

CHAPTER 2: DESCRIPTIVE STATISTICS: TABULAR AND GRAPHICAL DISPLAYS

Multiple Choice

1. A frequency distribution is a tabular summary of data showing the
 - a. fraction of items in several classes
 - b. percentage of items in several classes
 - c. relative percentage of items in several classes
 - d. number of items in several classes

ANSWER: d

2. An Ogive is constructed by plotting a point corresponding to the_____frequency of each class.
 - a. relative
 - b. cumulative
 - c. percent
 - d. octave

ANSWER: b

3. A tabular summary of a set of data showing the fraction of the total number of items in several classes is a
 - a. frequency distribution
 - b. relative frequency distribution
 - c. frequency
 - d. cumulative frequency distribution

ANSWER: b

4. The relative frequency of a class is computed by
 - a. dividing the midpoint of the class by the sample size
 - b. dividing the frequency of the class by the midpoint
 - c. dividing the sample size by the frequency of the class
 - d. dividing the frequency of the class by the sample size

ANSWER: d

5. The percent frequency of a class is computed by
 - a. multiplying the relative frequency by 10
 - b. dividing the relative frequency by 100
 - c. multiplying the relative frequency by 100
 - d. adding 100 to the relative frequency

ANSWER: c

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6. The sum of frequencies for all classes will always equal
- 1
 - the number of elements in a data set
 - the number of classes
 - a value between 0 and 1

ANSWER: b

7. Fifteen percent of the students in a school of Business Administration are majoring in Economics, 20% in Finance, 35% in Management, and 30% in Accounting. The graphical device(s) which can be used to present these data is (are)
- a line chart
 - only a bar chart
 - only a pie chart
 - both a bar chart and a pie chart

ANSWER: d

8. A researcher is gathering data from four geographical areas designated: South = 1; North = 2; East = 3; West = 4. The designated geographical regions represent
- categorical data
 - quantitative data
 - label data
 - either quantitative or categorical data

ANSWER: a

9. Categorical data can be graphically represented by using a(n)
- histogram
 - frequency polygon
 - ogive
 - bar chart

ANSWER: d

10. A cumulative relative frequency distribution shows
- the proportion of data items with values less than or equal to the upper limit of each class
 - the proportion of data items with values less than or equal to the lower limit of each class
 - the percentage of data items with values less than or equal to the upper limit of each class
 - the percentage of data items with values less than or equal to the lower limit of each class

ANSWER: a

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11. If several frequency distributions are constructed from the same data set, the distribution with the widest class width will have the
- fewest classes
 - most classes
 - same number of classes as the other distributions since all are constructed from the same data

ANSWER: a

12. The sum of the relative frequencies for all classes will always equal
- the sample size
 - the number of classes
 - one
 - any value larger than one

ANSWER: c

13. The sum of the percent frequencies for all classes will always equal
- one
 - the number of classes
 - the number of items in the study
 - 100

ANSWER: d

14. The most common graphical presentation of quantitative data is a
- histogram
 - bar chart
 - relative frequency
 - pie chart

ANSWER: a

15. The total number of data items with a value less than the upper limit for the class is given by the
- frequency distribution
 - relative frequency distribution
 - cumulative frequency distribution
 - cumulative relative frequency distribution

ANSWER: c

16. The relative frequency of a class is computed by
- dividing the cumulative frequency of the class by n
 - dividing n by cumulative frequency of the class
 - dividing the frequency of the class by n
 - dividing the frequency of the class by the number of classes

ANSWER: c

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17. In constructing a frequency distribution, the approximate class width is computed as
- (largest data value - smallest data value)/number of classes
 - (largest data value - smallest data value)/sample size
 - (smallest data value - largest data value)/sample size
 - largest data value/number of classes

ANSWER: a

18. In constructing a frequency distribution, as the number of classes are decreased, the class width
- decreases
 - remains unchanged
 - increases
 - can increase or decrease depending on the data values

ANSWER: c

19. The difference between the lower class limits of adjacent classes provides the
- number of classes
 - class limits
 - class midpoint
 - class width

ANSWER: d

20. In a cumulative frequency distribution, the last class will always have a cumulative frequency equal to
- one
 - 100%
 - the total number of elements in the data set
 - None of these alternatives is correct.

ANSWER: c

21. In a cumulative relative frequency distribution, the last class will have a cumulative relative frequency equal to
- one
 - zero
 - the total number of elements in the data set
 - None of these alternatives is correct.

