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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 intervals and the number of items in each group is listed 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 in the classes.

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

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 the 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. 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.

8. 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

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

9. 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.

10. 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.

11. 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.

12. For a company in gardening supplies business, the best graphical way to show the percentage of a total budget that is spent on each of a number of different expense categories 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.

13. In a histogram, the tallest bar represents the class 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.

14. 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.

15. 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.

16. 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.

17. 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.

18. 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.

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

Ans: True
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 is useful for examining the relationship between two numerical variables.

Ans: True
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.

Multiple Choice

21. 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.

22. 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

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

23. 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.

24. 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
Difficulty: Easy
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

25. 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.

26. 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.

27 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.

28. 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.

29. 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.

30. 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: Hard
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

31. 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.

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

32. 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 not fall into any of these 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: Hard
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

33. 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 340	-

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.

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

34. 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.

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

35. 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 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.

36. 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

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

37. 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.

38. 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

Ans: d
Response: See section 2.1 Frequency Distributions
Difficulty: Medium

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

39. 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.

40. 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: Medium
Learning Objective: 2.1: Construct a frequency distribution from a set of data.

41. 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.

42. 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.

43. 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

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. 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.

45. 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

Ans: d
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 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, 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.

47 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 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.

48. 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 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: 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.

49. 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 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: 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.

50. 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
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.

51. The following represent the ages of students in a class:

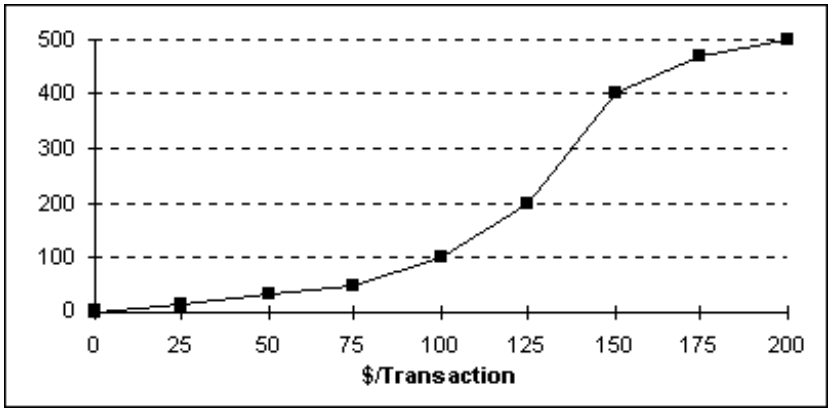
19, 23, 21, 19, 19, 20, 22, 31, 21, 20

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.

52. 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

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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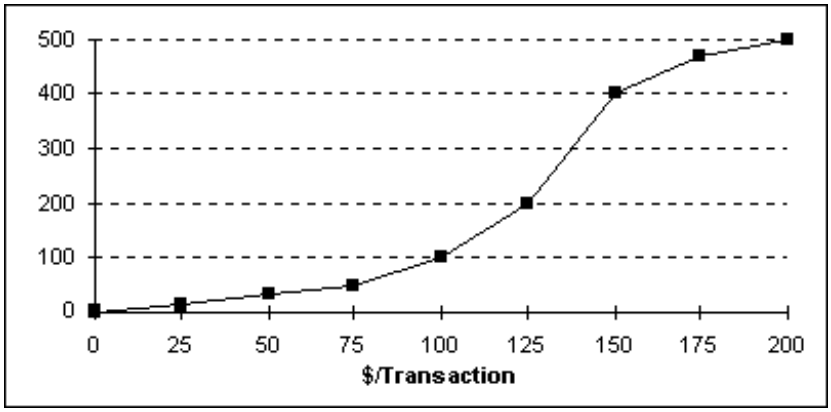
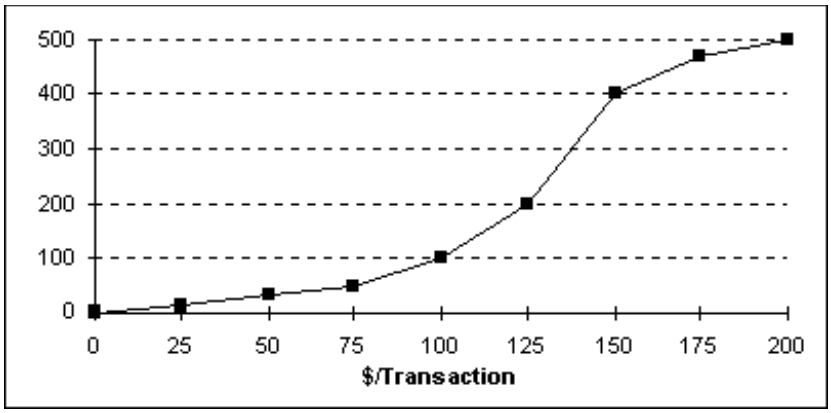


The percentage of sales transactions on Saturday that were under $100 each was _____.

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.

54. 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.

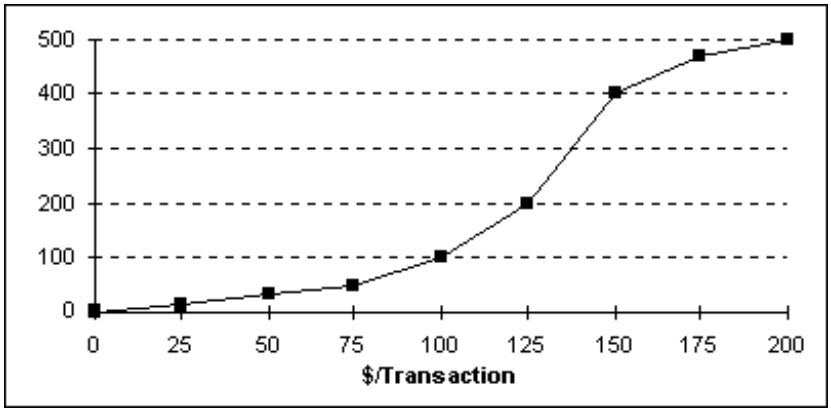


The percentage of sales transactions on Saturday that were at least $100 each was _____.

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.

55. 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.



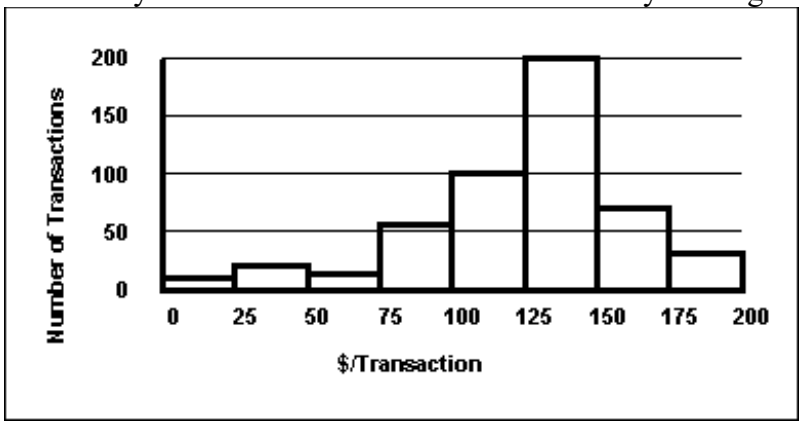
The percentage of sales transactions on Saturday that were between $100 and $150 was _____.

a) 20%
b) 40%

c) 60%
d) 80%
e) 10%

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.

