Chapter 02

1. A frequency distribution for qualitative data groups these data into classes called intervals and records the total number of observations in each class.

   True False

2. The relative frequency of a category is calculated by dividing the category's frequency by the total number of observations.

   True False

3. The percent frequency of a category equals the frequency of the category multiplied by 100%.

   True False

4. A pie chart is a segmented circle that portrays the categories and relative sizes of some quantitative variable.

   True False

5. A bar chart depicts the frequency or relative frequency of each category of qualitative data as a bar rising vertically from the horizontal axis. It is also acceptable for the bar to extend horizontally from the vertical axis.

   True False

6. A bar chart may be displayed horizontally.

   True False

7. To approximate the width of a class in the creation of a bar chart, we may use this formula:

$$\frac{\text{Maximum value} - \text{Minimum value}}{\text{Number of classes}}.$$

   True False

8. For quantitative data, a relative frequency distribution identifies the proportion of observations that fall into each class.

   True False

9. For quantitative data, a cumulative relative frequency distribution records the proportion (fraction) of values that fall below the upper limit of each class.

   True False

10. A histogram is a series of rectangles where the width and height of each rectangle represent the frequency (or relative frequency) and the width of the class, respectively.

    True False

11. A polygon connects a series of neighboring points where each point represents the midpoint of a particular class and its associated frequency or relative frequency.

    True False

12. An ogive is a graph that plots the cumulative frequency (or the cumulative relative frequency) of each class above the lower limit of the corresponding class.

    True False

13. A stem-and-leaf diagram is useful in that it gives an overall picture of where quantitative data are centered and how the data are dispersed from the center.

    True False

14. A scatterplot is a graphical tool that helps determine whether or not two quantitative variables are related.

    True False

15. When constructing a scatterplot for two quantitative variables, we usually refer to one variable as x and another one as y. Typically, we graph x on the vertical axis and y on the horizontal axis.

    True False

16. When constructing a pie chart, only a few, the most frequent, categories must be included in the pie.

    True False

17. When summarizing quantitative data it is always better to have up to 30 classes in a frequency distribution.

    True False

18. Scatterplot is a graphical tool that is focused on describing one variable.

    True False

19. Frequency distributions may be used to describe which of the following types of data?

    A. Nominal and ordinal data only
    B. Nominal and interval data only
    C. Nominal, ordinal, and interval data only
    D. Nominal, ordinal, interval, and ratio data

20. In order to summarize qualitative data, a useful tool is a _____.

    A. histogram
    B. frequency distribution
    C. stem-and-leaf diagram
    D. All of the above

21. For both qualitative and quantitative data, what is the difference between the relative frequency and the percent frequency?

A. The relative frequency equals the percent frequency multiplied by 100.

B. The percent frequency equals the relative frequency multiplied by 100.

C. As opposed to the relative frequency, the percent frequency is divided by the number of observations in the data set.

D. As opposed to the percent frequency, the relative frequency is divided by the number of observations in the data set.

22. For which of the following data sets will a pie chart be *most* useful?

A. Heights of high school freshmen

B. Ambient temperatures in the U.S. Capitol Building

C. Percentage of net sales by product for Lenovo in 2011

D. Growth rates of firms in a particular industry

23.

An auto parts chain asked customers to complete a survey rating the chain's customer service as average, above average, or below average. The following shows the results from the survey:

Average	Below Average	
Above Average	Above Average	Abo
Below Average	Average	
Below Average	Average	Bel
Below Average	Below Average	Bel

The proportion of customers who felt the customer service was Average is the closest to _____.

A. 0.20

B. 0.33

C. 0.46

D. 0.53

24.

An auto parts chain asked customers to complete a survey rating the chain's customer service as average, above average, or below average. The following table shows the results from the survey.

Average	Below Average	
Above Average	Above Average	Abo
Below Average	Average	
Below Average	Average	Bel
Below Average	Below Average	Bel

A rating of Average or Above Average accounted for what number of responses to the survey?

A. 3

B. 7

C. 8

D. 10

25.

The following is a list of five of the world's busiest airports by passenger traffic for 2010.

Name	Location	# of Passengers (in millions)
Hartsfield-Jackson	Atlanta, Georgia, United States	89
Capital International	Beijing, China	74
London Heathrow	London, United Kingdom	67
O'Hare	Chicago, Illinois, United States	66
Tokyo	Tokyo, Japan	64

The percentage of passenger traffic in the five busiest airports that occurred in Asia is the closest to _____.

A. 18%

B. 21%

C. 25%

D. 38%

26.

The following is a list of five of the world's busiest airports by passenger traffic for 2010.

Name	Location	# of Passengers (in millions)
Hartsfield-Jackson	Atlanta, Georgia, United States	89
Capital International	Beijing, China	74
London Heathrow	London, United Kingdom	67
O'Hare	Chicago, Illinois, United States	66
Tokyo	Tokyo, Japan	64

How many more millions of passengers flew out of Atlanta than flew out of Chicago?

A. 13

B. 21

C. 23

D. 25

27.

A city in California spent $6 million repairing damage to its public buildings in 2010. The following table shows the categories where the money was directed.

	Cause
	Termites
	Water Damage
	Mold
	Earthquake
	Other

How much did the city spend to fix damage caused by mold?

A. $360,000

B. $720,000

C. $1,440,000

D. $1,800,000

28.

A city in California spent $6 million repairing damage to its public buildings in 2010. The following table shows the categories where the money was directed.

Cause
Termites
Water Damage
Mold
Earthquake
Other

How much more did the city spend to fix damage caused by termites compared to the damage caused by water?

A. $360,000

B. $720,000

C. $960,000

D. $1,320,000

29.

Students in Professor Smith's business statistics course have evaluated the overall effectiveness of the professor's instruction on a five-point scale, where a score of 1 indicates very poor performance and a score of 5 indicates outstanding performance. The raw scores are displayed in the accompanying table:

1	4	4
5	5	4
4	5	5

What is the most common score given in the evaluations?

A. 2

B. 3

C. 4

D. 5

30.

Students in Professor Smith's business statistics course have evaluated the overall effectiveness of the professor's instruction on a five-point scale, where a score of 1 indicates very poor performance and a score of 5 indicates outstanding performance. The raw scores are displayed in the accompanying table.

1	4	4
5	5	4
4	5	5

What percentage of students gave professor Smith an evaluation higher than 3?

A. 20%

B. 30%

C. 50%

D. 80%

31.

Students in Professor Smith's business statistics course have evaluated the overall effectiveness of the professor's instruction on a five-point scale, where a score of 1 indicates very poor performance and a score of 5 indicates outstanding performance. The raw scores are displayed in the accompanying table.

1	4	4
5	5	4
4	5	5

What percentage of students gave Professor Smith an evaluation of 2 or less?

A. 6.7%

B. 13.3%

C. 20%

D. 80%

32.

Students in Professor Smith's business statistics course have evaluated the overall effectiveness of the professor's instruction on a five-point scale, where a score of 1 indicates very poor performance and a score of 5 indicates outstanding performance. The raw scores are displayed in the accompanying table:

1	4	4
5	5	4
4	5	5

What is the relative frequency of the students who gave Professor Smith an evaluation of 3?

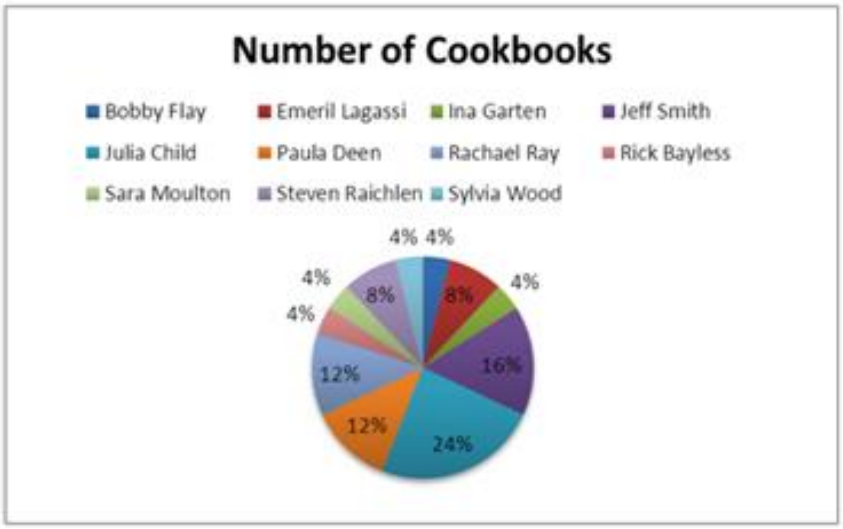
A. 0.3

B. 0.5

C. 9

D. 15

33. In the following pie chart representing a collection of cookbooks, which author has more titles?



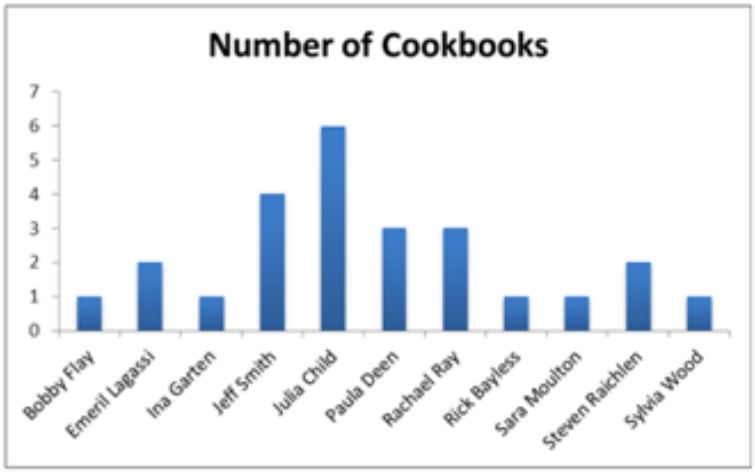
A. Jeff Smith

B. Julia Child

C. Rachael Ray

D. Paula Deen

34. The accompanying chart shows the numbers of books written by each author in a collection of cookbooks. What type of chart is this?



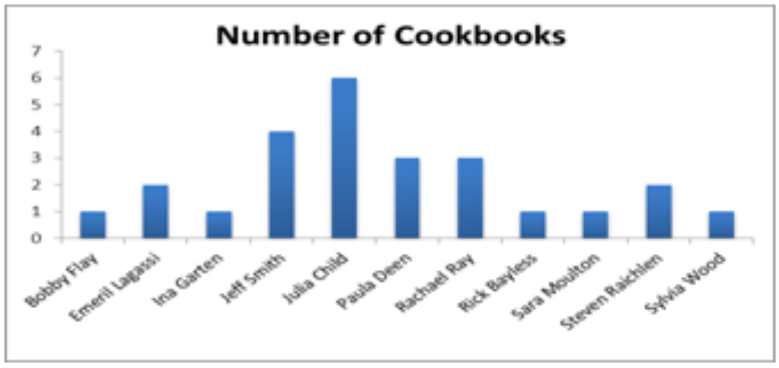
A. Bar chart for qualitative data

B. Bar chart for quantitative data

C. Frequency histogram for qualitative data

D. Frequency histogram for quantitative data

35. The accompanying chart shows the number of books written by each author in a collection of cookbooks. What type of data is being represented?



A. Quantitative, ordinal

B. Quantitative, ratio

C. Qualitative, nominal

D. Qualitative, ordinal

36. Horizontal bar charts are constructed by placing _____.

A. each category on the vertical axis and the appropriate range of values on the horizontal axis

B. each category on the horizontal axis and the appropriate range of values on the vertical axis

C. each interval of values on the vertical axis and the appropriate range of values on the horizontal axis

D. None of the above

37. When constructing a frequency distribution for quantitative data, it is important to remember that _____.

A. classes are mutually exclusive
B. classes are collectively exhaustive
C. the total number of classes usually ranges from 5 to 20
D. All of the above

38. Which of the following best describes a frequency distribution for qualitative data?

A. It groups data into histograms and records the proportion (fraction) of observations in each histogram.
B. It groups data into categories and records the number of observations in each category.
C. It groups data into intervals called classes and records the proportion (fraction) of observations in each class.
D. It groups data into intervals called classes and records the number of observations in each class.

39. What graphical tool is *best* used to display the relative frequency of grouped quantitative data?

A. Ogive
B. Pie chart
C. Bar chart
D. Histogram

40.

The following data represent scores on a pop quiz in a statistics section.

45	66	74	72	62	44	55	70	33	82
56	56	84	16	16	47	32	32	17	37

Suppose the data on quiz scores will be grouped into five classes. The width of the classes for a frequency distribution or histogram is the closestto _____.

A. 10

B. 12

C. 14

D. 16

41.

The following data represent scores on a pop quiz in a statistics section:

45	66	74	72	62	44	55	70	33	82
56	56	84	16	16	47	32	32	17	37

Suppose the data are grouped into five classes, and one of them will be "30 up to 44." that is, $\{x; 30 \leq x < 44\}$. The frequency of this class is _____.

A. 0.20

B. 0.25

C. 4

D. 5

42.

The following data represent scores on a pop quiz in a statistics section.

45	66	74	72	62	44	55	70	33	82
56	56	84	16	16	47	32	32	17	37

Suppose the data are grouped into five classes, and one of them will be "30 up to 44" —that is, $\{x; 30 \leq x < 44\}$. The relative frequency of this class is _____.

A. 0.20

B. 0.25

C. 4

D. 5

43.

The following data represent the recent sales price (in $1,000s) of 24 homes in a Midwestern city.

187	125	165	170
239	135	188	210
122	181	196	237

Suppose the data on house prices will be grouped into five classes. The width of the classes for a frequency distribution or histogram is the closest to _____.

A. 15

B. 20

C. 25

D. 30

44.

The following data represent the recent sales price (in $1,000s) of 24 homes in a midwestern city.

187	125	16
239	135	18
122	181	19

Suppose the data are grouped into five classes, and one of them will be "115 up to 140." -that is, $\{x; 115 \leq x < 140\}$. The relative frequency of this class is _____.

A. 6/24

B. 7/24

C. 6

D. 7

45.

The following data represent the recent sales price (in $1,000s) of 24 homes in a Midwestern city.

187	125	16
239	135	18
122	181	19

Suppose the data are grouped into five classes, and one of them will be "165 up to 190." -that is, $\{x; 165 \leq x < 190\}$. The frequency of this class is _____.

A. 6/24

B. 7/24

C. 6

D. 7

46.

Thirty students at Eastside High School took the SAT on the same Saturday. Their raw scores are given next.

1,450	1,620	1,800	1,740	1,650	1,710	1,900	1,910	1,950	1,820
1,800	2,010	1,780	1,840	1,490	1,590	2,350	2,260	1,870	1,530
1,620	1,480	2,390	1,640	1,830	1,950	2,000	1,830	1,980	2,100

Consider a frequency distribution of the data that groups the data in classes of 1400 up to 1600, 1600 up to 1800, 1800 up to 2000, and so on. How many students scored at least 1800 but less than 2000?

A. 3

B. 7

C. 12

D. 18

47.

Thirty students at Eastside High School took the SAT on the same Saturday. Their raw scores are given next.

1,450	1,620	1,800	1,740	1,650	1,710	1,900	1,910	1,950	1,820
1,800	2,010	1,780	1,840	1,490	1,590	2,350	2,260	1,870	1,530
1,620	1,480	2,390	1,640	1,830	1,950	2,000	1,830	1,980	2,100

Consider a frequency distribution of the data that groups the data in classes of 1400 up to 1600, 1600 up to 1800, 1800 up to 2000, and so on. What percent of students scored less than 2200?

A. 10%

B. 20%

C. 80%

D. 90%

48.

Thirty students at Eastside High School took the SAT on the same Saturday. Their raw scores are given next.

1,450	1,620	1,800	1,740	1,650	1,710	1,900	1,910	1,950	1,820
1,800	2,010	1,780	1,840	1,490	1,590	2,350	2,260	1,870	1,530
1,620	1,480	2,390	1,640	1,830	1,950	2,000	1,830	1,980	2,100

Consider a frequency distribution of the data that groups the data in classes of 1400 up to 1600, 1600 up to 1800, 1800 up to 2000, and so on. What is the approximate relative frequency of students who scored more than 1600 but less than 1800?

A. 0.17

B. 0.23

C. 0.40

D. 0.77

49.

Thirty students at Eastside High School took the SAT on the same Saturday. Their raw scores are given next.

1,450	1,620	1,800	1,740	1,650	1,710	1,900	1,910	1,950	1,820
1,800	2,010	1,780	1,840	1,490	1,590	2,350	2,260	1,870	1,530
1,620	1,480	2,390	1,640	1,830	1,950	2,000	1,830	1,980	2,100

Consider a frequency distribution of the data that groups the data in classes of 1400 up to 1600, 1600 up to 1800, 1800 up to 2000, and so on. What graphical tool would you use to display the cumulative relative frequency of the grouped data?

