, and 2018
e) 2010, 2011, and 2012

Ans: e
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

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117. A shirt production company has tracked their sales of red and blue shirts over the past few years. The graph of both is shown below.



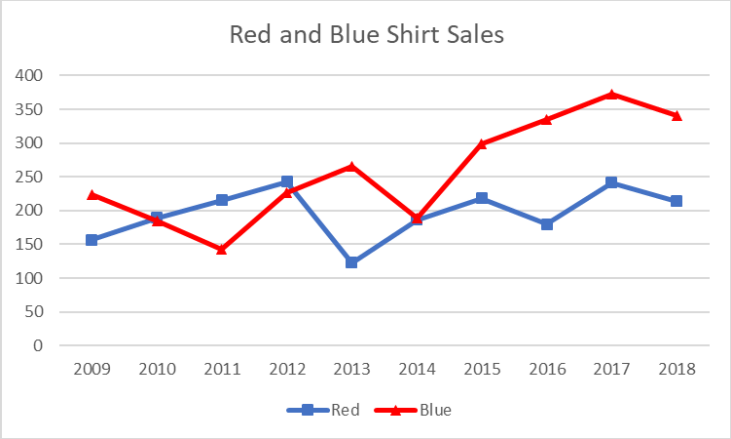
What trends can be identified from this graph?
a) Sales of red shirts have consistently increased throughout this time.
b) Sales of blue shirts are currently declining.
c) Between 2010 and 2018, sales of blue shirts consistently increased.
d) Cannot determine trends as data not in chronological order.
e) The smallest annual increase in red shirt sales was between the years of 2010 and 2014.

Ans: d
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

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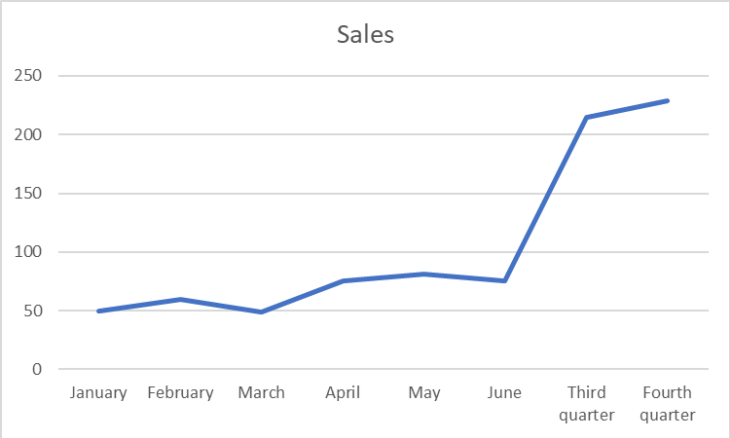
Realizing that a more clear chart would match the colors correctly, using this chart, which of the following is a true conclusion?
a) Red shirt sales have been higher than blue shirt sales in the most recent years.
b) Blue shirt sales were higher from 2010 through 1012.
c) Blue shirt sales have been higher than red shirt sales in the most recent years.
d) Red shirt sales declined from 2009 to 2011.
e) Cannot make conclusions from this chart.

Ans: c
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

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119. Sales are tracked during the past year in the graph below.



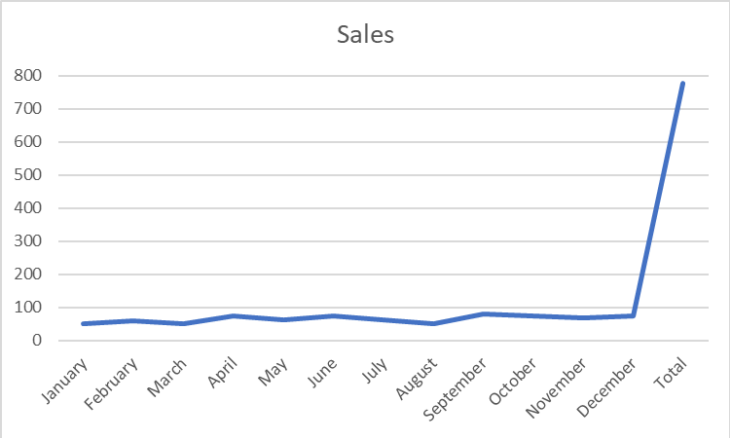
Management is pleased to show the growth in sales at the end of the year. Why would this be an incorrect conclusion?
a) The highest growth was in the month of June
b) Cannot compare sales for different time periods
c) The graph is not showing growth rates
d) A bar graph would be more effective in determining that conclusion
e) A second year of data would be needed to make that conclusion