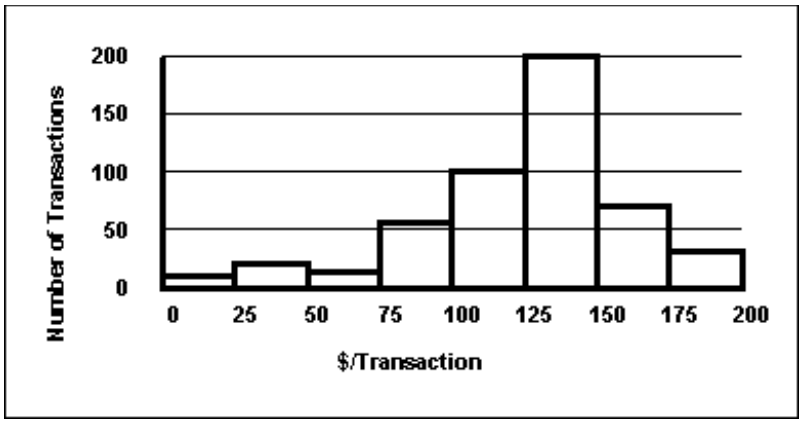
56. Each day, the manager at Jamie's Auto Care Shop prepares a frequency distribution and a histogram of sales transactions by dollar value of the transactions. Friday's histogram follows.



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

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.

57. 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.

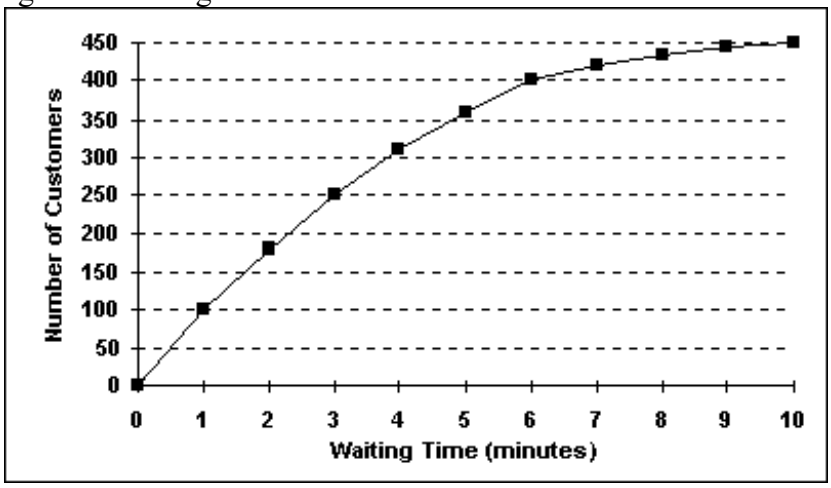


On Friday, the approximate number of sales transactions between $150 and $175 was _____.

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.

58. 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.



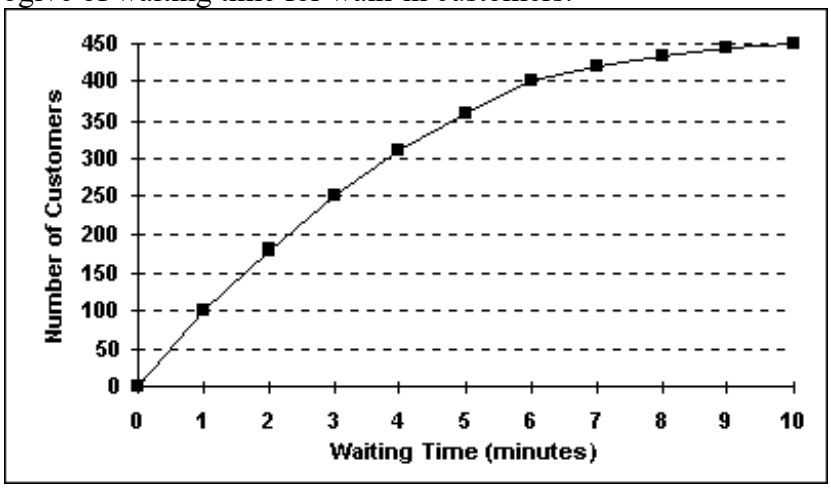
The total number of walk-in customers included in the study was _____.

a) 100
b) 250
c) 300

d) 450
e) 500

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.

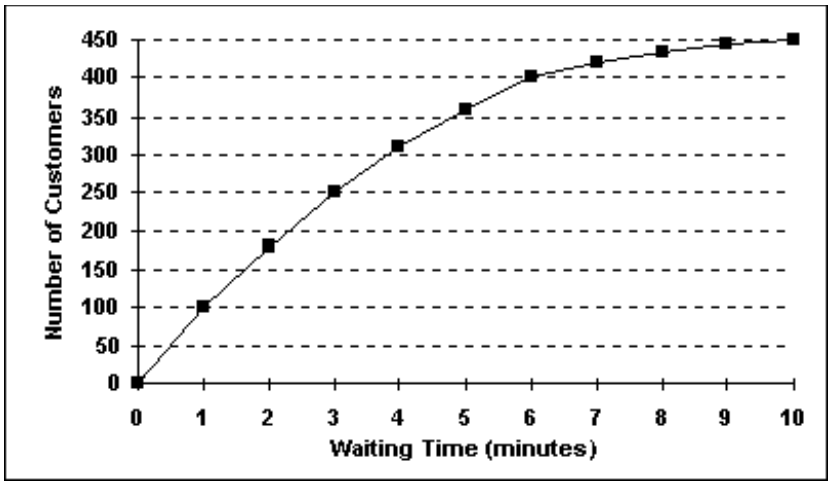
59. The staff of Mr. Wayne Wertz, VP of Operations at Portland Peoples Bank, prepared a cumulative frequency ogive of waiting time for walk-in customers.



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

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.