A. Ogive

B. Polygon

C. Pie chart

D. Bar chart

50.

Consider the following frequency distribution.

Class	Frequency
12 up to 15	3
15 up to 18	6
18 up to 21	3
21 up to 24	4
24 up to 27	4

The total number of observations in the frequency distribution is _____.

A. 5

B. 6

C. 20

D. 24

51.

Consider the following frequency distribution.

Class	Frequency
12 up to 15	3
15 up to 18	6
18 up to 21	3
21 up to 24	4
24 up to 27	4

How many observations are at least 15 but less than 18?

A. 3

B. 4

C. 5

D. 6

52.

Consider the following frequency distribution.

Class	Frequency
12 up to 15	3
15 up to 18	6
18 up to 21	3
21 up to 24	4
24 up to 27	4

How many observations are less than 21?

A. 6

B. 12

C. 18

D. 24

53.

Consider the following frequency distribution.

Class	Frequency
12 up to 15	3
15 up to 18	6
18 up to 21	3
21 up to 24	4
24 up to 27	4

What proportion of the observations are at least 15 but less than 18?

A. 0.20

B. 0.25

C. 0.30

D. 0.35

54.

Consider the following frequency distribution.

Class	Frequency
12 up to 15	3
15 up to 18	6
18 up to 21	3
21 up to 24	4
24 up to 27	4

What proportion of the observations are less than 21?

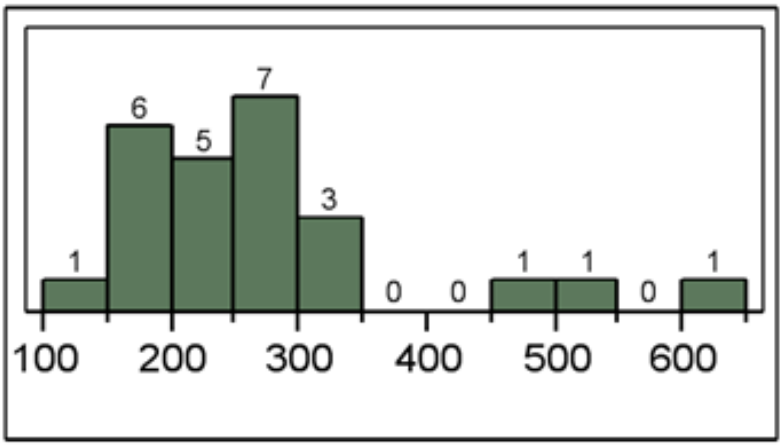
A. 0.30

B. 0.60

C. 0.90

D. 1.00

55. The following histogram represents the number of pages in each book within a collection. What is the frequency of books containing at least 250 but fewer than 300 pages?



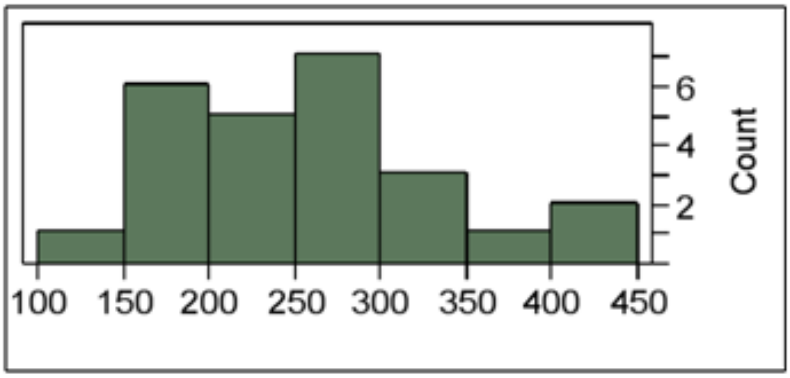
A. 5

B. 6

C. 7

D. 12

56. The following histogram represents the number of pages in each book within a collection. What is the frequency of books containing at least 200 but fewer than 250 pages?



A. 4

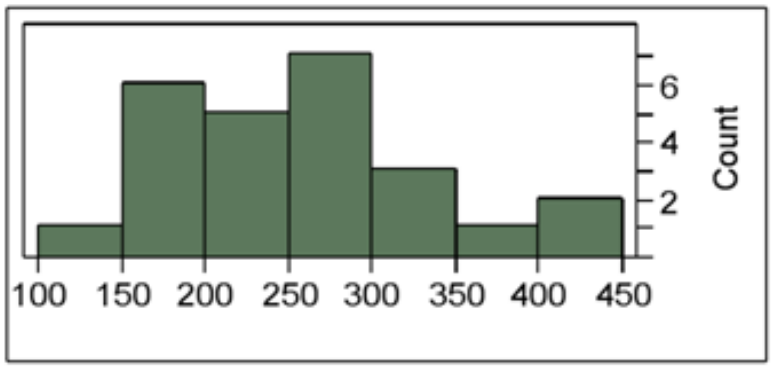
B. 5

C. 6

D. 7

57.

The following histogram represents the number of pages in each book within a collection. What is the frequency of books containing at least 250 but fewer than 400 pages?



A. 7

B. 10

C. 11

D. 12

58.

An analyst constructed the following frequency distribution on the monthly returns for 50 selected stocks.

Class (in percent)	
–10 up to 0	
0 up to 10	
10 upto 20	
20 up to 30	

The number of stocks with returns of 0% up to 10% is _____.

A. 2

B. 8

C. 15

D. 25

59.

An analyst constructed the following frequency distribution on the monthly returns for 50 selected stocks.

Class (in percent)	
–10 up to 0	
0 up to 10	
10 upto 20	
20 up to 30	

The number of stocks with returns of less than 10% is _____.

A. 8

B. 25

C. 33

D. 48

60.

An analyst constructed the following frequency distribution on the monthly returns for 50 selected stocks: An analyst constructed the following frequency distribution on the monthly returns for 50 selected stocks.

Class (in percent)	
–10 up to 0	
0 up to 10	
10 upto 20	
20 up to 30	

The proportion of stocks with returns of 0% up to 10% is _____.

A. 0.30

B. 0.50

C. 0.66

D. 0.80

61.

An analyst constructed the following frequency distribution on the monthly returns for 50 selected stocks.

Class (in percent)	Frequency
–10 up to 0	8
0 up to 10	25
10 upto 20	15
20 up to 30	2

The proportion of stocks with returns of less than 10% is _____.

A. 0.30

B. 0.50

C. 0.66

D. 0.80

62.

Automobiles traveling on a road with a posted speed limit of 65 miles per hour are checked for speed by a state police radar system. The following table is a frequency distribution of speeds.

	Speed (miles per hour)
	45 up to 55
	55 up to 65
	65 up to 75
	75 up to 85

How many of the cars traveled less than 75 miles per hour?

A. 275

B. 325

C. 650

D. 675

63.

Automobiles traveling on a road with a posted speed limit of 65 miles per hour are checked for speed by a state police radar system. The following table is a frequency distribution of speeds.

	Speed (miles per hour)
	45 up to 55
	55 up to 65
	65 up to 75
	75 up to 85

What proportion of the cars traveled at least 55 but less than 65 miles per hour?

A. 0.33

B. 0.48

C. 0.56

D. 0.80

64.

Automobiles traveling on a road with a posted speed limit of 65 miles per hour are checked for speed by a state police radar system. The following table is a frequency distribution of speeds.

	Speed (miles per hour)
	45 up to 55
	55 up to 65
	65 up to 75
	75 up to 85

When using a polygon to graph quantitative data, what does each point represent?

A. The lower limit of a particular class and its width

B. The midpoint of a particular class and its associated frequency or relative frequency

C. The midpoint of a particular class and its associated cumulative frequency or cumulative relative frequency

D. The upper limit of a particular class and its associated cumulative frequency or cumulative relative frequency

65.

The accompanying table shows students' scores from the final exam in a history course.

Scores
50 up to 60
60 up to 70
70 up to 80
80 up to 90
90 up to 100

How many of the students scored at least 70 but less than 90?

A. 24

B. 31

C. 55

D. 88

66.

The following table shows the number of payroll jobs the government added during the years it added jobs (since 1973). The jobs are in thousands.

Jobs Added	Frequency
100 up to 200	5
200 up to 300	8
300 up to 400	7
400 up to 500	5
500 up to 600	1

Approximately what percent of the time did the government add 200,000 or more jobs?

A. 19%

B. 50%

C. 77%

D. 81%

67.

The accompanying relative frequency distribution represents the last year car sales for the sales force at Kelly's Mega Used Car Center.

Car Sales	Relative Frequency
35 up to 45	0.07
45 up to 55	0.15
55 up to 65	0.31
65 up to 75	0.22
75 up to 85	0.25

If Kelly's employs 100 salespeople, how many of these salespeople have sold at least 35 but fewer than 45 cars in the last year?

A. 5

B. 7

C. 10

D. 15

68.

The accompanying relative frequency distribution represents the last year car sales for the sales force at Kelly's Mega Used Car Center.

Car Sales	Relative Frequency
35 up to 45	0.07
45 up to 55	0.15
55 up to 65	0.31
65 up to 75	0.22
75 up to 85	0.25

If Kelly's employs 100 salespeople, how many of these salespeople have sold at least 45 but fewer than 65 cars in the last year?

A. 15

B. 31

C. 40

D. 46

69.

The accompanying relative frequency distribution represents the last year car sales for the sales force at Kelly's Mega Used Car Center.

Car Sales	Relative Frequency
35 up to 45	0.07
45 up to 55	0.15
55 up to 65	0.31
65 up to 75	0.22
75 up to 85	0.25

If Kelly's employs 100 salespeople, how many of these salespeople have sold at least 65 cars in the last year?

A. 22

B. 25

C. 31

D. 47

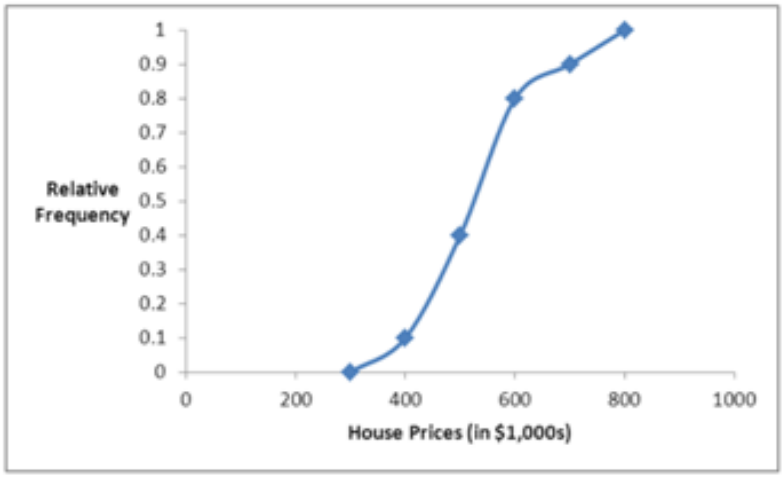
70. When displaying quantitative data, what is an ogive used to plot?

A. Frequency or relative frequency of each class against the midpoint of the corresponding class
B. Cumulative frequency or cumulative relative frequency of each class against the upper limit of the corresponding class
C. Frequency or relative frequency of each class against the midpoint of the corresponding class and cumulative frequency or cumulative relative frequency of each class against the upper limit of the corresponding class
D. None of the above

71. How does an ogive differ from a polygon?

A. An ogive is used for qualitative data, while a polygon is used for quantitative data.
B. An ogive is used for quantitative data, while a polygon is used for qualitative data.
C. An ogive is a graphical depiction of a frequency or relative distribution, while a polygon is a graphical depiction of a cumulative frequency or cumulative relative frequency distribution.
D. An ogive is a graphical depiction of a cumulative frequency or cumulative relative frequency distribution, while a polygon is a graphical depiction of a frequency or relative frequency distribution.

72. Recent home sales in a suburb of Washington, D.C., are shown in the accompanying ogive.



Approximate the percentage of houses that sold for less than $600,000.

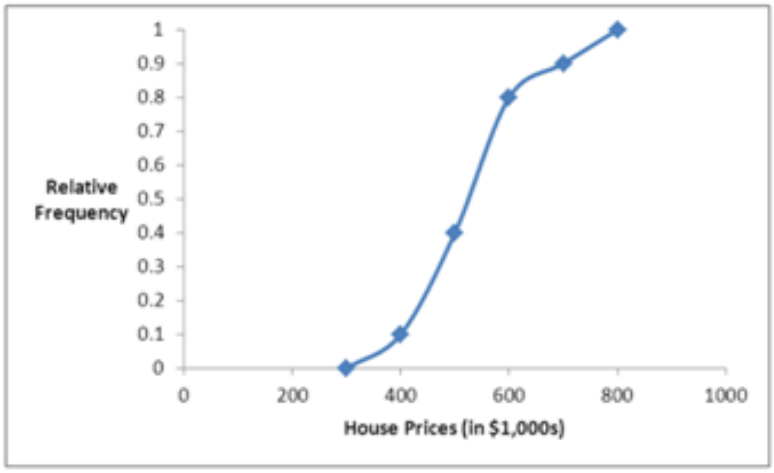
A. 60%

B. 70%

C. 80%

D. 90%

73. Recent home sales in a suburb of Washington, D.C., are shown in the accompanying ogive.



Approximate the percentage of houses that sold for more than $500,000.

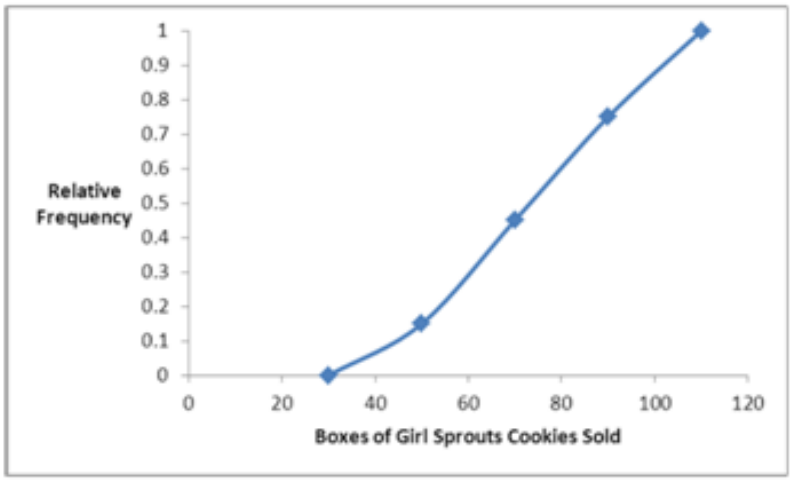
A. 40%

B. 50%

C. 60%

D. 70%

74. The organization of the Girl Sprouts has completed its annual cookie drive. The sales are reported in the accompanying ogive.



Approximate the percentage of girls who sold less than 90 boxes of cookies.

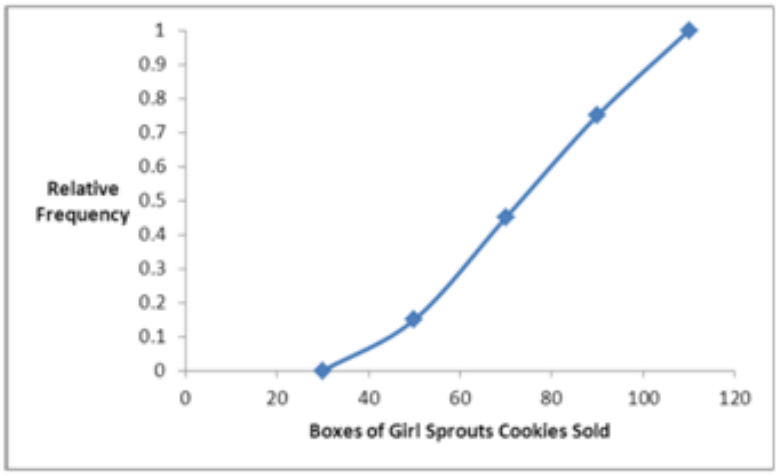
A. 45%

B. 55%

C. 65%

D. 75%

75. The organization of the Girl Sprouts has completed its annual cookie drive. The sales are reported in the accompanying ogive.



Approximate the percentage of girls who sold more than 70 boxes of cookies.

A. 45%

B. 55%

C. 65%

D. 75%

76. A stem-and-leaf diagram is constructed by separating each value of a data set into two parts. What are these parts?

A. Stem consisting of the last digit and leaf consisting of the leftmost digits

B. Stem consisting of the leftmost digits and leaf consisting of the second digit

C. Stem consisting of the second digit and leaf consisting of the last digit

D. Stem consisting of the leftmost digits and leaf consisting of the last digit

77. In the accompanying stem-and-leaf diagram, the values in the stem and leaf portions represent 10s and 1s digits, respectively.