ANSWER: a

22. In a cumulative percent frequency distribution, the last class will have a cumulative percent frequency equal to
- one
 - 100
 - the total number of elements in the data set
 - None of these alternatives is correct.

ANSWER: b

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23. Data that provide labels or names for categories of like items are known as
- categorical data
 - quantitative data
 - label data
 - category data

ANSWER: a

24. A tabular method that can be used to summarize the data on two variables simultaneously is called
- simultaneous equations
 - crosstabulation
 - a histogram
 - an ogive

ANSWER: b

25. A graphical presentation of the relationship between two variables is
- an ogive
 - a histogram
 - either an ogive or a histogram, depending on the type of data
 - a scatter diagram

ANSWER: d

26. A histogram is said to be skewed to the left if it has a
- longer tail to the right
 - shorter tail to the right
 - shorter tail to the left
 - longer tail to the left

ANSWER: d

27. When a histogram has a longer tail to the right, it is said to be
- symmetrical
 - skewed to the left
 - skewed to the right
 - none of these alternatives is correct

ANSWER: c

28. In a scatter diagram, a line that provides an approximation of the relationship between the variables is known as
- approximation line
 - trend line
 - line of zero intercept
 - line of zero slope

ANSWER: b

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29. A histogram is
- a. a graphical presentation of a frequency or relative frequency distribution
 - b. a graphical method of presenting a cumulative frequency or a cumulative relative frequency distribution
 - c. the history of data elements
 - d. the same as a pie chart

ANSWER: a

30. A situation in which conclusions based upon aggregated crosstabulation are different from unaggregated crosstabulation is known as
- a. wrong crosstabulation
 - b. Simpson's rule
 - c. Simpson's paradox
 - d. aggregated crosstabulation

ANSWER: c

31. The reversal of conclusions based on aggregate and unaggregated data is called
- a. Simpson's paradox
 - b. Trim's paradox
 - c. Poisson dilemma
 - d. Simon's paradox

ANSWER: a

32. Conclusions drawn from two or more separate crosstabulations that can be reversed when the data are aggregated into a single crosstabulation is known as
- a. incorrect crosstabulation
 - b. error of crosstabulation
 - c. simpson's crosstabulation
 - d. Simpson's paradox

ANSWER: d

33. Which of the following graphical methods shows the relationship between two variables?
- a. pie chart
 - b. Ogive
 - c. crosstabulation
 - d. dot plot

ANSWER: c

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34. The _____ can be used to show the rank order and shape of a data set simultaneously.
- a. Ogive
 - b. pie chart
 - c. stem-and-leaf display
 - d. bar chart

ANSWER: c

35. Which of the following is a graphical summary of a set of data in which each data value is represented by a dot above the axis?
- a. histogram
 - b. box plot
 - c. dot plot
 - d. crosstabulation

ANSWER: c

36. A set of visual displays that organizes and presents information that is used to monitor the performance of a company or organization in a manner that is easy to read, understand, and interpret.
- a. data dashboard
 - b. data computation
 - c. hypothesis testing
 - d. organization of the hypothesis

ANSWER: a

37. A line that provides an approximation of the relationship between two variables is known as the
- a. relationship line
 - b. Trend line
 - c. line of 2 variables
 - d. approximation of two variables

ANSWER: b

38. A frequency distribution is a tabular summary of data showing the
- a. fraction of items in several classes
 - b. percentage of items in several classes
 - c. relative percentage of items in several classes
 - d. number of items in several classes

ANSWER: d

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Exhibit 2-1

The number of hours worked (per week) by 400 statistics students are shown below.

Number of Hours	Frequency
0 - 9	20
10 - 19	80
20 - 29	200
30 - 39	100

39. Refer to Exhibit 2-1. The class width for this distribution
- a. is 9
 - b. is 10
 - c. is 39, which is: the largest value minus the smallest value or $39 - 0 = 39$
 - d. varies from class to class

ANSWER: b

40. Refer to Exhibit 2-1. The number of students working 19 hours or less
- a. is 80
 - b. is 100
 - c. is 180
 - d. is 300

ANSWER: b

41. Refer to Exhibit 2-1. The relative frequency of students working 9 hours or less
- a. is 20
 - b. is 100
 - c. is 0.95
 - d. 0.05