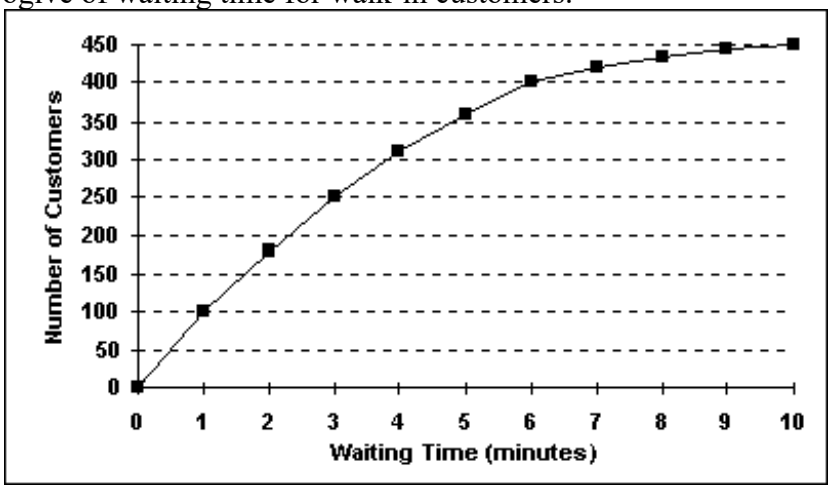
60. The staff of Mr. Wayne Wertz, VP of Operations at Portland Peoples Bank, prepared a cumulative frequency ogive of waiting time for walk-in customers.



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.

61. 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.

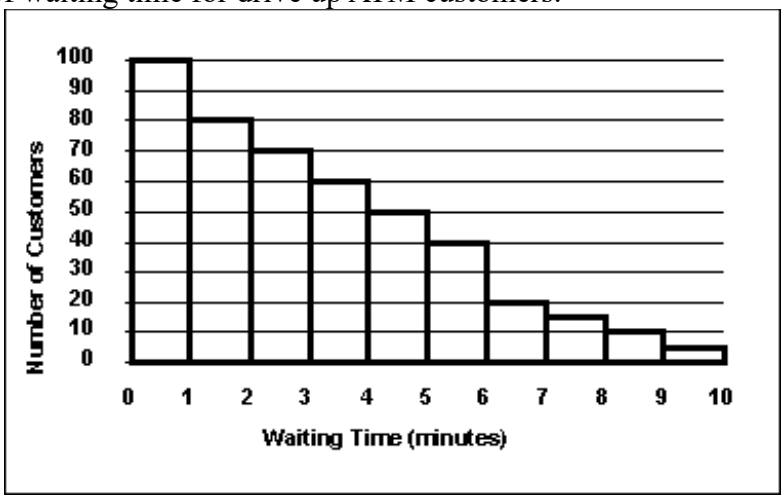


The percentage of walk-in customers waiting between 1 and 6 minutes was ___.
a) 22%
b) 11%

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.

62. 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

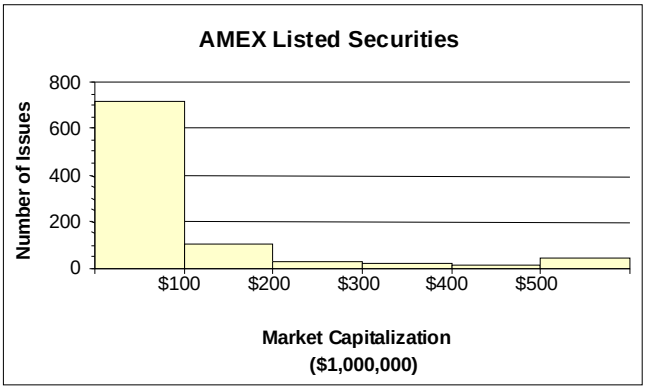
Ans: d
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

63. 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 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.

64. 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
c) 700
d) 800
e) 890

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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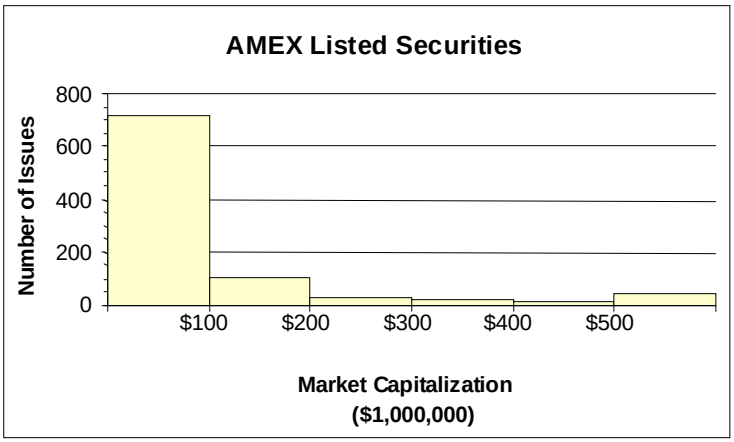


Approximately _____ corporations had capitalizations of $200,000,000 or less.
a) 50
b) 100
c) 700
d) 800
e) 900

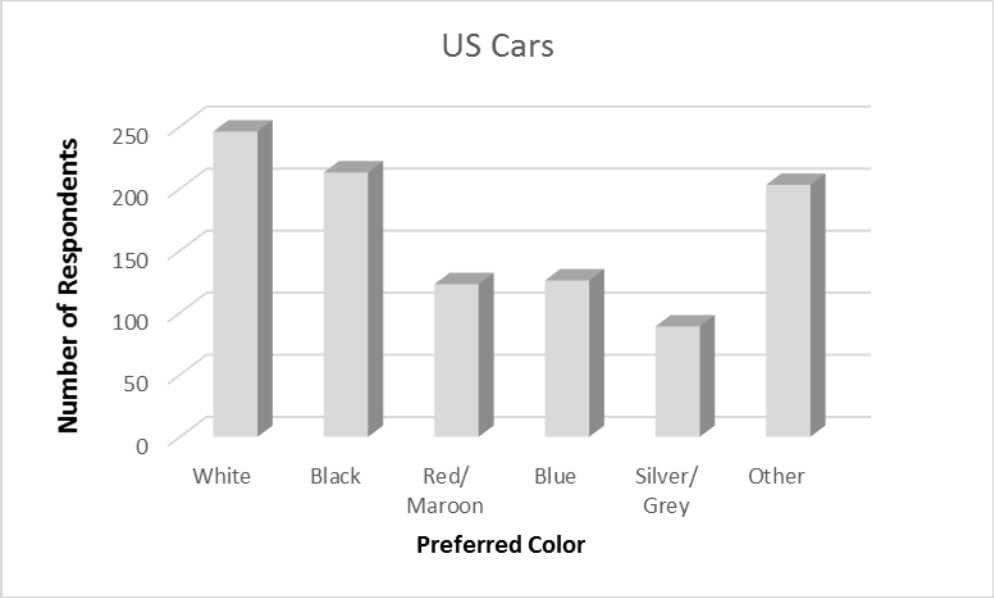
Ans: d
Response: See section 2.2 Quantitative Data Graphs
Difficulty: Medium
Learning Objective: 2.2: Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, and stem-and-leaf plots, in order to interpret the data being graphed.

66. 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

67. 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
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.