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

Which of the following numbers appears in the stem-and-leaf diagram?

A. 3800

B. 380

C. 38

D. 3.8

78. In the accompanying stem-and-leaf diagram, the values in the stem-and-leaf portions represent 10s and 1s digits, respectively.

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

What would be the frequency of the class 35 up to 45, that is $\{x; 35 \leq x < 45\}$?

A. 0

B. 1

C. 2

D. 3

79. In the accompanying stem-and-leaf diagram, the values in the stem-and-leaf portions represent 10s and 1s digits, respectively.

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

How many values are at least 25 but less than 35?

A. 10

B. 11

C. 12

D. 13

80. In the accompanying stem-and-leaf diagram, the values in the stem-and-leaf portions represent 10s and 1s digits, respectively.

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

Find the frequency associated with data values that are more than 28.

A. 8

B. 9

C. 10

D. 11

81. In the accompanying stem-and-leaf diagram, the values in the stem-and-leaf portions represent 10s and 1s digits, respectively.

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

The stem-and-leaf diagram shows that the distribution is _____.

A. symmetric

B. positively skewed

C. negatively skewed

D. None of the above

82. The following stem-and-leaf diagram shows the speeds in miles per hour (mph) of 14 cars approaching a toll booth on a bridge in Oakland, California.

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

How many of the cars were traveling faster than 25 mph but slower than 40 mph?

A. 8

B. 9

C. 10

D. 12

83. The following stem-and-leaf diagram shows the last 20 dividend payments (in cents) paid by Proctor and Gamble.

Stem	Leaf
3	1 5 5 5 5
4	0 0 0 0 4 4 4 4 4 8 8 8
5	3 3 3

The most common dividend payment is _____.

A. 0.35

B. 0.40

C. 0.44

D. 0.48

84. What may be revealed from a scatterplot?

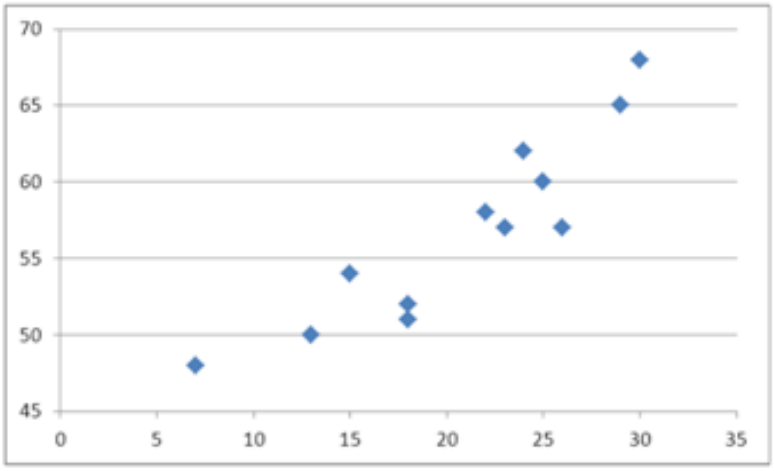
A. No relationship between two variables

B. A linear relationship between two variables

C. A curvilinear relationship between two variables

D. All of the above

85. What type of relationship is indicated in the scatterplot?



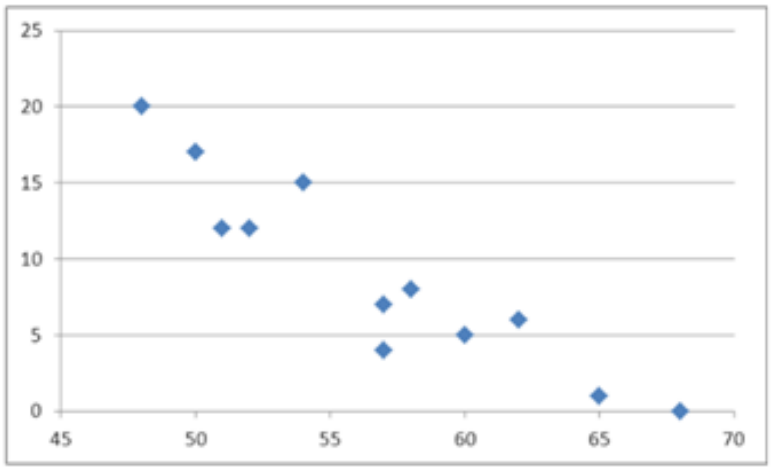
A. No relationship

B. A negative linear relationship

C. A negative curvilinear relationship

D. A positive linear or curvilinear relationship

86. What type of relationship is indicated in the scatterplot?



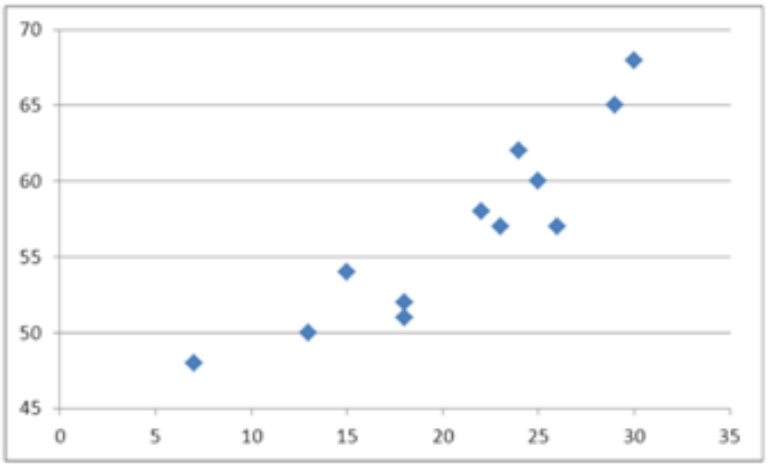
A. No relationship

B. A negative linear relationship

C. A positive linear relationship

D. A positive curvilinear relationship

87. What type of relationship is indicated in the scatterplot?



A. No relationship

B. A negative linear relationship

C. A negative curvilinear relationship

D. A positive linear or curvilinear relationship

88.

Use the following data to construct a scatterplot. What type of relationship is implied?

x	3	
y	34	

A. No relationship

B. A positive relationship

C. A negative relationship

D. There is not enough information to answer

89.

Use the following data to construct a scatterplot. What type of relationship is implied?

x	3	
y	34	

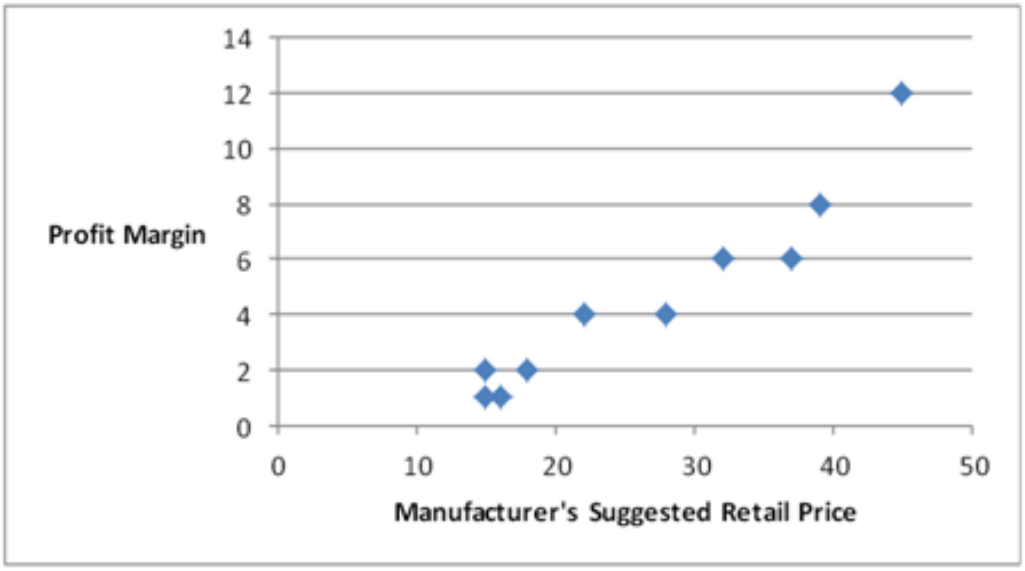
A. No relationship

B. A positive relationship

C. A negative relationship

D. Not enough information to answer

90. A car dealership created a scatterplot showing the manufacturer's retail price and profit margin for the cars they have on their lot.



As the manufacturer's suggested retail price increases, the profit margin tends to _____.

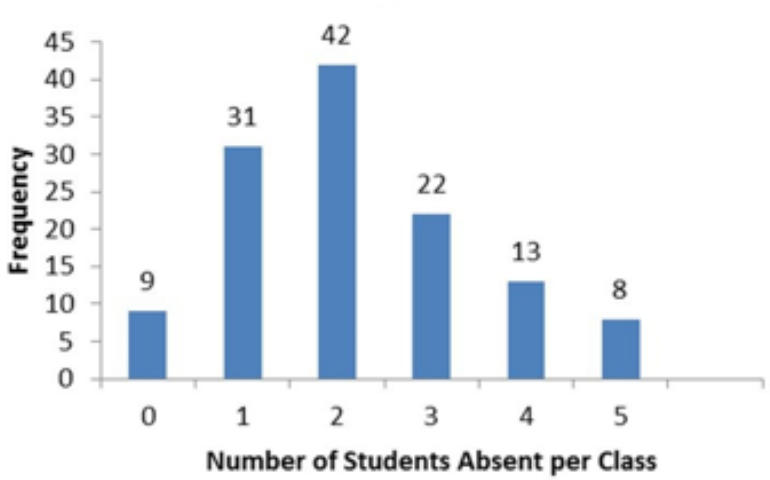
A. increase

B. decrease

C. stay the same

D. None of the above

91. The statistics professor has kept attendance records and recorded the number of absent students per class. The recorded data is displayed in the following histogram with the frequency of each number of absent students shown above the bars.



How many statistics classes had three or more students absent?

A. 8

B. 13

C. 22

D. 43

92.

The following table shows the percentage of e-mail that is sent each day of the business week according to an Intermedia survey.

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

Which of the following best displays this data?

A. Horizontal bar chart

B. Vertical bar chart

C. Pie chart

D. Histogram

93.

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

Number Sold	Frequency
01-May	3
06-Oct	7
Nov-15	14
16-20	22
21-25	4

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

A. 25

B. 50

C. 75

D. 100

94.

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

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

What percentage of houses has an asking price between $350,000 and under $400,000?

A. 16.4%

B. 21.8%

C. 30.9%

D. 33.3%

95.

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

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

What percentage of houses has an asking price under $550,000?

A. 50.5%

B. 69.1%

C. 89.1%

D. 95.0%

96.

A survey conducted by CBS news asked 1,026 respondents: "What would you do with an unexpected tax refund?" The responses are summarized in the following table.

Category	Percentage
Pay off debts	47%
Put it in the bank	30%
Spend it	11%
I never get a refund	10%
Other	2%

How many people will either put it in the bank or spend it?

A. 421

B. 411

C. 113

D. 482

97.

The manager at a water park constructed the following frequency distribution to summarize attendance in July and August.

Attendance	Frequency
1,000 up to 1,250	5
1,250 up to 1,500	6
1,500 up to 1,750	10
1,750 up to 2,000	20
2,000 up to 2,250	15
2,250 up to 2,500	4

What of the following is the most likely attendance range?

A. 2,000 up to 2,500

B. 1,750 up to 2,000

C. 1,000 up to 1,750

D. 1,250 up to 1,750

98.

The Statistical Abstract of the United States, 2010 provided the following frequency distribution of the number of people who live below the poverty level by region.

Region	Number of People (in 1000s)
Northeast	6,166
Midwest	7,237
South	15,501
West	8,372

What is the percentage of people who live below the poverty level in the West or Midwest?

A. 35.96%

B. 41.87%

C. 41.58%

D. 31.96%

99. Consider the following stem-and-leaf diagram.

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

Which data value occurs most often?

A. 1

B. 56

C. 31

D. 63

100. Consider the following stem-and-leaf diagram.

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

Which of the following statements is correct?

A. There are a total of 10 data values in this data set.

B. The data value that occurs most often is 50.

C. This largest data value is 59.

D. The range 50-59 contains the most values.

101. For qualitative data, a frequency distribution groups data into _____ and records the number of _____.

_____

102. Graphically, we can show a(n) _____ _____ for qualitative data by constructing a pie chart or a bar chart.

_____

103. When constructing a frequency distribution for quantitative data classes are mutually _____ and _____.

_____

104. A _____ _____ is a table that shows the number of data observations that fall into specific interval.

_____

105. The shape of most data distributions can be categorized as either _____ or _____.

_____

106. A stem-and-leaf diagram most resembles a(n) _____.

_____

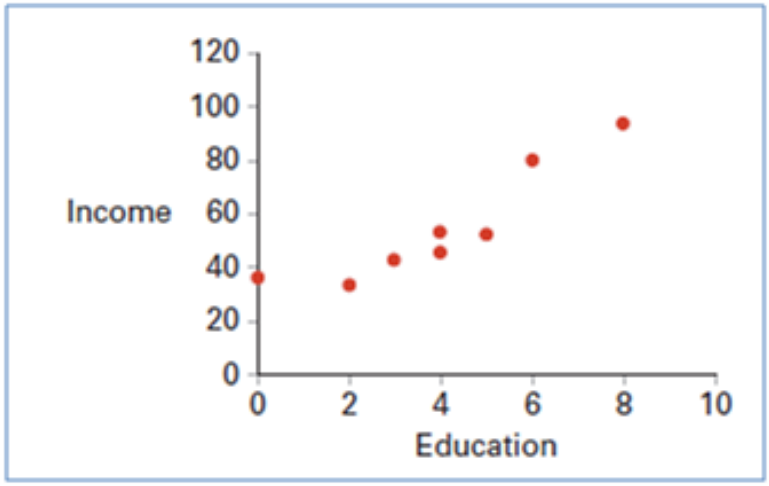
107. The _____ is a graphical technique that cannot be used to display qualitative data.

_____

108. A scatterplot depicts a positive _____ relationship, if as x increases, y tends to increase at an increasing rate.

_____

109.



Using a scatterplot above we observe a _____ linear relationship between two variables: Education and Income.

_____

110.

A survey of 400 unemployed people was completed at a job fair. Each person was asked to categorize his or her job interests. The accompanying relative frequency distribution was constructed.

Field	Relative Frequency
Management	0.15
Business and financial operations	0.2
Computer and mathematical	0.1
Life, physical, and social science	0.3
Community and social service	0.25

a. Construct the corresponding frequency distribution. How many of these people designated that the computer and mathematical industry was their job interest?

b. Construct a pie chart.

111.

A hair stylist records the hair color of her 25 most recent appointments, classifying the color as blonde, brown, black, or red. Her data set is displayed next.

Red	
Blonde	
Brown	
Brown	
Brown	

a. Construct a frequency and relative frequency distribution of the hair color of the stylist's customers.

b. Construct a pie chart. Which hair color is the most common among the stylist's customers?

c. Create a bar chart to display the frequency distribution. How many customers had black hair?

112.

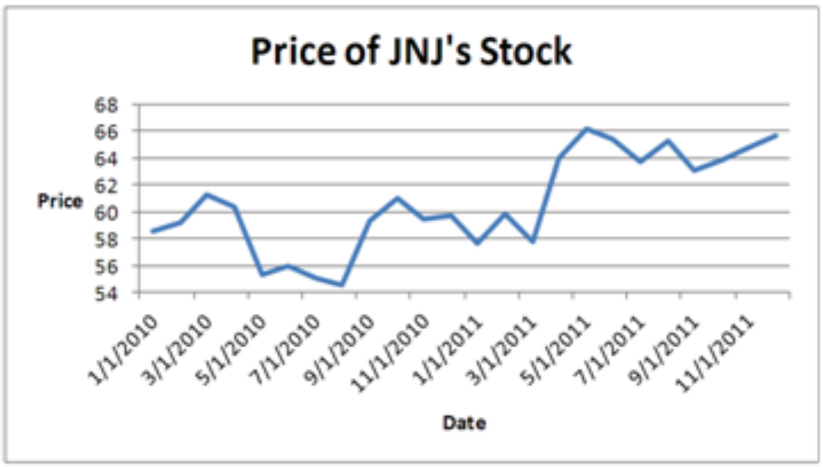
The following table lists some of the busiest ports in the world based on the number of containers in 2010.

Location of Port
Shanghai
Singapure
Hong Kong
Rotterdam
Los Angeles
New York

Construct a pie chart to summarize the data. Approximately what percent of the total number of containers go through Hong Kong?

113.

Johnson and Johnson (JNJ) is a consumer staples company. Consumer staples are products people need and buy even during times of financial hardship. Do you think JNJ will have a volatile stock price? Does the accompanying graph accurately depict the volatility of JNJ stock? Explain.