ANSWER: d

42. Refer to Exhibit 2-1. The percentage of students working 19 hours or less is
- a. 20%
 - b. 25%
 - c. 75%
 - d. 80%

ANSWER: b

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43. Refer to Exhibit 2-1. The cumulative relative frequency for the class of 20 - 29
- a. is 300
 - b. is 0.25
 - c. is 0.75
 - d. is 0.5

ANSWER: c

44. Refer to Exhibit 2-1. The cumulative percent frequency for the class of 30 - 39 is
- a. 100%
 - b. 75%
 - c. 50%
 - d. 25%

ANSWER: a

45. Refer to Exhibit 2-1. The cumulative frequency for the class of 20 - 29
- a. is 200
 - b. is 300
 - c. is 0.75
 - d. is 0.5

ANSWER: b

46. Refer to Exhibit 2-1. If a cumulative frequency distribution is developed for the above data, the last class will have a cumulative frequency of
- a. 100
 - b. 1
 - c. 30 - 39
 - d. 400

ANSWER: d

47. Refer to Exhibit 2-1. The percentage of students who work at least 10 hours per week is
- a. 50%
 - b. 5% c.
 - 95% d.
 - 100%

ANSWER: c

48. Refer to Exhibit 2-1. The number of students who work 19 hours or less is
- a. 80
 - b.
 - 100 c.
 - 200
 - d.

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400

ANSWER: b

49. Refer to Exhibit 2-1. The midpoint of the last class is

- a. 50
- b. 34
- c. 35
- d. 34.5

ANSWER: d

Exhibit 2-2

A survey of 800 college seniors resulted in the following crosstabulation regarding their undergraduate major and whether or not they plan to go to graduate school.

Graduate School	Undergraduate Major			Total
	Business	Engineering	Others	
Yes	70	84	126	280
No	182	208	130	520
Total	252	292	256	800

50. Refer to Exhibit 2-2. What percentage of the students does not plan to go to graduate school?

- a. 280
- b. 520
- c. 65
- d. 32

ANSWER: c

51. Refer to Exhibit 2-2. What percentage of the students' undergraduate major is engineering?

- a. 292
- b. 520
- c. 65
- d. 36.5

ANSWER: d

52. Refer to Exhibit 2-2. Of those students who are majoring in business, what percentage plans to go to graduate school?

- a. 27.78
- b. 8.75
- c. 70
- d. 72.22

ANSWER: a

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53. Refer to Exhibit 2-2. Among the students who plan to go to graduate school, what percentage indicated "Other" majors?
- 15.75
 - 45
 - 54
 - 35

ANSWER: b

Exhibit 2-3

Michael's Compute-All, a national computer retailer, has kept a record of the number of laptop computers they have sold for a period of 80 days. Their sales records are shown below:

Number of Laptops Sold	Number of Days
0 - 19	5
20 - 39	15
40 - 59	30
60 - 79	20
80 - 99	10
Total	80

54. Refer to Exhibit 2-3. The class width of the above distribution is
- 0 to 100
 - 20
 - 80
 - 5

ANSWER: b

55. Refer to Exhibit 2-3. The lower limit of the first class is
- 5
 - 80
 - 0
 - 20

ANSWER: c

56. Refer to Exhibit 2-3. If one develops a cumulative frequency distribution for the above data, the last class will have a frequency of
- 10
 - 100
 - 0 to 100
 - 80

ANSWER: d

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57. Refer to Exhibit 2-3. The percentage of days in which the company sold at least 40 laptops is
- 37.5%
 - 62.5%
 - 90.0%
 - 75.0%

ANSWER: d

58. Refer to Exhibit 2-3. The number of days in which the company sold less than 60 laptops is
- 20
 - 30
 - 50
 - 60

ANSWER: c

Exhibit 2-4

A sample of 15 children shows their favorite restaurant:

McDonalds	Luppi's	Mellow Mushroom
Friday's	McDonalds	McDonalds
Pizza Hut	Taco Bell	McDonalds
Mellow Mushroom	Luppi's	Pizza Hut
McDonalds	Friday's	McDonalds

59. Refer to Exhibit 2-4. The frequency distribution for these data is
- McDonalds 4, Friday's 3, Pizza Hut 1, Mellow Mushroom 4, Luppi's 3, Taco Bell 1
 - McDonalds 6, Friday's 2, Pizza Hut 2, Mellow Mushroom 2, Luppi's 2, Taco Bell 1
 - McDonalds 6, Friday's 1, Pizza Hut 3, Mellow Mushroom 1, Luppi's 2, Taco Bell 2
 - McDonalds 2, Friday's 6, Pizza Hut 3, Mellow Mushroom 1, Luppi's 2, Taco Bell 2