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

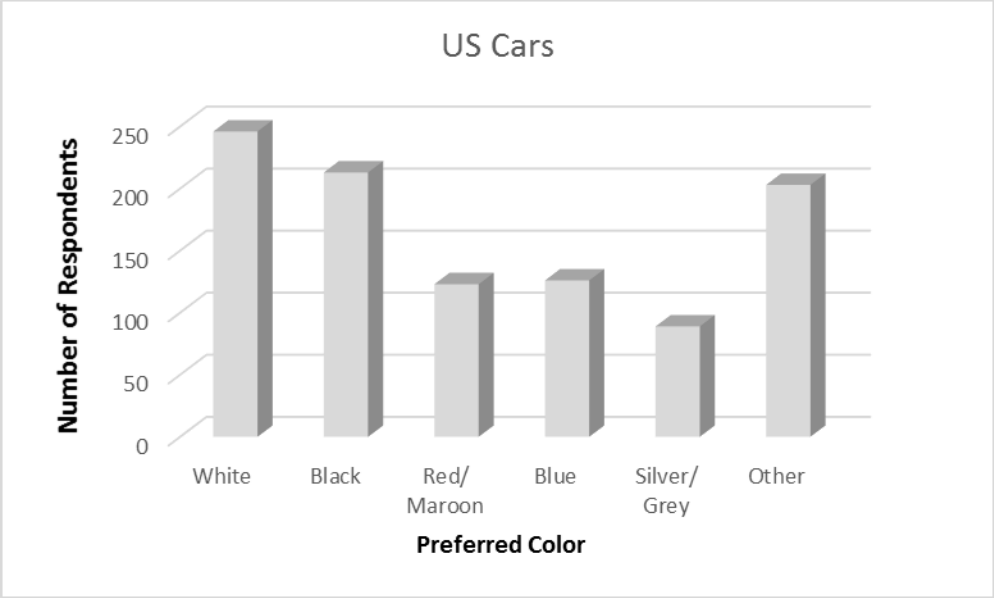


What type of graph is used to depict exterior automobile color preferences?

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.

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

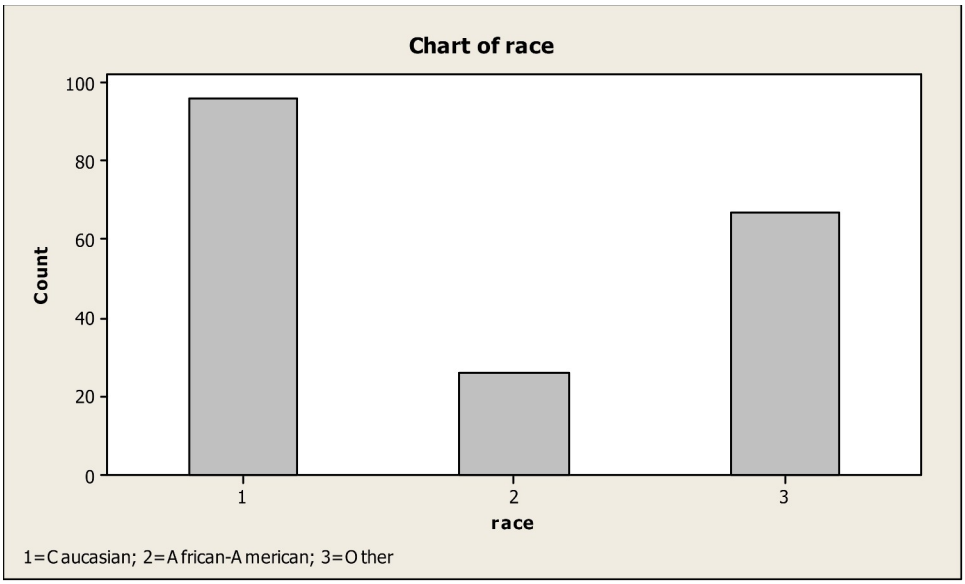


What are the top two color preferences for automobiles?

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

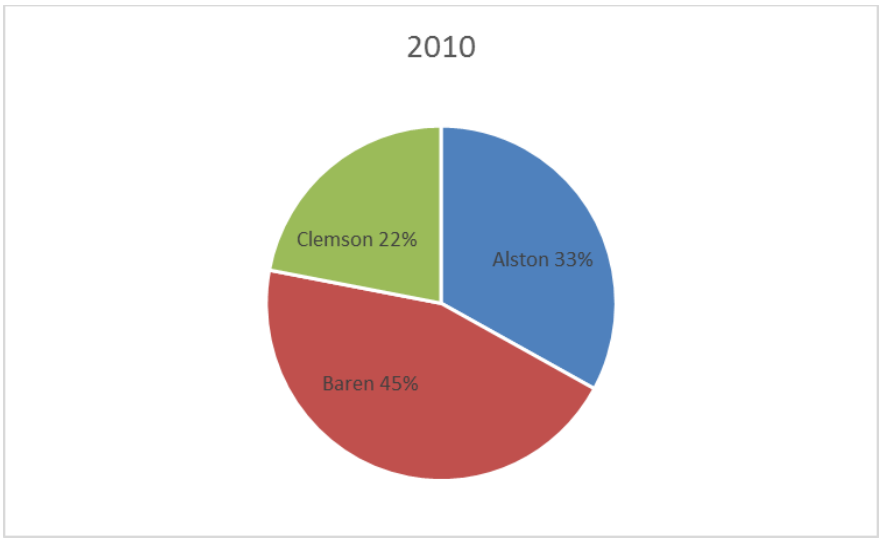
70. The following is a bar chart of the self-reported race for 189 pregnant women.

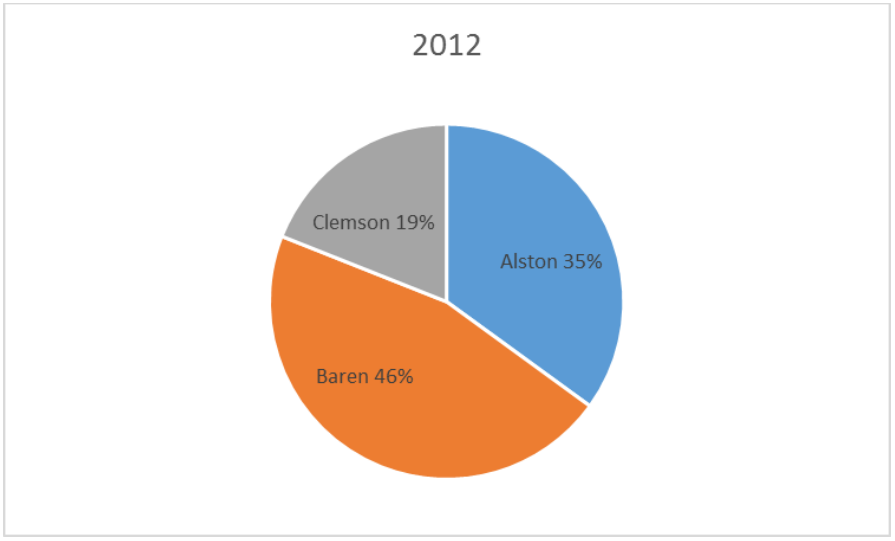


Approximately _____ percent of pregnant women are African-American
a) 20
b) 14
c) 5
d) 35
e) 50

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.