114.

Each month the Bureau of Labor Statistics reports the number of people (in thousands) employed in the United States by age. The accompanying frequency distribution shows the results for August 2011.

Age	Frequency
16 to 19	4,794
20 to 24	13,273
25 to 34	30,789
35 to 44	30,021
45 to 54	32,798
55 and over	28,660

a. Construct a relative frequency distribution. What proportion of workers is between 20 and 24 years old?

b. Construct a cumulative relative frequency distribution. What proportion of workers is younger than 35 years old?

c. Construct a relative frequency histogram.

115.

The following table displays the top 40 American League batting averages of the 2011 season.

Player	Batting Average	Player	Batting Average
Miguel Cabrera	0.344	Yunel Escobar	0.290
Adrian Gonzalez	0.338	Vladimir Guerrero	0.290
Michael Young	0.338	Alberto Callaspo	0.288
Victor Martinez	0.33	Howard Kendrick	0.285
Jacoby Ellsbury	0.321	Jeff Francoeur	0.285
David Ortiz	0.309	Nick Markakis	0.284
Dustin Pedroia	0.307	Michael Cuddyer	0.284
Casey Kotchman	0.306	Adam Jones	0.280
Melky Cabrera	0.305	Elvis Andrus	0.279
Alex Gordon	0.303	Erick Aybar	0.279
Jose Bautista	0.302	Juan Pierre	0.279
Robinson Cano	0.302	Matt Joyce	0.277
Paul Konerko	0.300	Asdrubal Cabrera	0.273
Jhonny Peralta	0.299	Edwin Encarnacion	0.272
Josh Hamilton	0.298	Ichiro Suzuki	0.272
Derek Jeter	0.297	Peter Bourjos	0.271
Adrian Beltre	0.296	J.J. Hardy	0.269
Alex Avila	0.295	Alexei Ramirez	0.269
Eric Hosmer	0.293	Ben Zobrist	0.269
Billy Butler	0.291	Delmon Young	0.268

a. Construct frequency, relative frequency, and cumulative relative frequency distributions that group the data in classes of 0.265 up to 0.280, 0.280 up to 0.295, 0.295 up to 0.310, and so on.

b. How many of these players have a batting average above 0.340? What proportion of these players has a batting average of at least 0.280 but below 0.295? What percentage of these players has a batting average below 0.325?

c. Construct a relative frequency histogram. Is the distribution symmetric? If not, is it positively or negatively skewed?

d. Construct an ogive.

e. Using the ogive, approximately what proportion of the players in this group has a batting average above 0.290?

116.

The following table shows analyst sentiment ratings for the 30 stocks listed in the Dow Jones Industrial Average.

7	4	6	
6	4	5	
2	9	7	

a. Construct a frequency distribution, relative frequency distribution, cumulative frequency distribution and relative cumulative frequency distribution using classes of 2 up to 4, 4 up to 6, 6 up to 8, and 8 up to 10.

b. Construct a histogram that summarizes the data.

c. What percentage of the stocks in the Dow Jones Industrial Average received a sentiment rating less than 8?

d. What percentage of the stocks in the Dow Jones Industrial Average received a sentiment rating of 6 or more?

117.

The accompanying cumulative relative frequency distribution shows a summary of the scores from an Algebra II exam at a local high school. Twenty students took the exam.

Class	Cumulative Relative Frequency
51 - 60	0.05
61 - 70	0.20
71 - 80	0.45
81 - 90	0.80
91 - 100	1.00

a. Construct the relative frequency distribution. What proportion of students scored between 81 and 90?

b. Construct the frequency distribution. How many students scored between 71 and 80?

c. Construct an ogive. What is the approximate percentage of students that scored less than 85?

118.

The dividend yields of the stocks in an investor's portfolio are shown in the following cumulative relative frequency distribution.

	Dividend Yields
	0% up to 2%
	2% up to 4%
	4% up to 6%
	6% up to 8%
	8% up to 10%

a. Construct an ogive.

b. Approximately what percent of the stocks had a dividend yield of 3% or larger?

119.

Construct a stem-and-leaf diagram with the following data set.

3.2	1.3	2.1	2.4	4.3	3.1	3.2	1.1	1.4	2.5
2.4	2.9	3.8	1.7	2.3	1.2	3.2	1.4	1.5	2.6

Is the distribution symmetric?

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

120.

Construct a stem-and-leaf diagram for the following data set.

74	75	63	62	56	79	58	79	53	49
78	69	74	72	53	72	64	65	67	77

Is the distribution symmetric?

Stem	Leaf
4	9
5	3 3 6 8
6	2 3 4 5 7 9
7	2 2 4 4 5 7 8 9 9

121.

The following table shows average wind speeds (in miles per hour) during 15 major fires in California.

44	55	22	32	29	24	47	33	32	27	58	39	38	51	41

Construct a stem-and-leaf diagram. Were most of these storms fueled by 45+ mile-per-hour winds? Explain.

122.

The following table shows the prices (in $1,000s) of the last 15 trucks sold at a Toyota dealership.

33	21	26	33	23	24	31	22	17	25	18	23	22	19	35

Construct a stem-and-leaf diagram. Given this diagram, estimate the price that a potential buyer would likely pay for a Toyota truck.

123.

The following data represent the ages of patients in the cardiac section of the local hospital.

Construct a stem-and-leaf diagram. Comment on whether or not the distribution is symmetric.

48	53	60	61	62	63	70	70	72	77	78	79	80	82	87	88	90

124.

A high school football league recorded the average points scored per game, as well as the winning percentage, for the 10 teams in the league.

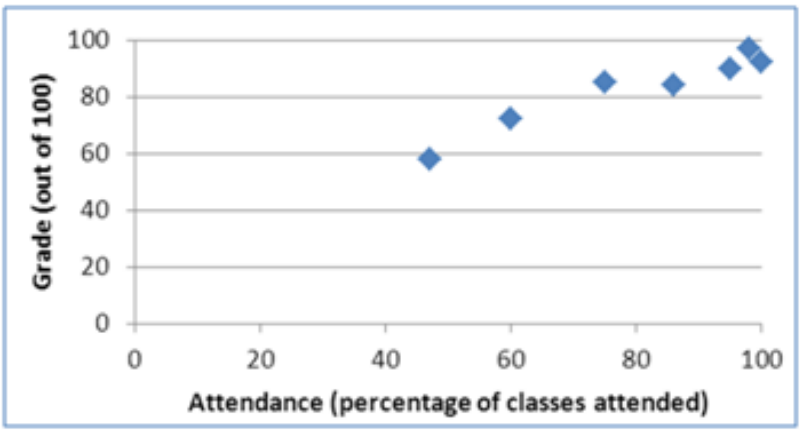
Points per Game
24
21
27
13
16
18
15
17
19
22

Construct a scatterplot. Does scoring more points appear to be associated with a higher winning percentage?

125.

A statistics instructor computes the grade and percentage of classes that each of his students attends. Construct a scatterplot from the data displayed next. Does a relationship exist between attendance and grade?

Attendance	47	60	75	86	95	98	100
Grade	58	72	85	84	90	97	92



Chapter 02 Key

1. A frequency distribution for qualitative data groups these data into classes called intervals and records the total number of observations in each class.

FALSE

A frequency distribution for qualitative data groups these data into categories and records the number of observations that fall into each category.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #1
Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.
Topic: Summarizing Qualitative Data

2. The relative frequency of a category is calculated by dividing the category's frequency by the total number of observations.

TRUE

The relative frequency of each category equals the proportion of observations in each category and is calculated by dividing the frequency by the total number of observations.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #2
Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

3. The percent frequency of a category equals the frequency of the category multiplied by 100%.

FALSE

The percent frequency of a category equals the relative frequency of the category multiplied by 100%.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #3
Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.
Topic: Summarizing Qualitative Data

4. A pie chart is a segmented circle that portrays the categories and relative sizes of some quantitative variable.

FALSE

A pie chart is a segmented circle whose segments portray the relative (or percent) frequencies of the categories of some qualitative variable.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #4
Learning Objective: 02-02 Construct and interpret pie charts and bar charts.
Topic: Summarizing Qualitative Data

5. A bar chart depicts the frequency or relative frequency of each category of qualitative data as a bar rising vertically from the horizontal axis. It is also acceptable for the bar to extend horizontally from the vertical axis.

TRUE

A bar chart depicts the frequency or the relative frequency for each category as a series of horizontal or vertical bars.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #5
Learning Objective: 02-02 Construct and interpret pie charts and bar charts.
Topic: Summarizing Qualitative Data

6. A bar chart may be displayed horizontally.

TRUE

A bar chart depicts the frequency or the relative frequency for each category as a series of horizontal or vertical bars.

AACSB: Technology
Accessibility: Keyboard Navigation
Blooms: Analyze
Difficulty: 2 Medium
Jaggia - Chapter 02 #6
Learning Objective: 02-02 Construct and interpret pie charts and bar charts.
Topic: Summarizing Qualitative Data

7. To approximate the width of a class in the creation of a bar chart, we may use this formula:

$$\frac{\text{Maximum value} - \text{Minimum value}}{\text{Number of classes}}.$$

FALSE

This formula is used when we construct a frequency distribution or a histogram for quantitative data.

AACSB: Analytical Thinking
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #7
Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.
Topic: Summarizing Quantitative Data

8. For quantitative data, a relative frequency distribution identifies the proportion of observations that fall into each class.

TRUE

Class relative frequency = Class frequency / Total number of observations.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #8
Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.
Topic: Summarizing Quantitative Data

9. For quantitative data, a cumulative relative frequency distribution records the proportion (fraction) of values that fall below the upper limit of each class.

TRUE

A cumulative relative frequency distribution represents the proportion of values that fall below the upper limit of each class.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #9
Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.
Topic: Summarizing Quantitative Data

10. A histogram is a series of rectangles where the width and height of each rectangle represent the frequency (or relative frequency) and the width of the class, respectively.

FALSE

A histogram is a series of rectangles where the width and height of each rectangle represent the class width and frequency (or relative frequency) of the class, respectively.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #10
Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.
Topic: Summarizing Quantitative Data

11. A polygon connects a series of neighboring points where each point represents the midpoint of a particular class and its associated frequency or relative frequency.

TRUE

Polygons are graphical depiction of frequency and relative frequency distributions. It connects a series of neighboring points where each point represents the midpoint of a particular class and its associated frequency or relative frequency.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #11
Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.
Topic: Summarizing Quantitative Data

12. An ogive is a graph that plots the cumulative frequency (or the cumulative relative frequency) of each class above the lower limit of the corresponding class.

FALSE

An ogive is a graph that plots the cumulative frequency (or the cumulative relative frequency) of each class against the upper limit of the corresponding class.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #12
Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.
Topic: Summarizing Quantitative Data

13. A stem-and-leaf diagram is useful in that it gives an overall picture of where quantitative data are centered and how the data are dispersed from the center.

TRUE

A stem-and-leaf diagram is a visual method for displaying quantitative data and gives an idea how data are centered and dispersed.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #13
Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.
Topic: Stem-and-Leaf Diagrams

14. A scatterplot is a graphical tool that helps determine whether or not two quantitative variables are related.

TRUE

A scatterplot illustrates whether two variables are related or not.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #14
Learning Objective: 02-06 Construct and interpret a scatterplot.
Topic: Scatterplots

15. When constructing a scatterplot for two quantitative variables, we usually refer to one variable as *x* and another one as *y*. Typically, we graph *x* on the vertical axis and *y* on the horizontal axis.

FALSE

When constructing a scatterplot for two quantitative variables, we usually refer to one variable as x and another one as y. Typically, we graph x on the horizontal axis and y on the vertical axis.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #15
Learning Objective: 02-06 Construct and interpret a scatterplot.
Topic: Scatterplots

16. When constructing a pie chart, only a few, the most frequent, categories must be included in the pie.

FALSE

A pie chart is a segmented circle whose segments portray the relative frequencies of all categories.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #16
Learning Objective: 02-02 Construct and interpret pie charts and bar charts.
Topic: Summarizing Qualitative Data

17. When summarizing quantitative data it is always better to have up to 30 classes in a frequency distribution.

FALSE

It depends on the size of the data set. The recommended number of classes usually ranges from 5 to 20.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #17
Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.
Topic: Summarizing Quantitative Data

18. Scatterplot is a graphical tool that is focused on describing one variable.

FALSE

A scatterplot helps to determine whether or not two variables are related. Multiple Choice

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #18
Learning Objective: 02-06 Construct and interpret a scatterplot.
Topic: Scatterplots

19. Frequency distributions may be used to describe which of the following types of data?

A. Nominal and ordinal data only

B. Nominal and interval data only

C. Nominal, ordinal, and interval data only

D. Nominal, ordinal, interval, and ratio data

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #19
Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.
Topic: Summarizing Quantitative Data

20. In order to summarize qualitative data, a useful tool is a _____.

A. histogram

B. frequency distribution

C. stem-and-leaf diagram

D. All of the above

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #20
Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.
Topic: Summarizing Qualitative Data

21. For both qualitative and quantitative data, what is the difference between the relative frequency and the percent frequency?

A. The relative frequency equals the percent frequency multiplied by 100.

B. The percent frequency equals the relative frequency multiplied by 100.

C. As opposed to the relative frequency, the percent frequency is divided by the number of observations in the data set.

D. As opposed to the percent frequency, the relative frequency is divided by the number of observations in the data set.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #21
Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.
Topic: Summarizing Qualitative Data

22. For which of the following data sets will a pie chart be *most* useful?

A. Heights of high school freshmen

B. Ambient temperatures in the U.S. Capitol Building

C. Percentage of net sales by product for Lenovo in 2011

D. Growth rates of firms in a particular industry

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #22
Learning Objective: 02-02 Construct and interpret pie charts and bar charts.
Topic: Summarizing Qualitative Data

23.

An auto parts chain asked customers to complete a survey rating the chain's customer service as average, above average, or below average. The following shows the results from the survey:

Average	Below Average	
Above Average	Above Average	Abo
Below Average	Average	
Below Average	Average	Bel
Below Average	Below Average	Bel

The proportion of customers who felt the customer service was Average is the closest to _____.

A. 0.20

B. 0.33

C. 0.46

D. 0.53

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #23

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

24.

An auto parts chain asked customers to complete a survey rating the chain's customer service as average, above average, or below average. The following table shows the results from the survey.

Average	Below Average	
Above Average	Above Average	Abo
Below Average	Average	
Below Average	Average	Bel
Below Average	Below Average	Bel

A rating of Average or Above Average accounted for what number of responses to the survey?

A. 3

B. 7

C. 8

D. 10

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #24

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

25.

The following is a list of five of the world's busiest airports by passenger traffic for 2010.

Name	Location	# of Passengers (in millions)
Hartsfield-Jackson	Atlanta, Georgia, United States	89
Capital International	Beijing, China	74
London Heathrow	London, United Kingdom	67
O'Hare	Chicago, Illinois, United States	66
Tokyo	Tokyo, Japan	64

The percentage of passenger traffic in the five busiest airports that occurred in Asia is the closest to _____.

A. 18%

B. 21%

C. 25%

D. 38%

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #25

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

26.

The following is a list of five of the world's busiest airports by passenger traffic for 2010.

Name	Location	# of Passengers (in millions)
Hartsfield-Jackson	Atlanta, Georgia, United States	89
Capital International	Beijing, China	74
London Heathrow	London, United Kingdom	67
O'Hare	Chicago, Illinois, United States	66
Tokyo	Tokyo, Japan	64

How many more millions of passengers flew out of Atlanta than flew out of Chicago?

A. 13

B. 21

C. 23

D. 25

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #26

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

27.

A city in California spent $6 million repairing damage to its public buildings in 2010. The following table shows the categories where the money was directed.

	Cause
	Termites
	Water Damage
	Mold
	Earthquake
	Other

How much did the city spend to fix damage caused by mold?

A. $360,000

B. $720,000

C. $1,440,000

D. $1,800,000

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #27

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

28.

A city in California spent $6 million repairing damage to its public buildings in 2010. The following table shows the categories where the money was directed.

	Cause
	Termites
	Water Damage
	Mold
	Earthquake
	Other

How much more did the city spend to fix damage caused by termites compared to the damage caused by water?

A. $360,000

B. $720,000

C. $960,000

D. $1,320,000

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #28

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

29.

Students in Professor Smith's business statistics course have evaluated the overall effectiveness of the professor's instruction on a five-point scale, where a score of 1 indicates very poor performance and a score of 5 indicates outstanding performance. The raw scores are displayed in the accompanying table:

1	4	4
5	5	4
4	5	5

What is the most common score given in the evaluations?

A. 2

B. 3

C. 4

D. 5

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #29

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

30.