ANSWER: b

60. Refer to Exhibit 2-4. Determine the relative frequency for McDonalds.
- 0.27
 - 0.5
 - 0.4
 - 6

ANSWER: c

61. Refer to Exhibit 2-4. Determine the percent frequency for McDonalds.
- 10%
 - 27%
 - 2%
 - 40%

ANSWER: d

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Subjective Short Answer

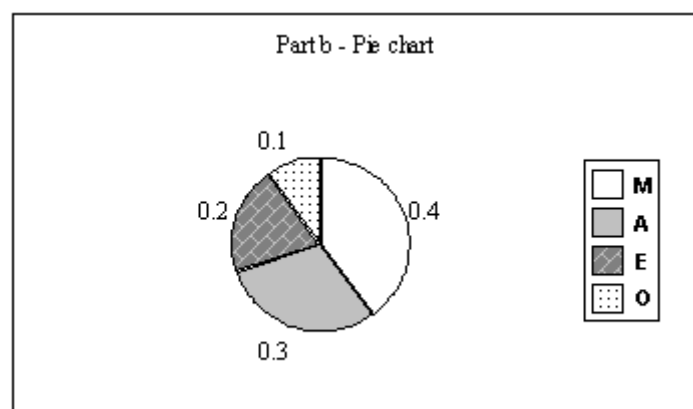
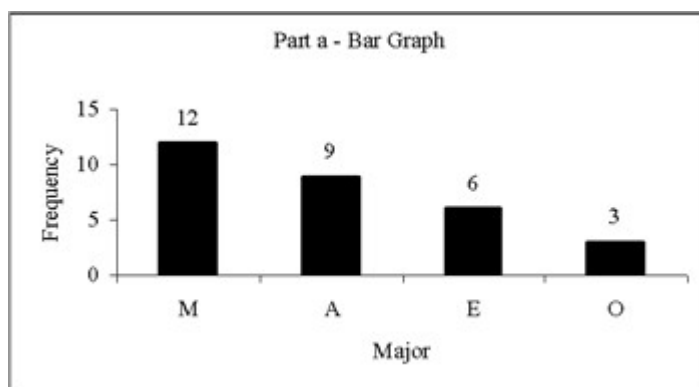
62. Thirty students in the School of Business were asked what their majors were. The following represents their responses (M = Management; A = Accounting; E = Economics; O = Others).

A M M A M M E M O A
 E E M A O E M A M A
 M A O A M E E M A M

- Construct a frequency distribution and a bar chart.
- Construct a relative frequency distribution and a pie chart.

ANSWER:

	(a)	(b)
Major	Frequency	Relative Frequency
M	12	0.4
A	9	0.3
E	6	0.2
O	<u>3</u>	<u>0.1</u>
Total	30	1.0



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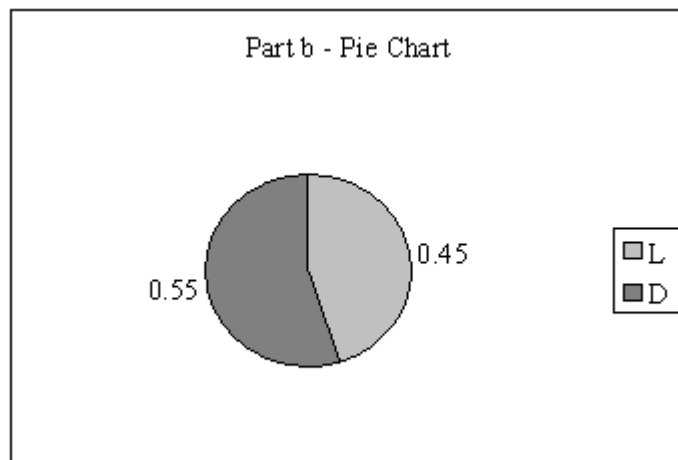
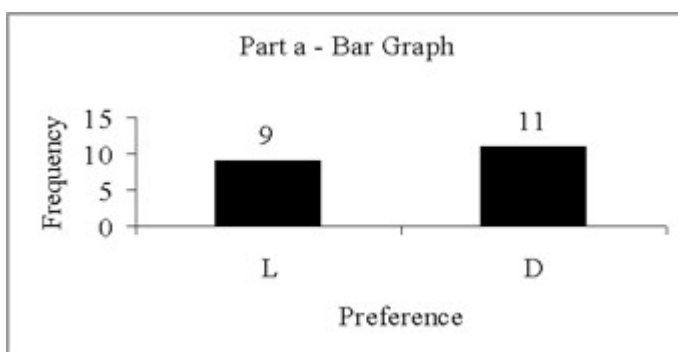
63. Twenty employees of the Ahmadi Corporation were asked if they liked or disliked the new district manager. Below you are given their responses. Let L represent liked and D represent disliked.