71. 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.

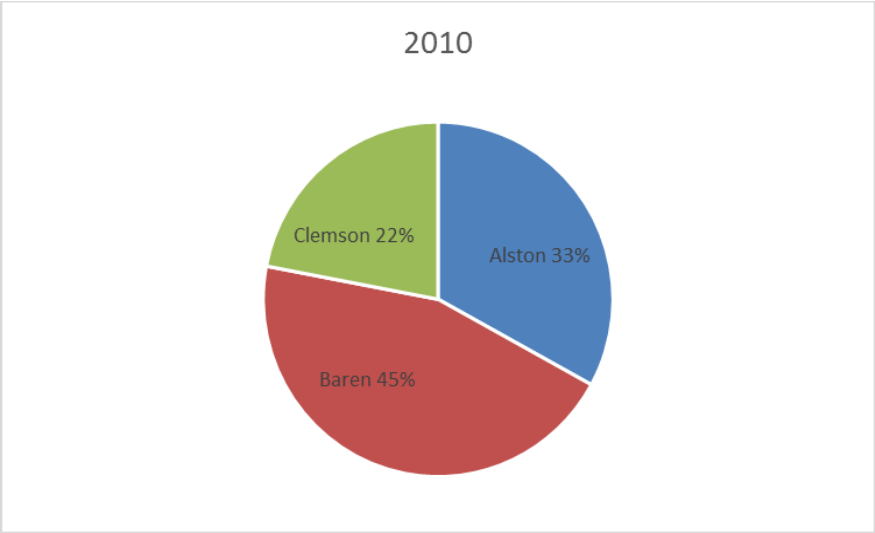


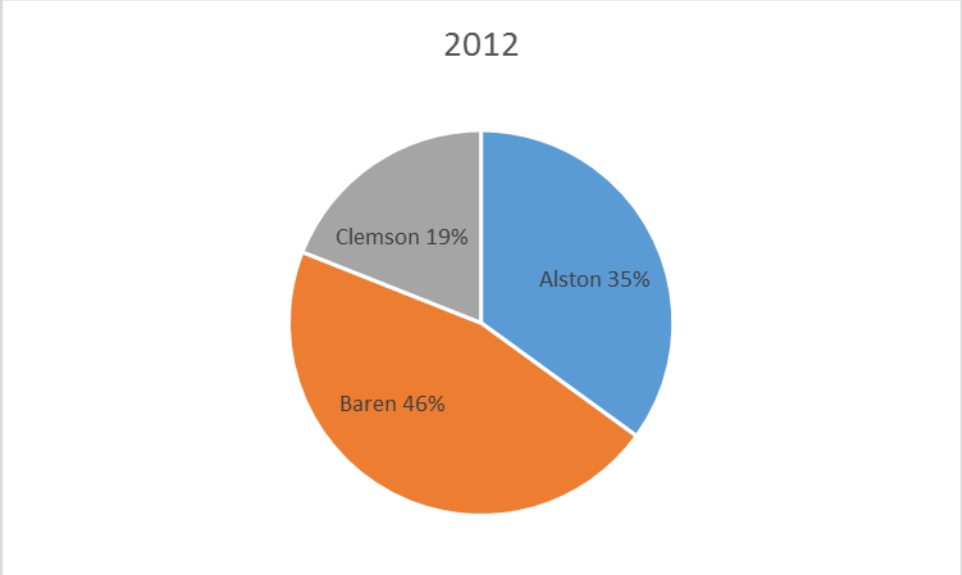


Which of the following is true?
a) Only Baren share.
b) Only Clemson lost market share.
c) Alston lost market share.
d) Baren lost market share.
e) All companies lost market share

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.

72. 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 _____.

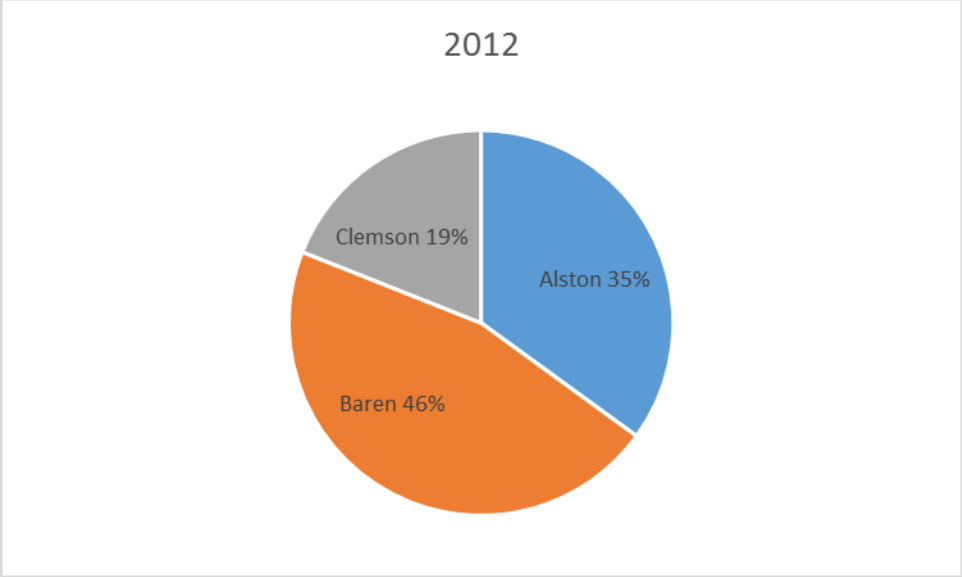




a) $342 million
b) $630 million
c) $675 million
d) $828 million
e) $928 million

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.

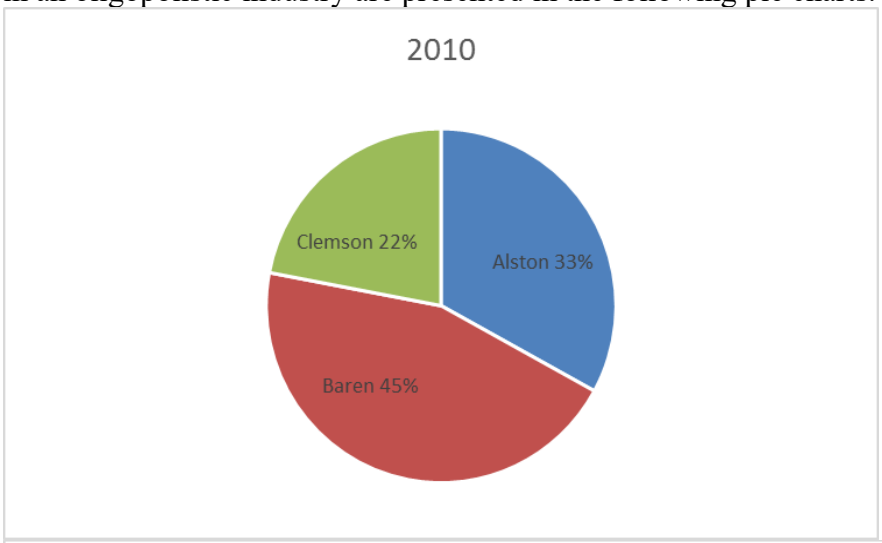
73. The 2010 and 2012 market share data of the three competitors (Alston, Baren, and Clemson) in an oligopolistic industry are presented in the following pie charts. Total sales for this industry were $1.5 billion in 2010 and $1.8 billion in 2012.