Students in Professor Smith's business statistics course have evaluated the overall effectiveness of the professor's instruction on a five-point scale, where a score of 1 indicates very poor performance and a score of 5 indicates outstanding performance. The raw scores are displayed in the accompanying table.

1	4	4
5	5	4
4	5	5

What percentage of students gave professor Smith an evaluation higher than 3?

A. 20%

B. 30%

C. 50%

D. 80%

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #30

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

31.

Students in Professor Smith's business statistics course have evaluated the overall effectiveness of the professor's instruction on a five-point scale, where a score of 1 indicates very poor performance and a score of 5 indicates outstanding performance. The raw scores are displayed in the accompanying table.

1	4	4
5	5	4
4	5	5

What percentage of students gave Professor Smith an evaluation of 2 or less?

A. 6.7%

B. 13.3%

C. 20%

D. 80%

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #31

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

32.

Students in Professor Smith's business statistics course have evaluated the overall effectiveness of the professor's instruction on a five-point scale, where a score of 1 indicates very poor performance and a score of 5 indicates outstanding performance. The raw scores are displayed in the accompanying table:

1	4	4
5	5	4
4	5	5

What is the relative frequency of the students who gave Professor Smith an evaluation of 3?

A. 0.3

B. 0.5

C. 9

D. 15

AACSB: Analytical Thinking

Blooms: Understand

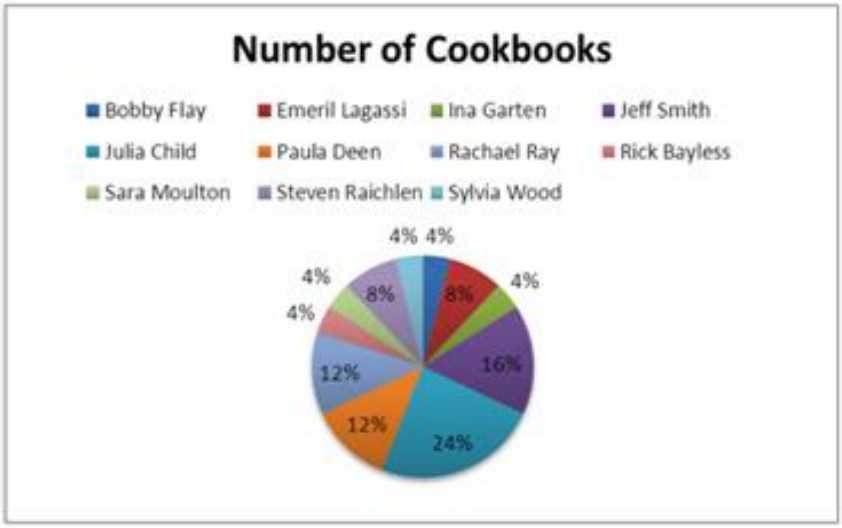
Difficulty: 2 Medium

Jaggia - Chapter 02 #32

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

33. In the following pie chart representing a collection of cookbooks, which author has more titles?



A. Jeff Smith

B. Julia Child

C. Rachael Ray

D. Paula Deen

AACSB: Analytical Thinking

Blooms: Remember

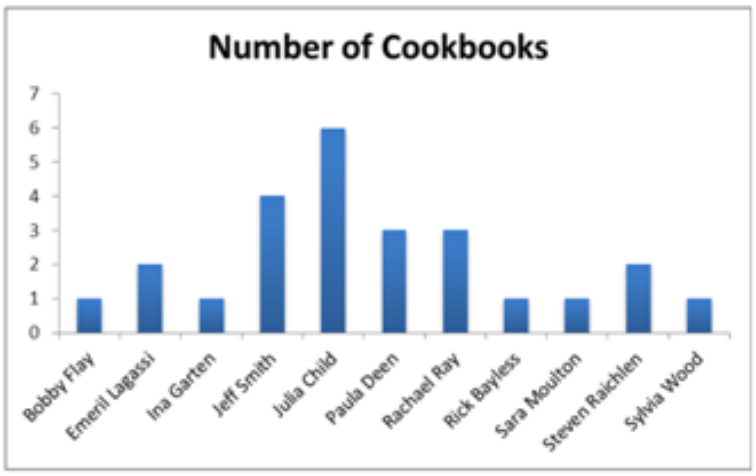
Difficulty: 1 Easy

Jaggia - Chapter 02 #33

Learning Objective: 02-02 Construct and interpret pie charts and bar charts.

Topic: Summarizing Qualitative Data

34. The accompanying chart shows the numbers of books written by each author in a collection of cookbooks. What type of chart is this?



A. Bar chart for qualitative data

B. Bar chart for quantitative data

C. Frequency histogram for qualitative data

D. Frequency histogram for quantitative data

AACSB: Analytical Thinking

Blooms: Remember

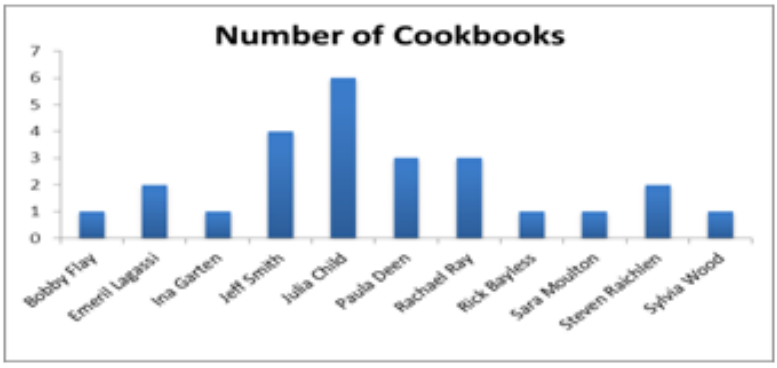
Difficulty: 1 Easy

Jaggia - Chapter 02 #34

Learning Objective: 02-02 Construct and interpret pie charts and bar charts.

Topic: Summarizing Qualitative Data

35. The accompanying chart shows the number of books written by each author in a collection of cookbooks. What type of data is being represented?



A. Quantitative, ordinal

B. Quantitative, ratio

C. Qualitative, nominal

D. Qualitative, ordinal

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #35

Learning Objective: 02-02 Construct and interpret pie charts and bar charts.

Topic: Summarizing Qualitative Data

36. Horizontal bar charts are constructed by placing _____.

A. each category on the vertical axis and the appropriate range of values on the horizontal axis

B. each category on the horizontal axis and the appropriate range of values on the vertical axis

C. each interval of values on the vertical axis and the appropriate range of values on the horizontal axis

D. None of the above

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #36
Learning Objective: 02-02 Construct and interpret pie charts and bar charts.
Topic: Summarizing Qualitative Data

37. When constructing a frequency distribution for quantitative data, it is important to remember that _____.

A. classes are mutually exclusive

B. classes are collectively exhaustive

C. the total number of classes usually ranges from 5 to 20

D. All of the above

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #37
Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

38. Which of the following best describes a frequency distribution for qualitative data?

A. It groups data into histograms and records the proportion (fraction) of observations in each histogram.

B. It groups data into categories and records the number of observations in each category.

C. It groups data into intervals called classes and records the proportion (fraction) of observations in each class.

D. It groups data into intervals called classes and records the number of observations in each class.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #38
Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.
Topic: Summarizing Qualitative Data

39. What graphical tool is *best* used to display the relative frequency of grouped quantitative data?

A. Ogive

B. Pie chart

C. Bar chart

D. Histogram

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #39
Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

40.

The following data represent scores on a pop quiz in a statistics section.

45	66	74	72	62	44	55	70	33	82
56	56	84	16	16	47	32	32	17	37

Suppose the data on quiz scores will be grouped into five classes. The width of the classes for a frequency distribution or histogram is the closestto _____.

A. 10

B. 12

C. 14

D. 16

AACSB: Analytical Thinking

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Jaggia - Chapter 02 #40

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

41.

The following data represent scores on a pop quiz in a statistics section:

45	66	74	72	62	44	55	70	33	82
56	56	84	16	16	47	32	32	17	37

Suppose the data are grouped into five classes, and one of them will be "30 up to 44." that is, $\{x; 30 \le x < 44\}$. The frequency of this class is _____.

A. 0.20

B. 0.25

C. 4

D. 5

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #41

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

42.

The following data represent scores on a pop quiz in a statistics section.

45	66	74	72	62	44	55	70	33	82
56	56	84	16	16	47	32	32	17	37

Suppose the data are grouped into five classes, and one of them will be "30 up to 44" —that is, $\{x; 30 \leq x < 44\}$. The relative frequency of this class is _____.

A. 0.20

B. 0.25

C. 4

D. 5

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #42

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

43.

The following data represent the recent sales price (in $1,000s) of 24 homes in a Midwestern city.

187	125	165	170
239	135	188	210
122	181	196	237

Suppose the data on house prices will be grouped into five classes. The width of the classes for a frequency distribution or histogram is the closest to _____.

A. 15

B. 20

C. 25

D. 30

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #43

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

44.

The following data represent the recent sales price (in $1,000s) of 24 homes in a midwestern city.

187	125	
239	135	
122	181	

Suppose the data are grouped into five classes, and one of them will be "115 up to 140." -that is, {x; 115 ≤ x < 140}. The relative frequency of this class is _____.

A. 6/24

B. 7/24

C. 6

D. 7

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #44

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

45.

The following data represent the recent sales price (in $1,000s) of 24 homes in a Midwestern city.

187	125	
239	135	
122	181	

Suppose the data are grouped into five classes, and one of them will be "165 up to 190." -that is, {x; 165 ≤ x < 190}. The frequency of this class is _____.

A. 6/24

B. 7/24

C. 6

D. 7

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #45

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

46.

Thirty students at Eastside High School took the SAT on the same Saturday. Their raw scores are given next.

1,450	1,620	1,800	1,740	1,650	1,710	1,900	1,910	1,950	1,820
1,800	2,010	1,780	1,840	1,490	1,590	2,350	2,260	1,870	1,530
1,620	1,480	2,390	1,640	1,830	1,950	2,000	1,830	1,980	2,100

Consider a frequency distribution of the data that groups the data in classes of 1400 up to 1600, 1600 up to 1800, 1800 up to 2000, and so on. How many students scored at least 1800 but less than 2000?

A. 3

B. 7

C. 12

D. 18

AACSB: Analytical Thinking

Blooms: Remember

Difficulty: 1 Easy

Jaggia - Chapter 02 #46

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

47.

Thirty students at Eastside High School took the SAT on the same Saturday. Their raw scores are given next.

1,450	1,620	1,800	1,740	1,650	1,710	1,900	1,910	1,950	1,820
1,800	2,010	1,780	1,840	1,490	1,590	2,350	2,260	1,870	1,530
1,620	1,480	2,390	1,640	1,830	1,950	2,000	1,830	1,980	2,100

Consider a frequency distribution of the data that groups the data in classes of 1400 up to 1600, 1600 up to 1800, 1800 up to 2000, and so on. What percent of students scored less than 2200?

A. 10%

B. 20%

C. 80%

D. 90%

AACSB: Analytical Thinking

Blooms: Apply

Difficulty: 3 Hard

Jaggia - Chapter 02 #47

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

48.

Thirty students at Eastside High School took the SAT on the same Saturday. Their raw scores are given next.

1,450	1,620	1,800	1,740	1,650	1,710	1,900	1,910	1,950	1,820
1,800	2,010	1,780	1,840	1,490	1,590	2,350	2,260	1,870	1,530
1,620	1,480	2,390	1,640	1,830	1,950	2,000	1,830	1,980	2,100

Consider a frequency distribution of the data that groups the data in classes of 1400 up to 1600, 1600 up to 1800, 1800 up to 2000, and so on. What is the approximate relative frequency of students who scored more than 1600 but less than 1800?

A. 0.17

B. 0.23

C. 0.40

D. 0.77

AACSB: Analytical Thinking

Blooms: Apply

Difficulty: 3 Hard

Jaggia - Chapter 02 #48

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

49.

Thirty students at Eastside High School took the SAT on the same Saturday. Their raw scores are given next.

1,450	1,620	1,800	1,740	1,650	1,710	1,900	1,910	1,950	1,820
1,800	2,010	1,780	1,840	1,490	1,590	2,350	2,260	1,870	1,530
1,620	1,480	2,390	1,640	1,830	1,950	2,000	1,830	1,980	2,100

Consider a frequency distribution of the data that groups the data in classes of 1400 up to 1600, 1600 up to 1800, 1800 up to 2000, and so on. What graphical tool would you use to display the cumulative relative frequency of the grouped data?

A. Ogive

B. Polygon

C. Pie chart

D. Bar chart

AACSB: Analytical Thinking

Blooms: Remember

Difficulty: 1 Easy

Jaggia - Chapter 02 #49

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

50.

Consider the following frequency distribution.

Class	Frequency
12 up to 15	3
15 up to 18	6
18 up to 21	3
21 up to 24	4
24 up to 27	4

The total number of observations in the frequency distribution is _____.

A. 5

B. 6

C. 20

D. 24

AACSB: Analytical Thinking

Blooms: Remember

Difficulty: 1 Easy

Jaggia - Chapter 02 #50

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

51.

Consider the following frequency distribution.

Class	Frequency
12 up to 15	3
15 up to 18	6
18 up to 21	3
21 up to 24	4
24 up to 27	4

How many observations are at least 15 but less than 18?

A. 3

B. 4

C. 5

D. 6

AACSB: Analytical Thinking

Blooms: Remember

Difficulty: 1 Easy

Jaggia - Chapter 02 #51

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

52.

Consider the following frequency distribution.

Class	Frequency
12 up to 15	3
15 up to 18	6
18 up to 21	3
21 up to 24	4
24 up to 27	4

How many observations are less than 21?

A. 6

B. 12

C. 18

D. 24

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #52

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

53.

Consider the following frequency distribution.

Class	Frequency
12 up to 15	3
15 up to 18	6
18 up to 21	3
21 up to 24	4
24 up to 27	4

What proportion of the observations are at least 15 but less than 18?

A. 0.20

B. 0.25

C. 0.30

D. 0.35

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #53

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

54.

Consider the following frequency distribution.

Class	Frequency
12 up to 15	3
15 up to 18	6
18 up to 21	3
21 up to 24	4
24 up to 27	4

What proportion of the observations are less than 21?

A. 0.30

B. 0.60

C. 0.90

D. 1.00

AACSB: Analytical Thinking

Blooms: Understand

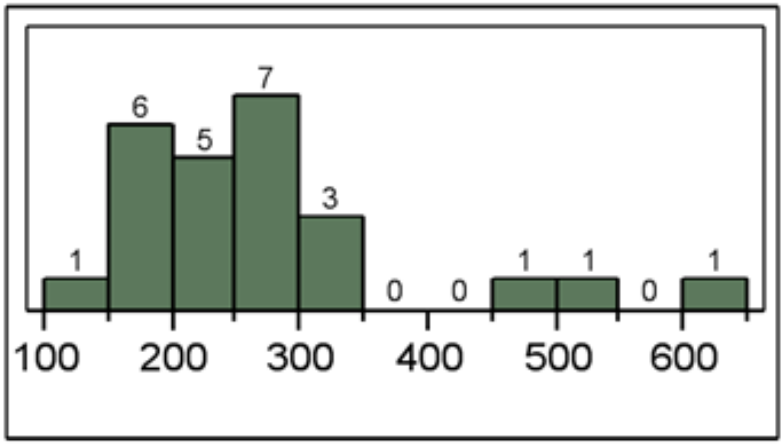
Difficulty: 2 Medium

Jaggia - Chapter 02 #54

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

55. The following histogram represents the number of pages in each book within a collection. What is the frequency of books containing at least 250 but fewer than 300 pages?



A. 5

B. 6

C. 7

D. 12

AACSB: Analytical Thinking

Blooms: Understand

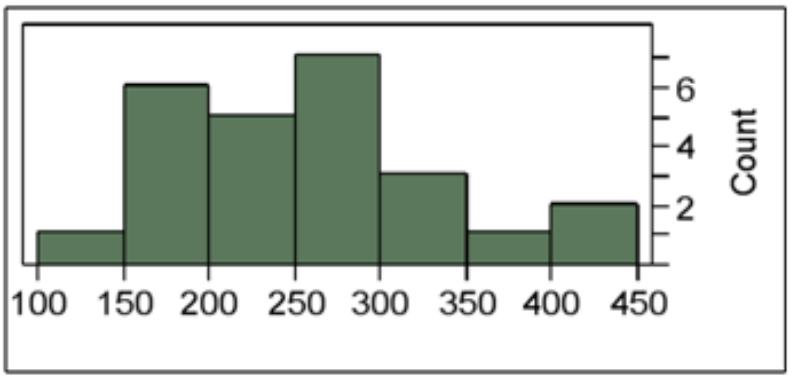
Difficulty: 2 Medium

Jaggia - Chapter 02 #55

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

56. The following histogram represents the number of pages in each book within a collection. What is the frequency of books containing at least 200 but fewer than 250 pages?