L L D L D
D D L L D
D L D D L
D D L D L

- Construct a frequency distribution and a bar chart.
- Construct a relative frequency distribution and a pie chart.

ANSWER: a and b

Preferences	Frequency	Relative Frequency
L	9	0.45
D	<u>11</u>	<u>0.55</u>
Total	20	1.00



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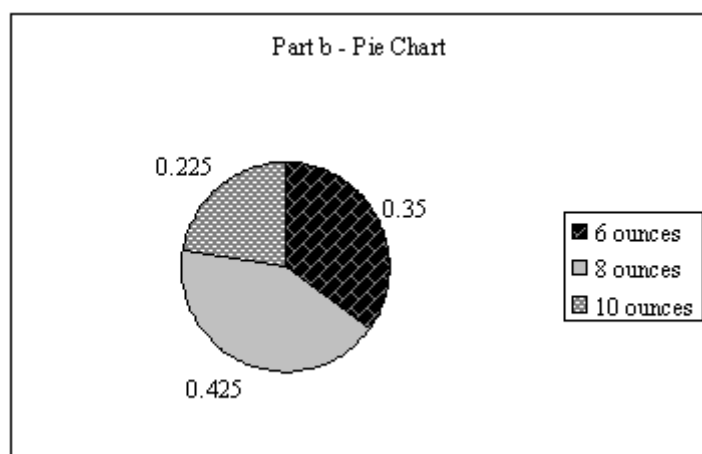
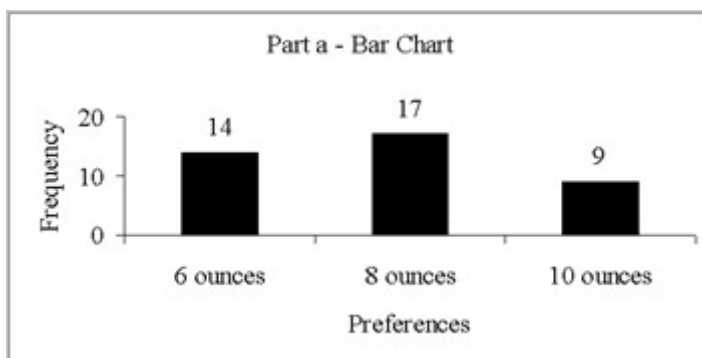
64. Forty shoppers were asked if they preferred the weight of a can of soup to be 6 ounces, 8 ounces, or 10 ounces. Below you are given their responses.

6	6	6	10	8	8	8	10	6	6
10	10	8	8	6	6	6	8	6	6
8	8	8	10	8	8	6	10	8	6
6	8	8	8	10	10	8	10	8	6

- Construct a frequency distribution and graphically represent the frequency distribution.
- Construct a relative frequency distribution and graphically represent the relative frequency distribution.

ANSWER: a and b

Preferences	Frequency	Relative Frequency
6 ounces	14	0.350
8 ounces	17	0.425
10 ounces	9	0.225
Total	40	1.000



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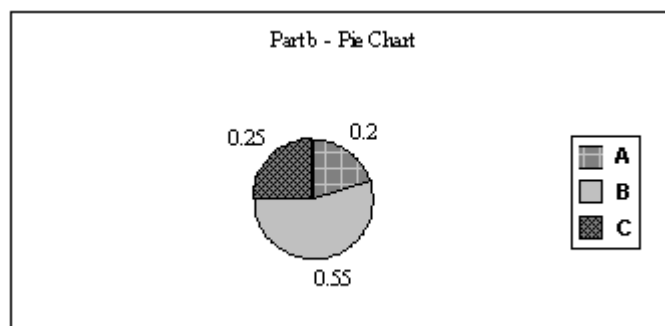
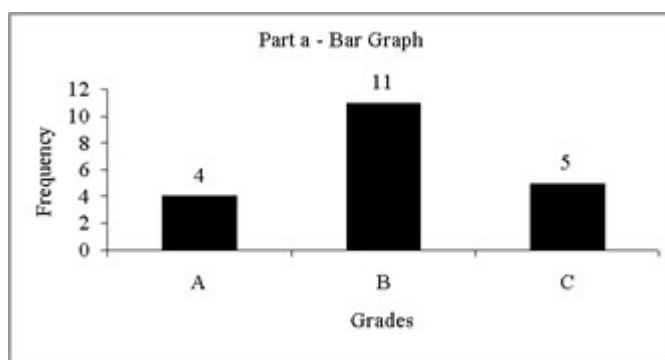
65. A student has completed 20 courses in the School of Arts and Sciences. Her grades in the 20 courses are shown below.