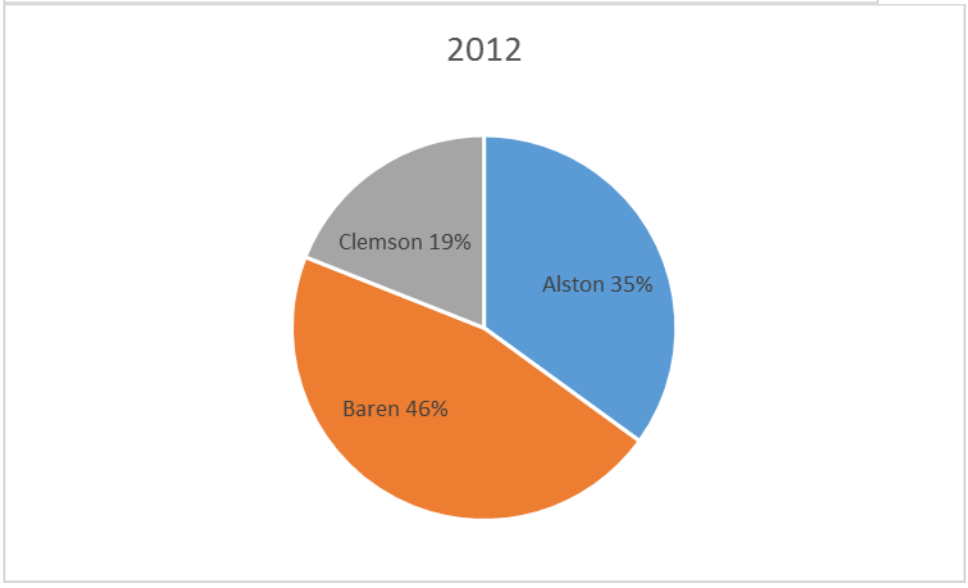


a) $342 million
b) $630 million
c) $675 million
d) $828 million
e) $928 million

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.

74. 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.



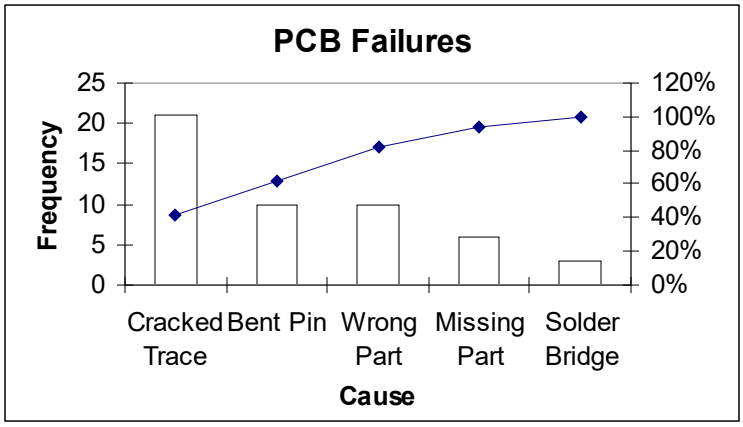


Which of the following may be a false statement?
a) Sales revenues declined at Clemson.
b) Only Clemson lost market share.
c) Alston gained market share.

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.

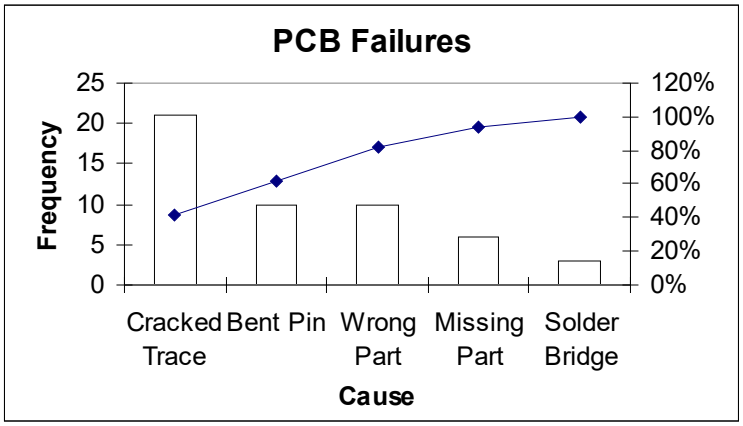
75. The following graphic of PCB Failures is a _____.



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: 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.

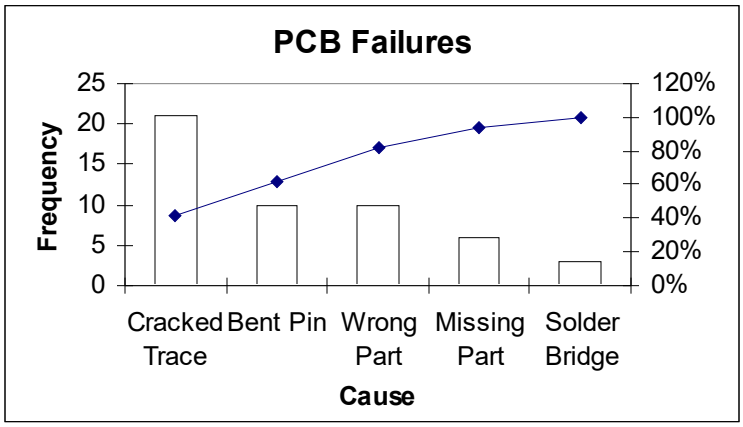
76. According to the following graphic, the most common cause of PCB Failures is a _____.



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: 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

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



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

78. 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 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?

a. Younger consumers are more likely to purchase a computer next year.
b. Older consumers are more likely to purchase a computer next year.
c. There does not appear to be a relationship between age and purchasing a computer.
d. Individuals between 25 and 34 are most likely to purchase a new computer next year.
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.

79. 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:

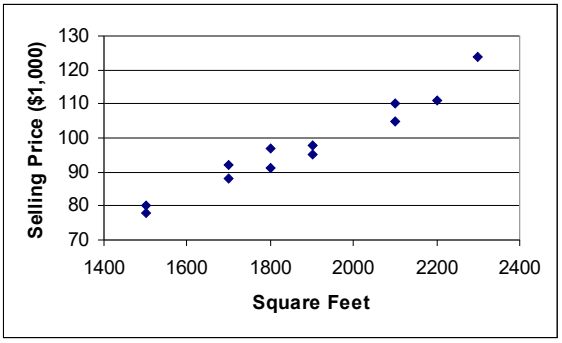
Income Level	**Intent to Purchase Computer within 1 year**
<$30K	40
$30K - $59K	43
$60K - $89K	38

$90 - $119K	40
$120K	39
Total Surveyed	200

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

a. Wealthier consumers are more likely to purchase a computer next year.
b. Income does not seem to be related to likelihood of purchasing a computer next year.
c. The wealthier a consumer is the less likely they are to purchase a computer next year.
d. Individuals with greater than $120K are least likely to purchase a new computer next year.
e. None of the above statements are true.