A. 4

B. 5

C. 6

D. 7

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #56

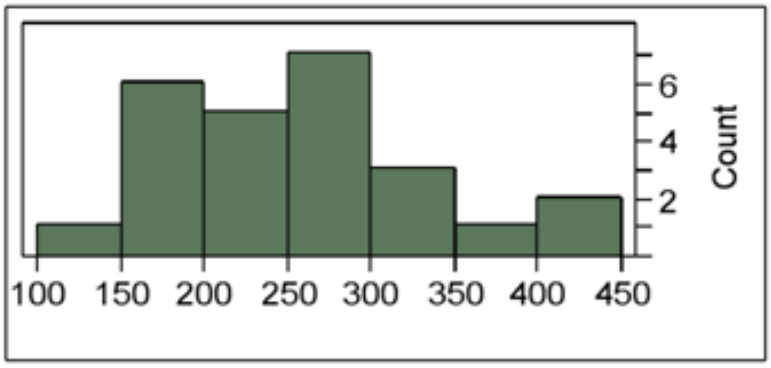
Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

57.

The following histogram represents the number of pages in each book within a collection.

What is the frequency of books containing at least 250 but fewer than 400 pages?



A. 7

B. 10

C. 11

D. 12

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #57

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

58.

An analyst constructed the following frequency distribution on the monthly returns for 50 selected stocks.

Class (in percent)	
–10 up to 0	
0 up to 10	
10 upto 20	
20 up to 30	

The number of stocks with returns of 0% up to 10% is _____.

A. 2

B. 8

C. 15

D. 25

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #58

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

59.

An analyst constructed the following frequency distribution on the monthly returns for 50 selected stocks.

Class (in percent)	
–10 up to 0	
0 up to 10	
10 upto 20	
20 up to 30	

The number of stocks with returns of less than 10% is _____.

A. 8

B. 25

C. 33

D. 48

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #59

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

60.

An analyst constructed the following frequency distribution on the monthly returns for 50 selected stocks: An analyst constructed the following frequency distribution on the monthly returns for 50 selected stocks.

Class (in percent)	
–10 up to 0	
0 up to 10	
10 upto 20	
20 up to 30	

The proportion of stocks with returns of 0% up to 10% is _____.

A. 0.30

B. 0.50

C. 0.66

D. 0.80

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #60

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

61.

An analyst constructed the following frequency distribution on the monthly returns for 50 selected stocks.

Class (in percent)	Frequency
–10 up to 0	8
0 up to 10	25
10 upto 20	15
20 up to 30	2

The proportion of stocks with returns of less than 10% is _____.

A. 0.30

B. 0.50

C. 0.66

D. 0.80

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #61

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

62.

Automobiles traveling on a road with a posted speed limit of 65 miles per hour are checked for speed by a state police radar system. The following table is a frequency distribution of speeds.

	Speed (miles per hour)
	45 up to 55
	55 up to 65
	65 up to 75
	75 up to 85

How many of the cars traveled less than 75 miles per hour?

A. 275

B. 325

C. 650

D. 675

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #62

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

63.

Automobiles traveling on a road with a posted speed limit of 65 miles per hour are checked for speed by a state police radar system. The following table is a frequency distribution of speeds.

	Speed (miles per hour)
	45 up to 55
	55 up to 65
	65 up to 75
	75 up to 85

What proportion of the cars traveled at least 55 but less than 65 miles per hour?

A. 0.33

B. 0.48

C. 0.56

D. 0.80

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #63

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

64.

Automobiles traveling on a road with a posted speed limit of 65 miles per hour are checked for speed by a state police radar system. The following table is a frequency distribution of speeds.

	Speed (miles per hour)
	45 up to 55
	55 up to 65
	65 up to 75
	75 up to 85

When using a polygon to graph quantitative data, what does each point represent?

A. The lower limit of a particular class and its width

B. The midpoint of a particular class and its associated frequency or relative frequency

C. The midpoint of a particular class and its associated cumulative frequency or cumulative relative frequency

D. The upper limit of a particular class and its associated cumulative frequency or cumulative relative frequency

AACSB: Analytical Thinking

Blooms: Remember

Difficulty: 1 Easy

Jaggia - Chapter 02 #64

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

65.

The accompanying table shows students' scores from the final exam in a history course.

Scores
50 up to 60
60 up to 70
70 up to 80
80 up to 90
90 up to 100

How many of the students scored at least 70 but less than 90?

A. 24

B. 31

C. 55

D. 88

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #65

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

66.

The following table shows the number of payroll jobs the government added during the years it added jobs (since 1973). The jobs are in thousands.

Jobs Added	Frequency
100 up to 200	5
200 up to 300	8
300 up to 400	7
400 up to 500	5
500 up to 600	1

Approximately what percent of the time did the government add 200,000 or more jobs?

A. 19%

B. 50%

C. 77%

D. 81%

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #66

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

67.

The accompanying relative frequency distribution represents the last year car sales for the sales force at Kelly's Mega Used Car Center.

Car Sales	Relative Frequency
35 up to 45	0.07
45 up to 55	0.15
55 up to 65	0.31
65 up to 75	0.22
75 up to 85	0.25

If Kelly's employs 100 salespeople, how many of these salespeople have sold at least 35 but fewer than 45 cars in the last year?

A. 5

B. 7

C. 10

D. 15

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #67

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

68.

The accompanying relative frequency distribution represents the last year car sales for the sales force at Kelly's Mega Used Car Center.

Car Sales	Relative Frequency
35 up to 45	0.07
45 up to 55	0.15
55 up to 65	0.31
65 up to 75	0.22
75 up to 85	0.25

If Kelly's employs 100 salespeople, how many of these salespeople have sold at least 45 but fewer than 65 cars in the last year?

A. 15

B. 31

C. 40

D. 46

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #68

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

69.

The accompanying relative frequency distribution represents the last year car sales for the sales force at Kelly's Mega Used Car Center.

Car Sales	Relative Frequency
35 up to 45	0.07
45 up to 55	0.15
55 up to 65	0.31
65 up to 75	0.22
75 up to 85	0.25

If Kelly's employs 100 salespeople, how many of these salespeople have sold at least 65 cars in the last year?

A. 22

B. 25

C. 31

D. 47

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #69

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

70. When displaying quantitative data, what is an ogive used to plot?

A. Frequency or relative frequency of each class against the midpoint of the corresponding class

B. Cumulative frequency or cumulative relative frequency of each class against the upper limit of the corresponding class

C. Frequency or relative frequency of each class against the midpoint of the corresponding class and cumulative frequency or cumulative relative frequency of each class against the upper limit of the corresponding class

D. None of the above

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #70
Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.
Topic: Summarizing Quantitative Data

71. How does an ogive differ from a polygon?

A. An ogive is used for qualitative data, while a polygon is used for quantitative data.

B. An ogive is used for quantitative data, while a polygon is used for qualitative data.

C. An ogive is a graphical depiction of a frequency or relative distribution, while a polygon is a graphical depiction of a cumulative frequency or cumulative relative frequency distribution.

D. An ogive is a graphical depiction of a cumulative frequency or cumulative relative frequency distribution, while a polygon is a graphical depiction of a frequency or relative frequency distribution.

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand

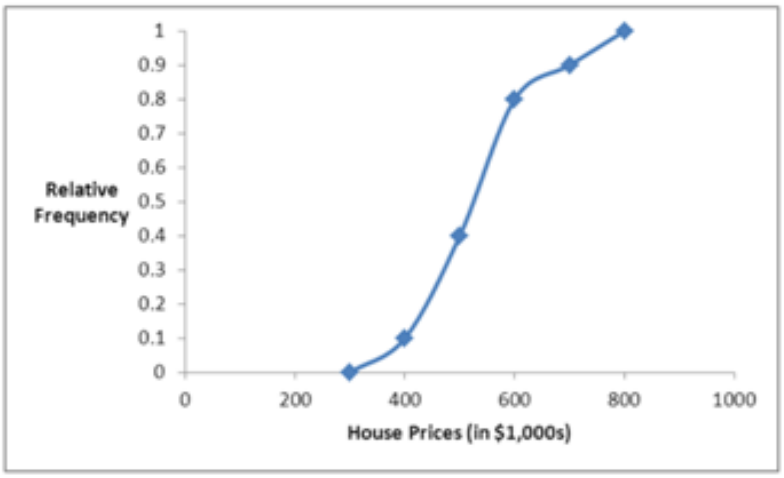
Difficulty: 2 Medium

Jaggia - Chapter 02 #71

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Qualitative Data

72. Recent home sales in a suburb of Washington, D.C., are shown in the accompanying ogive.



Approximate the percentage of houses that sold for less than $600,000.

A. 60%

B. 70%

C. 80%

D. 90%

AACSB: Analytical Thinking

Blooms: Understand

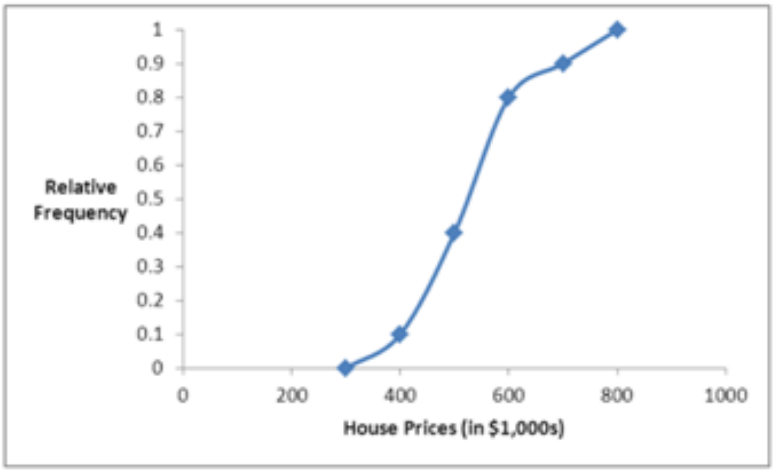
Difficulty: 2 Medium

Jaggia - Chapter 02 #72

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

73. Recent home sales in a suburb of Washington, D.C., are shown in the accompanying ogive.



Approximate the percentage of houses that sold for more than $500,000.

A. 40%

B. 50%

C. 60%

D. 70%

AACSB: Analytical Thinking

Blooms: Understand

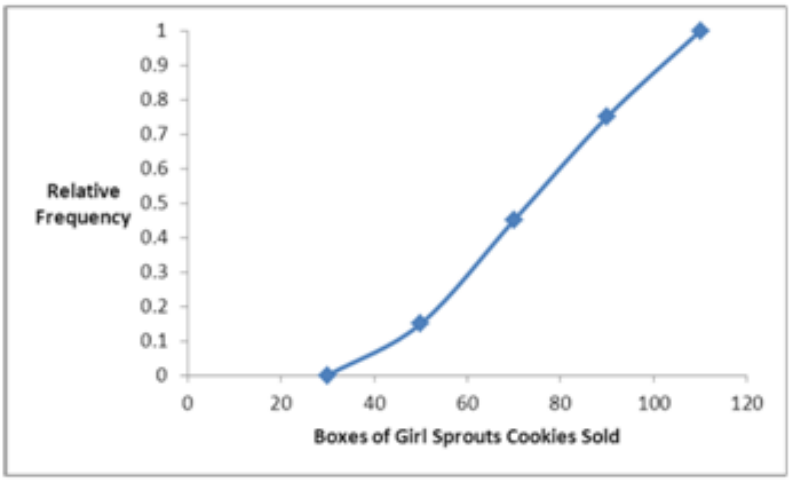
Difficulty: 2 Medium

Jaggia - Chapter 02 #73

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

74. The organization of the Girl Sprouts has completed its annual cookie drive. The sales are reported in the accompanying ogive.



Approximate the percentage of girls who sold less than 90 boxes of cookies.

A. 45%

B. 55%

C. 65%

D. 75%

AACSB: Analytical Thinking

Blooms: Understand

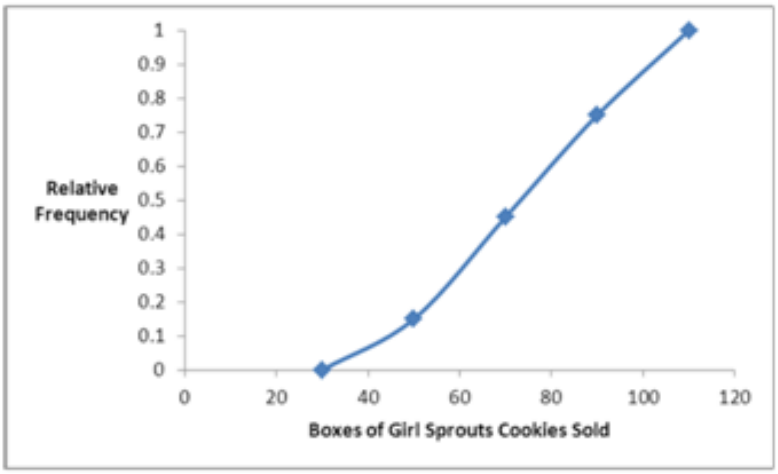
Difficulty: 2 Medium

Jaggia - Chapter 02 #74

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

75. The organization of the Girl Sprouts has completed its annual cookie drive. The sales are reported in the accompanying ogive.



Approximate the percentage of girls who sold more than 70 boxes of cookies.

A. 45%

B. 55%

C. 65%

D. 75%

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #75

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

76. A stem-and-leaf diagram is constructed by separating each value of a data set into two parts. What are these parts?

A. Stem consisting of the last digit and leaf consisting of the leftmost digits

B. Stem consisting of the leftmost digits and leaf consisting of the second digit

C. Stem consisting of the second digit and leaf consisting of the last digit

D. Stem consisting of the leftmost digits and leaf consisting of the last digit

AACSB: Analytical Thinking

Blooms: Remember

Difficulty: 1 Easy

Jaggia - Chapter 02 #76

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

Topic: Stem-and-Leaf Diagrams

77. In the accompanying stem-and-leaf diagram, the values in the stem and leaf portions represent 10s and 1s digits, respectively.

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

Which of the following numbers appears in the stem-and-leaf diagram?

A. 3800

B. 380

C. 38

D. 3.8

AACSB: Analytical Thinking

Blooms: Remember

Difficulty: 1 Easy

Jaggia - Chapter 02 #77

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

Topic: Stem-and-Leaf Diagrams

78. In the accompanying stem-and-leaf diagram, the values in the stem-and-leaf portions represent 10s and 1s digits, respectively.

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

What would be the frequency of the class 35 up to 45, that is $\{x; 35 \leq x < 45\}$?

A. 0

B. 1

C. 2

D. 3

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #78

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

Topic: Stem-and-Leaf Diagrams

79. In the accompanying stem-and-leaf diagram, the values in the stem-and-leaf portions represent 10s and 1s digits, respectively.

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

How many values are at least 25 but less than 35?

A. 10

B. 11

C. 12

D. 13

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #79

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

Topic: Stem-and-Leaf Diagrams

80. In the accompanying stem-and-leaf diagram, the values in the stem-and-leaf portions represent 10s and 1s digits, respectively.

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

Find the frequency associated with data values that are more than 28.

A. 8

B. 9

C. 10

D. 11

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #80

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

Topic: Stem-and-Leaf Diagrams

81. In the accompanying stem-and-leaf diagram, the values in the stem-and-leaf portions represent 10s and 1s digits, respectively.

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

The stem-and-leaf diagram shows that the distribution is _____.

A. symmetric

B. positively skewed

C. negatively skewed

D. None of the above

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #81

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

Topic: Stem-and-Leaf Diagrams

82. The following stem-and-leaf diagram shows the speeds in miles per hour (mph) of 14 cars approaching a toll booth on a bridge in Oakland, California.

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

How many of the cars were traveling faster than 25 mph but slower than 40 mph?

A. 8

B. 9

C. 10

D. 12

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #82

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

Topic: Stem-and-Leaf Diagrams

83. The following stem-and-leaf diagram shows the last 20 dividend payments (in cents) paid by Proctor and Gamble.

Stem	Leaf
3	1 5 5 5 5
4	0 0 0 0 4 4 4 4 4 8 8 8
5	3 3 3

The most common dividend payment is _____.