A	B	A	B	C
C	C	B	B	B
B	A	B	B	B
C	B	C	B	A

- Develop a frequency distribution and a bar chart for her grades.
- Develop a relative frequency distribution for her grades and construct a pie chart.

ANSWER: a and b

Grade	Frequency	Relative Frequency
A	4	0.20
B	11	0.55
C	5	0.25
Total	20	1.00



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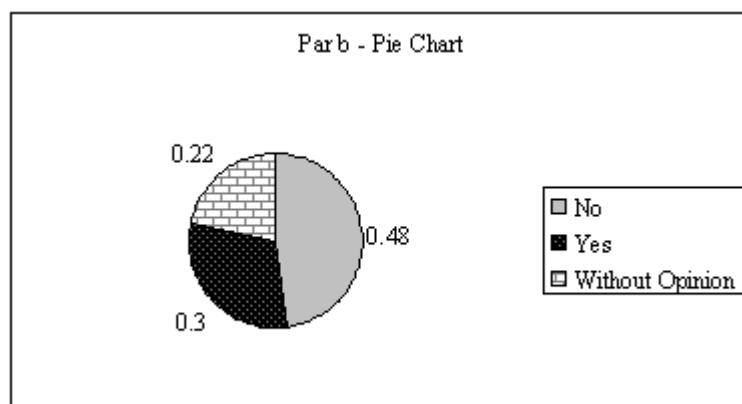
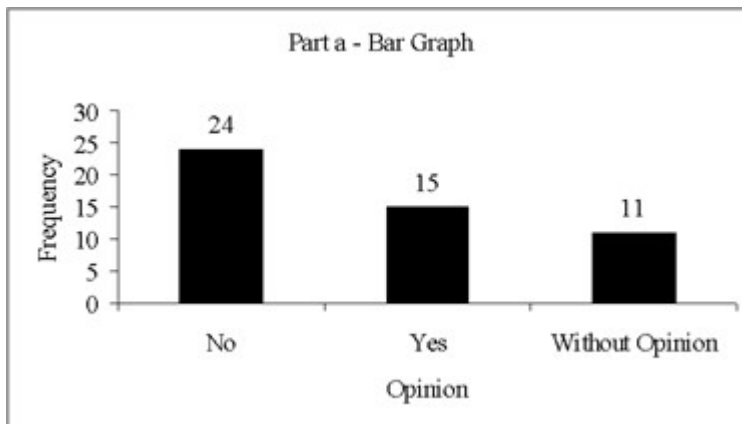
66. A sample of 50 TV viewers were asked, "Should TV sponsors pull their sponsorship from programs that draw numerous viewer complaints?" Below are the results of the survey. (Y = Yes; N = No; W = Without Opinion)

N	W	N	N	Y	N	N	N	Y	N
N	Y	N	N	N	N	N	Y	N	N
Y	N	Y	W	N	Y	W	W	N	Y
W	W	N	W	Y	W	N	W	Y	W
N	Y	N	Y	N	W	Y	Y	N	Y

- Construct a frequency distribution and a bar chart.
- Construct a relative frequency distribution and a pie chart.

ANSWER: a and b

	Frequency	Relative Frequency
No	24	0.48
Yes	15	0.30
Without Opinion	<u>11</u>	<u>0.22</u>
Total	50	1.00



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67. Below you are given the examination scores of 20 students.

52	99	92	86	84
63	72	76	95	88
92	58	65	79	80
90	75	74	56	99

- Construct a frequency distribution for this data. Let the first class be 50 - 59 and draw a histogram.
- Construct a cumulative frequency distribution.
- Construct a relative frequency distribution.
- Construct a cumulative relative frequency distribution.