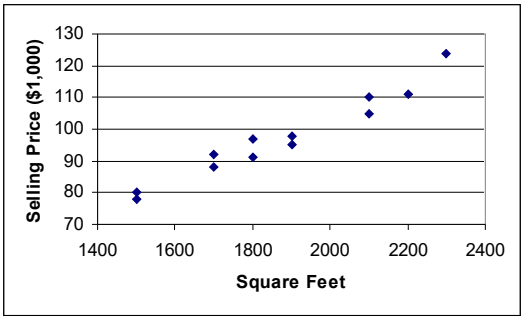
Ans: b
Response: See section 2.4 Charts and Graphs for Two Variables
Difficulty: easy
Learning objective: 2.4: Recognize basic trends in two-variable scatter plots of numerical data.
80. The following graphic of residential housing data (selling price and size in square feet) is a _____.



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

Ans: a
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.

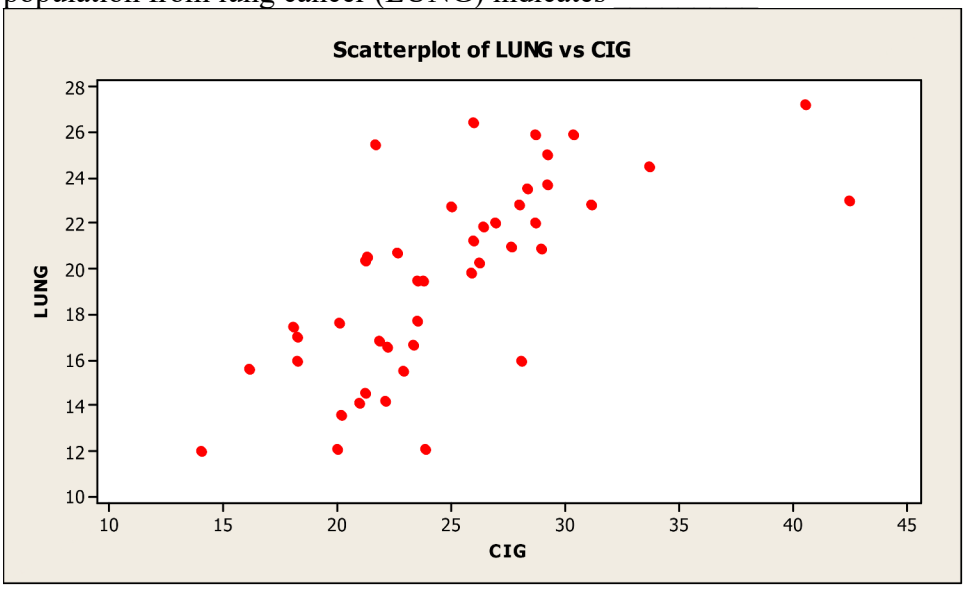
81. The following graphic of residential housing data (selling price and size in square feet) indicates _____.



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.

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

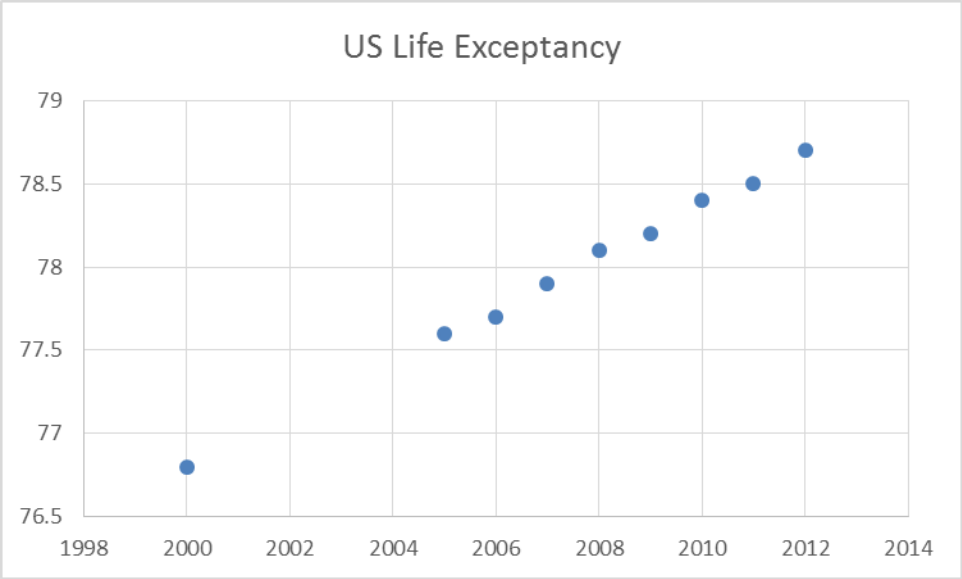


a) a weak relation between the two variables
b) a pretty strong relation between the two variables
c) when the number of cigarettes smoked (sold) per capita (CIG) increases the deaths per 100K population from lung cancer (LUNG)decreases

d) a negative relation between the two variables
e) no relation between the two variables

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

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



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. All of the above 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

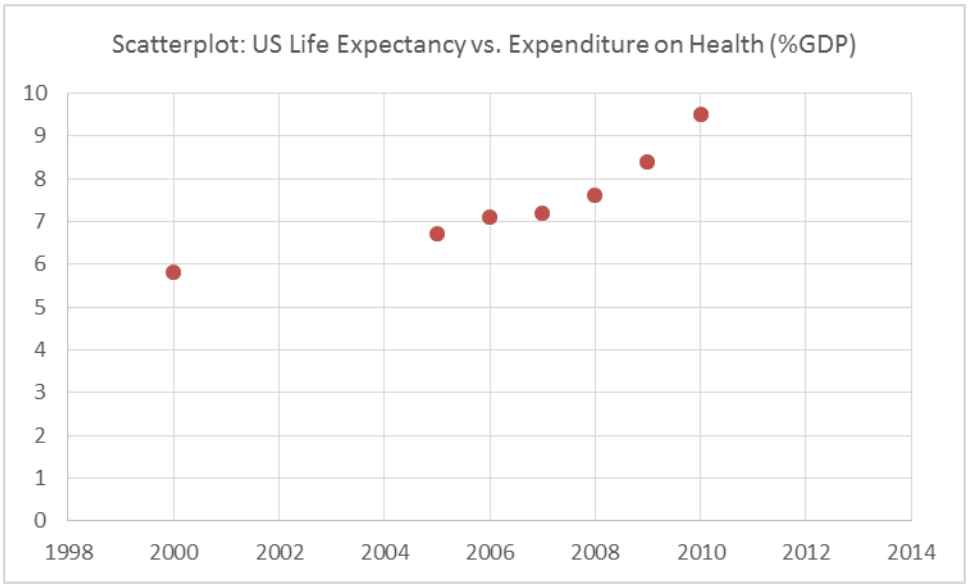
84. The United Nations Development Programme website provides comparative data by country

on key metrics. Two such metrics are life expectancy and expenditures on health as a percent of GDP. The table below show data on life expectancy and health expenditures in the United States.