Ans: c
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

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120. Sales are tracked during the past year in the graph below.



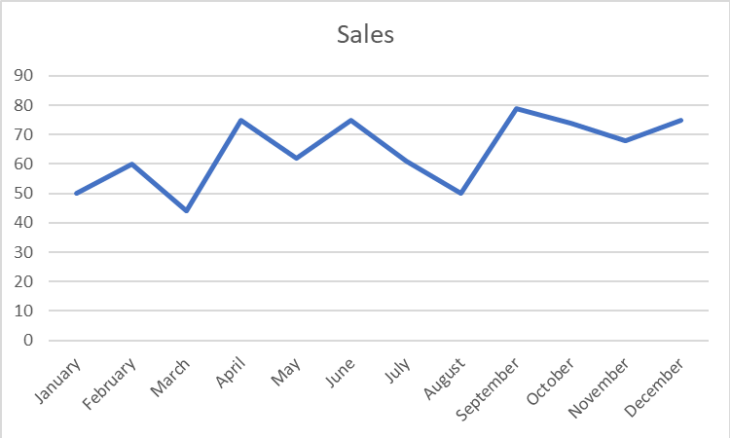
What would be the most effective strategy to allow management to more clearly discern monthly trends in sales?
a) Remove the total value from being included in the graph.
b) Have the axis on the left show more detailed grid lines between 0 and 100
c) Show the trend line in a more vivid color.
d) Add labels to each of the graphed data points.
e) Add minor grid lines throughout the graph making values more clear.

Ans: a
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

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121. Monthly sales were tracked and shown on the graph below.



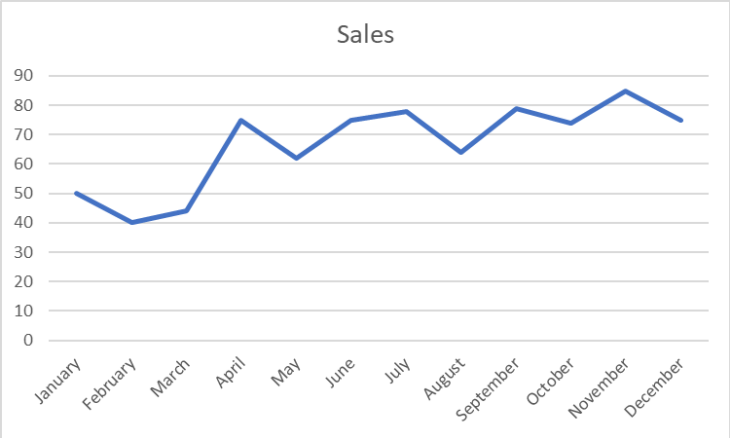
Which of the following would be an incorrect conclusion based on this graph?
a) Sales were lowest in the month of March.
b) Sales increased between August and September.
c) The last month had higher sales than the first month.
d) Sales declined from June through August.
e) The last month had higher sales than September.

Ans: e
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

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122. Monthly sales were tracked and shown on the graph below.



Based on this graph, which month had the highest sales?
a) April
b) July
c) February
d) November
e) December

Ans: d
Response: See section 2.5 Visualizing Time-Series Data
Difficulty: Medium
Learning Objective: 2.5: Construct a time-series graph and be able to visually identify any trends in the data

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