ANSWER:

	a.	b.	c.	d.
Score	Frequency	Cumulative Frequency	Relative Frequency	Cumulative Relative Frequency
50 - 59	3	3	0.15	0.15
60 - 69	2	5	0.10	0.25
70 - 79	5	10	0.25	0.50
80 - 89	4	14	0.20	0.70
90 - 99	<u>6</u>	20	<u>0.30</u>	1.00
Total	20		1.00	

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68. The frequency distribution below was constructed from data collected from a group of 25 students.

Height (in Inches)	Frequency
58 - 63	3
64 - 69	5
70 - 75	2
76 - 81	6
82 - 87	4
88 - 93	3
94 - 99	2

- Construct a relative frequency distribution.
- Construct a cumulative frequency distribution.
- Construct a cumulative relative frequency distribution.

ANSWER:

		a.	b.	c.
Height (In Inches)	Frequency	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency
58 - 63	3	0.12	3	0.12
64 - 69	5	0.20	8	0.32
70 - 75	2	0.08	10	0.40
76 - 81	6	0.24	16	0.64
82 - 87	4	0.16	20	0.80
88 - 93	3	0.12	23	0.92
94 - 99	2	<u>0.08</u>	25	1.00
		1.00		

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69. The frequency distribution below was constructed from data collected on the quarts of soft drinks consumed per week by 20 students.

Quarts of Soft Drink	Frequency
0 - 3	4
4 - 7	5
8 - 11	6
12 - 15	3
16 - 19	2

- Construct a relative frequency distribution.
- Construct a cumulative frequency distribution.
- Construct a cumulative relative frequency distribution.

ANSWER:

		a.	b.	c.
Quarts of Soft Drinks	Frequency	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency
0 - 4	4	0.20	4	0.20
4 - 8	5	0.25	9	0.45
8 - 12	6	0.30	15	0.75
12 - 16	3	0.15	18	0.90
16 - 20	<u>2</u>	<u>0.10</u>	20	1.00
Total	20	1.00		

70. The grades of 10 students on their first management test are shown below.

94	61	96	66	92
68	75	85	84	78

- Construct a frequency distribution. Let the first class be 60 - 69.
- Construct a cumulative frequency distribution.
- Construct a relative frequency distribution.

ANSWER:

	a.	b.	c.
Class	Frequency	Cumulative Frequency	Relative Frequency
60 - 69	3	3	0.3
70 - 79	2	5	0.2
80 - 89	2	7	0.2
90 - 99	3	10	0.3

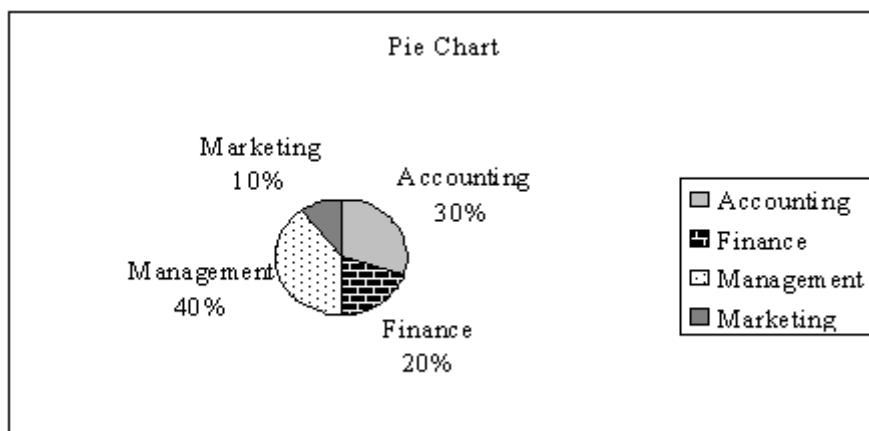
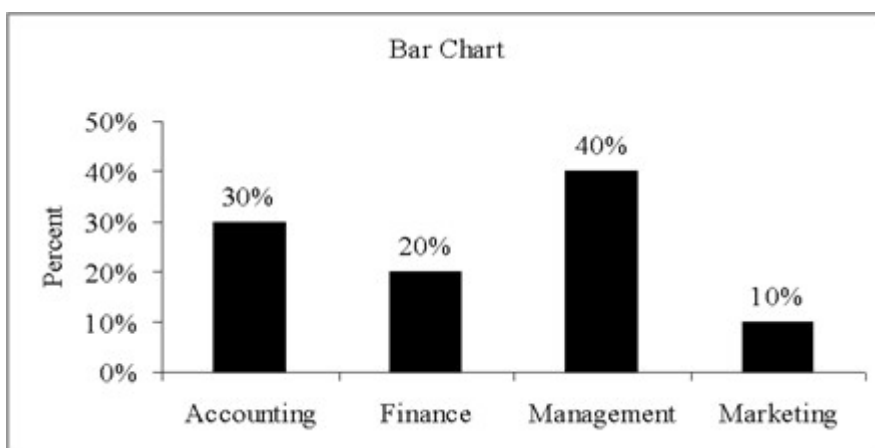
71. There are 800 students in the School of Business Administration. There are four majors in the School: Accounting, Finance, Management, and Marketing. The following shows the number of students in each major.