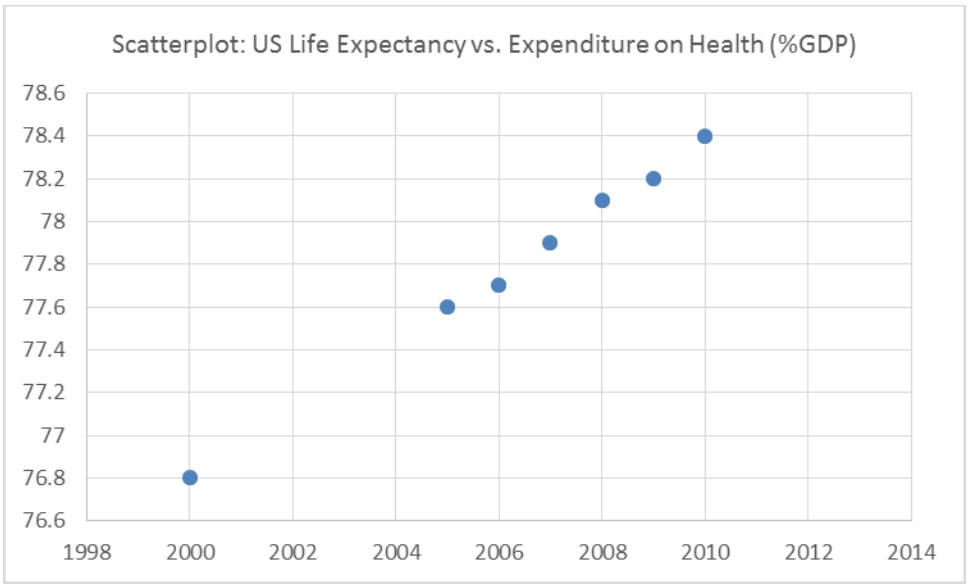
Year	U.S. Life Expectancy	Expenditure on Health (%GDP)
2000	76.8	5.8
2005	77.6	6.7
2006	77.7	7.1
2007	77.9	7.2
2008	78.1	7.6
2009	78.2	8.4
2010	78.4	9.5

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

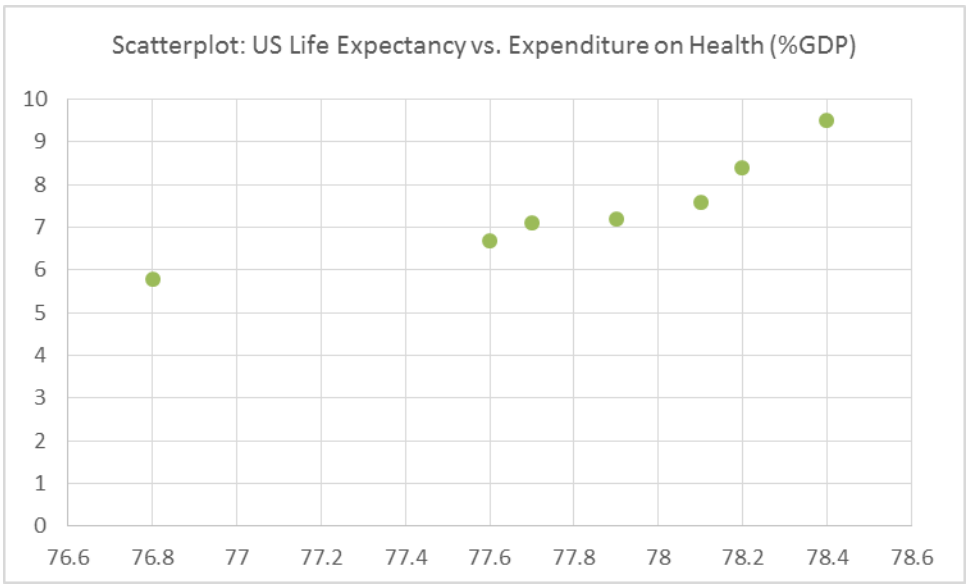
a.



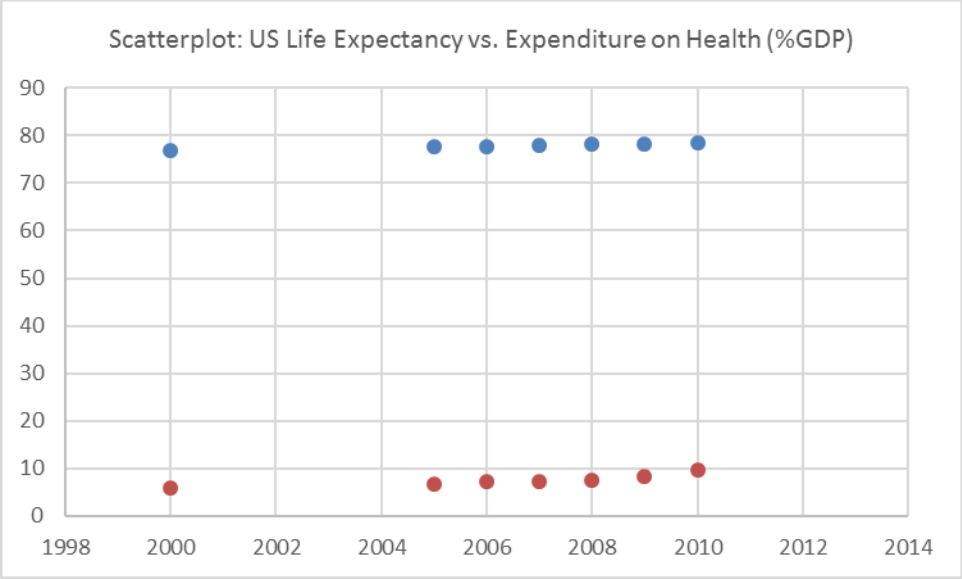
b.


Scatterplot: US Life Expectancy vs. Expenditure on Health (%GDP)
78.6
78.4
78.2
78
77.8
77.6
77.4
77.2
77
76.8
76.6
1998
2000
2002
2004
2006
2008
2010
2012
2014

c.


Scatterplot: US Life Expectancy vs. Expenditure on Health (%GDP)
10
9
8
7
6
5
4
3
2
1
0
76.6
76.8
77
77.2
77.4
77.6
77.8
78
78.2
78.4
78.6

d.



Ans: d
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