A. 0.35

B. 0.40

C. 0.44

D. 0.48

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #83

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

Topic: Stem-and-Leaf Diagrams

84. What may be revealed from a scatterplot?

A. No relationship between two variables

B. A linear relationship between two variables

C. A curvilinear relationship between two variables

D. All of the above

AACSB: Analytical Thinking

Blooms: Understand

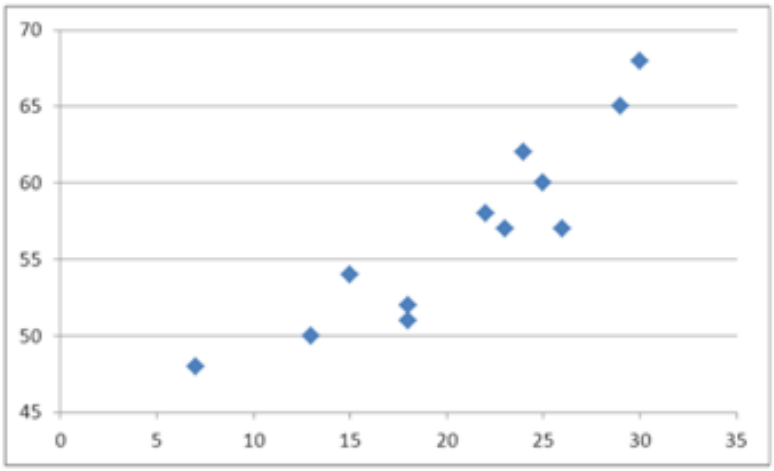
Difficulty: 2 Medium

Jaggia - Chapter 02 #84

Learning Objective: 02-06 Construct and interpret a scatterplot.

Topic: Scatterplots

85. What type of relationship is indicated in the scatterplot?



A. No relationship

B. A negative linear relationship

C. A negative curvilinear relationship

D. A positive linear or curvilinear relationship

AACSB: Analytical Thinking

Blooms: Understand

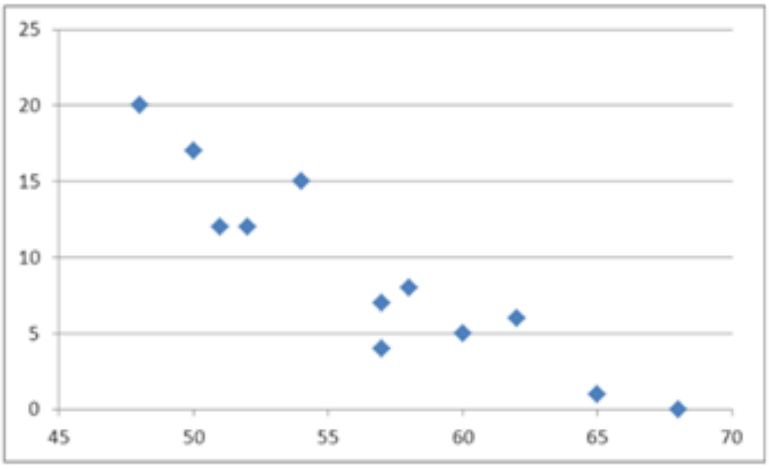
Difficulty: 2 Medium

Jaggia - Chapter 02 #85

Learning Objective: 02-06 Construct and interpret a scatterplot.

Topic: Scatterplots

86. What type of relationship is indicated in the scatterplot?



A. No relationship

B. A negative linear relationship

C. A positive linear relationship

D. A positive curvilinear relationship

AACSB: Analytical Thinking

Blooms: Understand

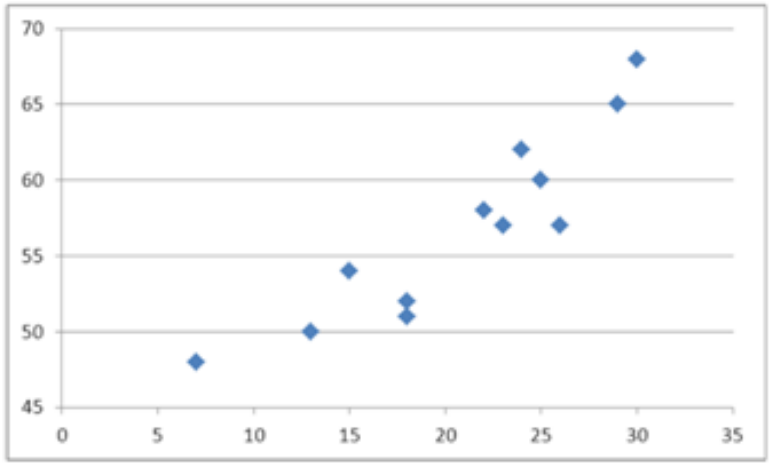
Difficulty: 2 Medium

Jaggia - Chapter 02 #86

Learning Objective: 02-06 Construct and interpret a scatterplot.

Topic: Scatterplots

87. What type of relationship is indicated in the scatterplot?



A. No relationship

B. A negative linear relationship

C. A negative curvilinear relationship

D. A positive linear or curvilinear relationship

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #87

Learning Objective: 02-06 Construct and interpret a scatterplot.

Topic: Scatterplots

88.

Use the following data to construct a scatterplot. What type of relationship is implied?

x	3	
y	34	

A. No relationship

B. A positive relationship

C. A negative relationship

D. There is not enough information to answer

AACSB: Analytical Thinking

Blooms: Analyze

Difficulty: 3 Hard

Jaggia - Chapter 02 #88

Learning Objective: 02-06 Construct and interpret a scatterplot.

Topic: Scatterplots

89.

Use the following data to construct a scatterplot. What type of relationship is implied?

x	3	
y	34	

A. No relationship

B. A positive relationship

C. A negative relationship

D. Not enough information to answer

AACSB: Analytical Thinking

Blooms: Analyze

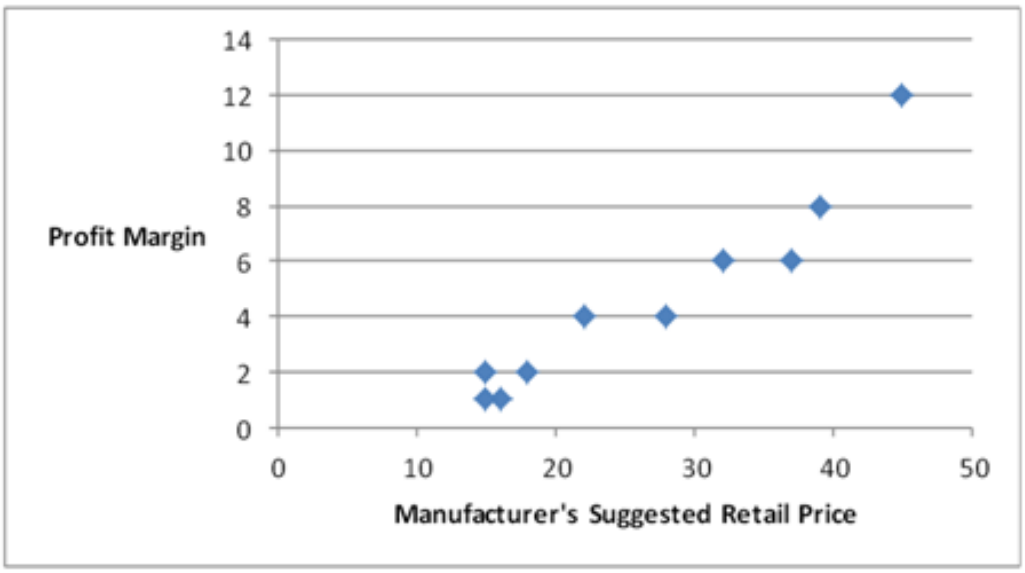
Difficulty: 3 Hard

Jaggia - Chapter 02 #89

Learning Objective: 02-06 Construct and interpret a scatterplot.

Topic: Scatterplots

90. A car dealership created a scatterplot showing the manufacturer's retail price and profit margin for the cars they have on their lot.



As the manufacturer's suggested retail price increases, the profit margin tends to _____.

A. increase

B. decrease

C. stay the same

D. None of the above

AACSB: Analytical Thinking

Blooms: Remember

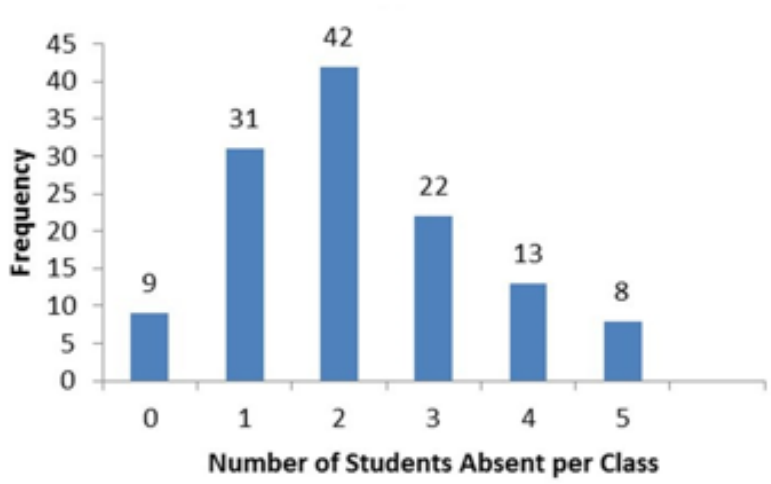
Difficulty: 1 Easy

Jaggia - Chapter 02 #90

Learning Objective: 02-06 Construct and interpret a scatterplot.

Topic: Scatterplots

91. The statistics professor has kept attendance records and recorded the number of absent students per class. The recorded data is displayed in the following histogram with the frequency of each number of absent students shown above the bars.



How many statistics classes had three or more students absent?

A. 8

B. 13

C. 22

D. 43

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #91

Learning Objective: 02-02 Construct and interpret pie charts and bar charts.

Topic: Summarizing Qualitative Data

92.

The following table shows the percentage of e-mail that is sent each day of the business week according to an Intermedia survey.

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

Which of the following best displays this data?

A. Horizontal bar chart

B. Vertical bar chart

C. Pie chart

D. Histogram

AACSB: Analytical Thinking

Blooms: Remember

Difficulty: 1 Easy

Jaggia - Chapter 02 #92

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

93.

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

Number Sold	Frequency
01-May	3
06-Oct	7
Nov-15	14
16-20	22
21-25	4

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

A. 25

B. 50

C. 75

D. 100

AACSB: Analytical Thinking

Blooms: Remember

Difficulty: 1 Easy

Jaggia - Chapter 02 #93

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

94.

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

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

What percentage of houses has an asking price between $350,000 and under $400,000?

A. 16.4%

B. 21.8%

C. 30.9%

D. 33.3%

AACSB: Analytical Thinking

Blooms: Apply

Difficulty: 3 Hard

Jaggia - Chapter 02 #94

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

95.

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

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

What percentage of houses has an asking price under $550,000?

A. 50.5%

B. 69.1%

C. 89.1%

D. 95.0%

AACSB: Analytical Thinking

Blooms: Apply

Difficulty: 3 Hard

Jaggia - Chapter 02 #95

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

96.

A survey conducted by CBS news asked 1,026 respondents: "What would you do with an unexpected tax refund?" The responses are summarized in the following table.

Category	Percentage
Pay off debts	47%
Put it in the bank	30%
Spend it	11%
I never get a refund	10%
Other	2%

How many people will either put it in the bank or spend it?

A. 421

B. 411

C. 113

D. 482

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #96

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

97.

The manager at a water park constructed the following frequency distribution to summarize attendance in July and August.

Attendance	Frequency
1,000 up to 1,250	5
1,250 up to 1,500	6
1,500 up to 1,750	10
1,750 up to 2,000	20
2,000 up to 2,250	15
2,250 up to 2,500	4

What of the following is the most likely attendance range?

A. 2,000 up to 2,500

B. 1,750 up to 2,000

C. 1,000 up to 1,750

D. 1,250 up to 1,750

AACSB: Analytical Thinking

Blooms: Apply

Difficulty: 3 Hard

Jaggia - Chapter 02 #97

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Topic: Summarizing Quantitative Data

98.

The Statistical Abstract of the United States, 2010 provided the following frequency distribution of the number of people who live below the poverty level by region.

Region	Number of People (in 1000s)
Northeast	6,166
Midwest	7,237
South	15,501
West	8,372

What is the percentage of people who live below the poverty level in the West or Midwest?

A. 35.96%

B. 41.87%

C. 41.58%

D. 31.96%

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #98

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Topic: Summarizing Qualitative Data

99. Consider the following stem-and-leaf diagram.

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

Which data value occurs most often?

A. 1

B. 56

C. 31

D. 63

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #99

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

Topic: Stem-and-Leaf Diagrams

100. Consider the following stem-and-leaf diagram.

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

Which of the following statements is correct?

A. There are a total of 10 data values in this data set.

B. The data value that occurs most often is 50.

C. This largest data value is 59.

D. The range 50-59 contains the most values.

AACSB: Analytical Thinking
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #100
Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.
Topic: Stem-and-Leaf Diagrams

101. For qualitative data, a frequency distribution groups data into _____ and records the number of _____.

categories; observations

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #101
Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.
Topic: Summarizing Qualitative Data

102. Graphically, we can show a(n) _____ _____ for qualitative data by constructing a pie chart or a bar chart.

frequency distribution

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Remember
Difficulty: 1 Easy
Jaggia - Chapter 02 #102
Learning Objective: 02-02 Construct and interpret pie charts and bar charts.
Topic: Summarizing Qualitative Data

103. When constructing a frequency distribution for quantitative data classes are mutually _____ and _____.

exclusive; exhaustive

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #103
Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.
Topic: Summarizing Quantitative Data

104. A _____ _____ is a table that shows the number of data observations that fall into specific interval.

frequency distribution

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #104
Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.
Topic: Summarizing Quantitative Data

105. The shape of most data distributions can be categorized as either _____ or _____.

symmetric; skewed

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #105
Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.
Topic: Summarizing Quantitative Data

106. A stem-and-leaf diagram most resembles a(n) _____.

histogram

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #106
Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.
Topic: Stem-and-Leaf Diagrams

107. The _____ is a graphical technique that cannot be used to display qualitative data.

stem-and-leaf

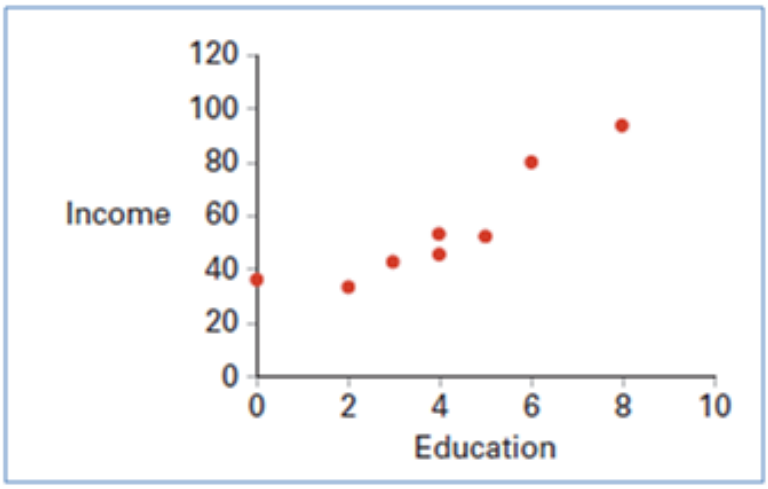
AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #107
Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.
Topic: Stem-and-Leaf Diagrams

108. A scatterplot depicts a positive _____ relationship, if as *x* increases, *y* tends to increase at an increasing rate.

curvilinear

AACSB: Analytical Thinking
Accessibility: Keyboard Navigation
Blooms: Understand
Difficulty: 2 Medium
Jaggia - Chapter 02 #108
Learning Objective: 02-06 Construct and interpret a scatterplot.
Topic: Scatterplots

109.



Using a scatterplot above we observe a _____ linear relationship between two variables: Education and Income.

positive

A positive linear relationship exists between variables *x* and *y*, when *y* tends to increase as *x* increases.

AACSB: Analytical Thinking
Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #109

Learning Objective: 02-06 Construct and interpret a scatterplot.

Topic: Scatterplots

110.

A survey of 400 unemployed people was completed at a job fair. Each person was asked to categorize his or her job interests. The accompanying relative frequency distribution was constructed.

Field	Relative Frequency
Management	0.15
Business and financial operations	0.2
Computer and mathematical	0.1
Life, physical, and social science	0.3
Community and social service	0.25

a. Construct the corresponding frequency distribution. How many of these people designated that the computer and mathematical industry was their job interest?

b. Construct a pie chart.

In order to construct the frequency distribution, multiply each relative frequency by 400, the sample size. For the pie chart, each segment corresponds to the relative frequency for each job category.

AACSB: Analytical Thinking

Blooms: Remember

Difficulty: 1 Easy

Jaggia - Chapter 02 #110

Learning Objective: 02-01 Summarize qualitative data by forming frequency distributions.

Learning Objective: 02-02 Construct and interpret pie charts and bar charts.

Topic: Summarizing Qualitative Data

111.

A hair stylist records the hair color of her 25 most recent appointments, classifying the color as blonde, brown, black, or red. Her data set is displayed next.

Red	
Blonde	
Brown	
Brown	
Brown	

a. Construct a frequency and relative frequency distribution of the hair color of the stylist's customers.

b. Construct a pie chart. Which hair color is the most common among the stylist's customers?

c. Create a bar chart to display the frequency distribution. How many customers had black hair?

To construct a pie chart in Excel, select both columns of data, and then select **Insert > Pie > 2-D Pie**. Choose the option at the top left. To construct a bar chart in Excel, select both columns of data, and then select **Insert > Column > 2-D Column**. Choose the option at the top left. See instructions in text for other formatting options.

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #111

Learning Objective: 02-02 Construct and interpret pie charts and bar charts.

Topic: Summarizing Qualitative Data

112.

The following table lists some of the busiest ports in the world based on the number of containers in 2010.

Location of Port
Shanghai
Singapure
Hong Kong
Rotterdam
Los Angeles
New York

Construct a pie chart to summarize the data. Approximately what percent of the total number of containers go through Hong Kong?

To construct a pie chart in Excel, select both columns of data, and then select **Insert > Pie > 2-D Pie**. Choose the option at the top left. See instructions in the text for other formatting options. Twenty-four million out of 104 million containers went through Hong Kong: 24/104 = 23%.

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

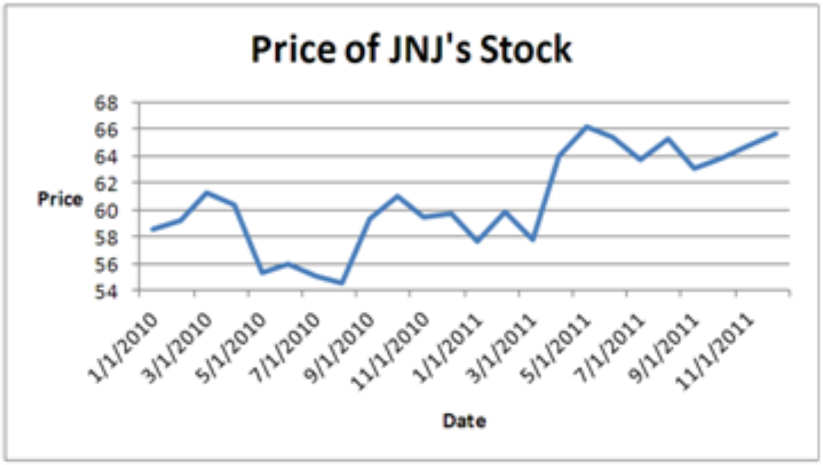
Jaggia - Chapter 02 #112

Learning Objective: 02-02 Construct and interpret pie charts and bar charts.

Topic: Summarizing Qualitative Data

113.

Johnson and Johnson (JNJ) is a consumer staples company. Consumer staples are products people need and buy even during times of financial hardship. Do you think JNJ will have a volatile stock price? Does the accompanying graph accurately depict the volatility of JNJ stock? Explain.



The scale on the vertical axis should begin at zero. Refer to Figure 2.6 where graphs with misleading scales are shown.

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #113

Learning Objective: 02-02 Construct and interpret pie charts and bar charts.

Topic: Summarizing Qualitative Data

114.

Each month the Bureau of Labor Statistics reports the number of people (in thousands) employed in the United States by age. The accompanying frequency distribution shows the results for August 2011.

Age	Frequency
16 to 19	4,794
20 to 24	13,273
25 to 34	30,789
35 to 44	30,021
45 to 54	32,798
55 and over	28,660

a. Construct a relative frequency distribution. What proportion of workers is between 20 and 24 years old?

b. Construct a cumulative relative frequency distribution. What proportion of workers is younger than 35 years old?

c. Construct a relative frequency histogram.

First find the total number of people surveyed by summing the frequency column (n = 140,335). \

a. To find the relative frequency for each class, divide each class's frequency by n; so the

proportion of workers that are between 20 and 24 years old is 13,273/140,335 = 0.095.

b. To find the cumulative relative frequency for each class, take each class's relative frequency and add it to the preceding relative frequencies. So the proportion of workers that are younger than 35 years old is 0.034 + 0.095 + 0.219 = 0.348.

c. To construct a relative frequency histogram by hand, let the width of each rectangle equal the width of the class, and its height equal the corresponding relative frequency. In order to construct a relative frequency histogram in Excel, put the class column and the relative frequency column next to one another in the spreadsheet. Select both columns simultaneously and then choose **Insert > Column > 2-D Column**. Choose the option at the top left. See instructions in the text for other formatting options.

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #114

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

115.

The following table displays the top 40 American League batting averages of the 2011 season.

Player	Batting Average	Player	Batting Average
Miguel Cabrera	0.344	Yunel Escobar	0.290
Adrian Gonzalez	0.338	Vladimir Guerrero	0.290
Michael Young	0.338	Alberto Callaspo	0.288
Victor Martinez	0.33	Howard Kendrick	0.285
Jacoby Ellsbury	0.321	Jeff Francoeur	0.285
David Ortiz	0.309	Nick Markakis	0.284
Dustin Pedroia	0.307	Michael Cuddyer	0.284
Casey Kotchman	0.306	Adam Jones	0.280
Melky Cabrera	0.305	Elvis Andrus	0.279
Alex Gordon	0.303	Erick Aybar	0.279
Jose Bautista	0.302	Juan Pierre	0.279
Robinson Cano	0.302	Matt Joyce	0.277
Paul Konerko	0.300	Asdrubal Cabrera	0.273
Jhonny Peralta	0.299	Edwin Encarnacion	0.272
Josh Hamilton	0.298	Ichiro Suzuki	0.272
Derek Jeter	0.297	Peter Bourjos	0.271
Adrian Beltre	0.296	J.J. Hardy	0.269
Alex Avila	0.295	Alexei Ramirez	0.269
Eric Hosmer	0.293	Ben Zobrist	0.269
Billy Butler	0.291	Delmon Young	0.268

a. Construct frequency, relative frequency, and cumulative relative frequency distributions that group the data in classes of 0.265 up to 0.280, 0.280 up to 0.295, 0.295 up to 0.310, and so on.

b. How many of these players have a batting average above 0.340? What proportion of these players has a batting average of at least 0.280 but below 0.295? What percentage of these players has a batting average below 0.325?

c. Construct a relative frequency histogram. Is the distribution symmetric? If not, is it positively or negatively skewed?

d. Construct an ogive.

e. Using the ogive, approximately what proportion of the players in this group has a batting average above 0.290?

a. To construct the frequency distribution, count the number of players whose batting average falls in each class. To construct a relative frequency distribution, divide the frequency of each class by the total number of observations (in this case, 40). To construct the cumulative relative frequency distribution, take the relative distribution and add it to the preceding class's cumulative relative frequency. For the lowest class, the cumulative relative frequency is simply the relative frequency of that class. b. Use the distributions computed in part a. to answer these questions. c. Because the distribution has a tail toward the right, we are able to say that it is positively skewed. To construct a relative frequency histogram by hand, let the width of each rectangle equal the width of the class, and its height equal the corresponding relative frequency. To construct a relative frequency histogram in Excel, put the class column and the relative frequency column next to one another in the spreadsheet. Select both columns simultaneously and then choose **Insert > Column > 2-D Column**. Choose the option at the top left. See instructions in the text for other formatting options. d. To construct an ogive in Excel, create a table with two columns. In the left column, put the upper limit of each class, and in the right column put the cumulative relative frequency or cumulative percent frequency. In the first row of this table, insert the lower bound of the first class in the left column and a 0 in the right column. Select both columns simultaneously and then choose **Insert > Scatter** and pick the option given at the top right (a scatterplot with a smooth line connecting the points). e. Draw a vertical line up from .290 on the horizontal axis of the ogive. This intersects the ogive at about 0.45, so about 45% of this group of players have a batting average less than .290. Therefore,

about 55% have a batting average greater than .290.

AACSB: Analytical Thinking

Blooms: Apply

Difficulty: 3 Hard

Jaggia - Chapter 02 #115

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

116.

The following table shows analyst sentiment ratings for the 30 stocks listed in the Dow Jones Industrial Average.

7	4	6	
6	4	5	
2	9	7	

a. Construct a frequency distribution, relative frequency distribution, cumulative frequency distribution and relative cumulative frequency distribution using classes of 2 up to 4, 4 up to 6, 6 up to 8, and 8 up to 10.

b. Construct a histogram that summarizes the data.

c. What percentage of the stocks in the Dow Jones Industrial Average received a sentiment rating less than 8?

d. What percentage of the stocks in the Dow Jones Industrial Average received a sentiment rating of 6 or more?

c. 23/30 ≈ 0.77 or about 77%. See cumulative relative frequency distribution in part a. d. 15/30 = 0.5 or 50%. See cumulative relative frequency distribution in part a.

AACSB: Analytical Thinking

Blooms: Apply

Difficulty: 3 Hard

Jaggia - Chapter 02 #116

Learning Objective: 02-03 Summarize quantitative data by forming frequency distributions.

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

117.

The accompanying cumulative relative frequency distribution shows a summary of the scores from an Algebra II exam at a local high school. Twenty students took the exam.

Class	Cumulative Relative Frequency
51 - 60	0.05
61 - 70	0.20
71 - 80	0.45
81 - 90	0.80
91 - 100	1.00

a. Construct the relative frequency distribution. What proportion of students scored between 81 and 90?

b. Construct the frequency distribution. How many students scored between 71 and 80?

c. Construct an ogive. What is the approximate percentage of students that scored less than 85?

a. To find the relative frequency for each class, subtract each class's cumulative relative

frequency from the preceding cumulative relative frequency; so the proportion of students that scored between 81 and 90 is 0.80 − 0.45 = 0.35.

b. To find the frequency for each class, multiply each class's relative frequency by N (N = 20); so the number of students that scored between 71 and 80 is 0.25 × 20 = 5.

c. To construct an ogive, we plot the five points corresponding to the upper class limits and their cumulative relative frequencies. In addition, we add one point being the first class lower limit with a zero value. See instructions in the text for plotting an ogive in Excel. We then draw a vertical line at the score 85 (not shown) until it intersects the curve. At the intersection, draw a horizontal line to the y axis-it intersects at approximately 0.60, or 60%.

AACSB: Analytical Thinking

Blooms: Apply

Difficulty: 3 Hard

Jaggia - Chapter 02 #117

Learning Objective: 02-04 Construct and interpret histograms, polygons, and ogives.

Topic: Summarizing Quantitative Data

118.

The dividend yields of the stocks in an investor's portfolio are shown in the following cumulative relative frequency distribution.

	Dividend Yields
	0% up to 2%
	2% up to 4%
	4% up to 6%
	6% up to 8%
	8% up to 10%

a. Construct an ogive.

b. Approximately what percent of the stocks had a dividend yield of 3% or larger?

To construct an ogive, we plot the five points corresponding to the upper class limits and their cumulative relative frequencies. In addition, we add one point being the first class lower limit with a zero value. See instructions in the text for plotting an ogive in Excel. We then draw a vertical line at the score .03 (not shown) until it intersects the curve. At the intersection, draw a horizontal line to the *y* axis-it intersects at approximately 0.70. One minus 0.7 equals 0.3, which is the approximate proportion with dividend yields of 3% or more.

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

119.

Construct a stem-and-leaf diagram with the following data set.

3.2	1.3	2.1	2.4	4.3	3.1	3.2	1.1	1.4	2.5
2.4	2.9	3.8	1.7	2.3	1.2	3.2	1.4	1.5	2.6

Is the distribution symmetric?

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

Sort the data from lowest value to highest value, grouping by the leftmost digit. Write the leftmost digit in the left-hand column. In the right column, write the right-most digit of each data point, separated by a space, in ascending order. By turning the stem-and-leaf diagram on its side, we notice that the distribution has a tail toward the right. The distribution is therefore positively skewed.

120.

Construct a stem-and-leaf diagram for the following data set.

74	75	63	62	56	79	58	79	53	49
78	69	74	72	53	72	64	65	67	77

Is the distribution symmetric?

Stem	Leaf
4	9
5	3 3 6 8
6	2 3 4 5 7 9
7	2 2 4 4 5 7 8 9 9

Sort the data from lowest value to highest value, grouping by the leftmost digit. Write the leftmost digit in the left-hand column. In the right column, write the right-most digit of each data point, separated by a space, in ascending order. By turning the stem-and-leaf diagram on its side, we notice that the distribution has a tail toward the left. The distribution is therefore negatively skewed.

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #120

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

121.

The following table shows average wind speeds (in miles per hour) during 15 major fires in California.

44	55	22	32	29	24	47	33	32	27	58	39	38	51	41

Construct a stem-and-leaf diagram. Were most of these storms fueled by 45+ mile-per-hour winds? Explain.

• Sort data, then group according to the 10s digit.

20s 22, 24, 27, 29
30s 32, 32, 33, 38, 39
40s 41, 44, 47
50s 51, 55, 58

• Write the 10s digits in the left-hand column.

• Draw a line next to the 10s digit.

On the right-hand side of the line, write the 1s digit for each number.

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

122.

The following table shows the prices (in $1,000s) of the last 15 trucks sold at a Toyota dealership.

33	21	26	33	23	24	31	22	17	25	18	23	22	19	35

Construct a stem-and-leaf diagram. Given this diagram, estimate the price that a potential buyer would likely pay for a Toyota truck.

• Sort data, then group according to the 10s digit.

10s 17, 18, 19
20s 21, 22, 22, 23, 23, 24, 25, 26
30s 31, 32, 33, 35

• Write the 10s digits in the left-hand column.

• Draw a line next to the 10s digit.

On the right-hand side of the line, write the 1s digit for each number.

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #122

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

Topic: Stem-and-Leaf Diagrams

123.

The following data represent the ages of patients in the cardiac section of the local hospital. Construct a stem-and-leaf diagram. Comment on whether or not the distribution is symmetric.

48	53	60	61	62	63	70	70	72	77	78	79	80	82	87	88	90

Because the numbers are already sorted, begin by grouping according to the 10s digit.Write the 10s digits in the left-hand column.Draw a line next to the 10s digit.On the right-hand side of the line, write the 1s digit for each number.

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #123

Learning Objective: 02-05 Construct and interpret a stem-and-leaf diagram.

Topic: Stem-and-Leaf Diagrams

124.

A high school football league recorded the average points scored per game, as well as the winning percentage, for the 10 teams in the league.

Points per Game
24
21
27
13
16
18
15
17
19
22

Construct a scatterplot. Does scoring more points appear to be associated with a higher winning percentage?

To construct the scatterplot, plot each team's points per game-winning percentage combination, where, in our answer key, the points per game correspond to the value on the horizontal axis, and the winning percentage corresponds to the value on the vertical axis. Since the relationship is clearly positive (as one variable gets larger, the other tends to get larger as well), teams that score more points tend to have a higher winning percentage.

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #124

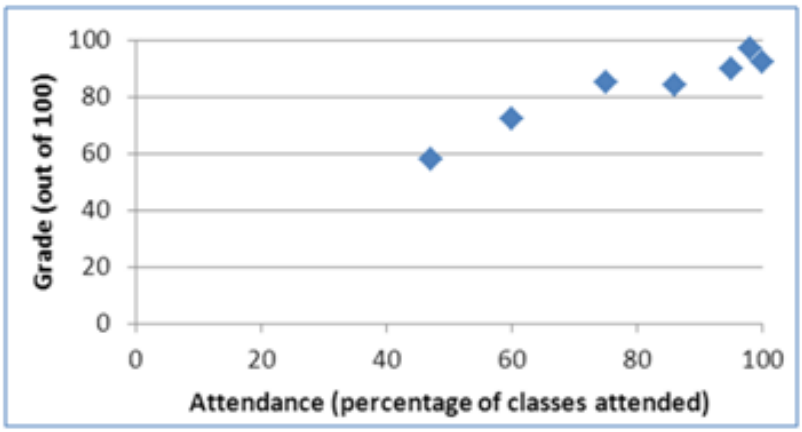
Learning Objective: 02-06 Construct and interpret a scatterplot.

Topic: Scatterplots

125.

A statistics instructor computes the grade and percentage of classes that each of his students attends. Construct a scatterplot from the data displayed next. Does a relationship exist between attendance and grade?

Attendance	47	60	75	86	95	98	100
Grade	58	72	85	84	90	97	92



To construct the scatterplot, plot each attendance-grade combination, where, in our answer key, the attendance corresponds to the value on the horizontal axis and the grade corresponds to the value on the vertical axis. Since a clear positive relationship exists, we are able to say that the two variables are related.

AACSB: Analytical Thinking

Blooms: Understand

Difficulty: 2 Medium

Jaggia - Chapter 02 #125

Learning Objective: 02-06 Construct and interpret a scatterplot.

Chapter 02 Summary

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