Major	Number of Students
Accounting	240
Finance	160
Management	320
Marketing	80

Develop a percent frequency distribution and construct a bar chart and a pie chart.

ANSWER:

Major	Percent Frequency
Accounting	30%
Finance	20%
Management	40%
Marketing	10%



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72. You are given the following data on the ages of employees at a company. Construct a stem-and-leaf display.

26	32	28	45	58
52	44	36	42	27
41	53	55	48	32
42	44	40	36	37

ANSWER:

2	6	7	8					
3	2	2	6	6	7			
4	0	1	2	2	4	4	5	8
5	2	3	5	8				

73. Construct a stem-and-leaf display for the following data.

12	52	51	37	47	40	38	26	57	31
49	43	45	19	36	32	44	48	22	18

ANSWER:

1	2	8	9					
2	2	6						
3	1	2	6	7	8			
4	0	3	4	5	7	8	9	
5	1	2	7					

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74. The SAT scores of a sample of business school students and their genders are shown below.

Gender	SAT Scores			Total
	Less than 20	20 up to 25	25 and more	
Female	24	168	48	240
Male	40	96	24	160
Total	64	264	72	400

- How many students scored less than 20?
- How many students were female?
- Of the male students, how many scored 25 or more?
- Compute row percentages and comment on any relationship that may exist between SAT scores and gender of the individuals.
- Compute column percentages.

ANSWER: a. 64
b. 240
c. 24

d.

Gender	SAT Scores			Total
	Less than 20	20 up to 25	25 and more	
Female	10%	70%	20%	100%
Male	25%	60%	15%	100%

From the above percentages it can be noted that the largest percentages of both genders' SAT scores are in the 20 to 25 range. However, 70% of females and only 60% of males have SAT scores in this range. Also it can be noted that 10% of females' SAT scores are under 20, whereas, 25% of males' SAT scores fall in this category.

e.

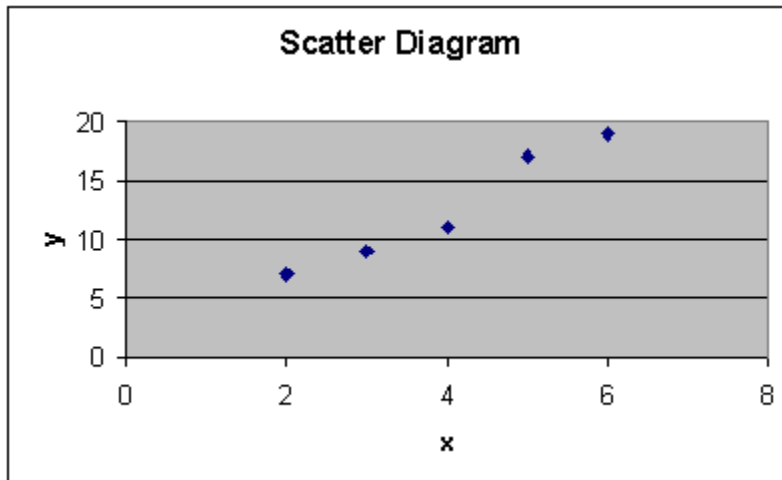
Gender	SAT Scores			
	Less than 20	20 up to 25	25 and more	
Female	37.5%	63.6%	66.7%	
Male	62.5%	36.4%	33.3%	
Total	100%	100%	100%	

Chapter 2: Descriptive Statistics: Tabular and Graphical Displays

75. For the following observations, plot a scatter diagram and indicate what kind of relationship (if any) exist between x and y .

x	y
2	7
6	19
3	9
5	17
4	11

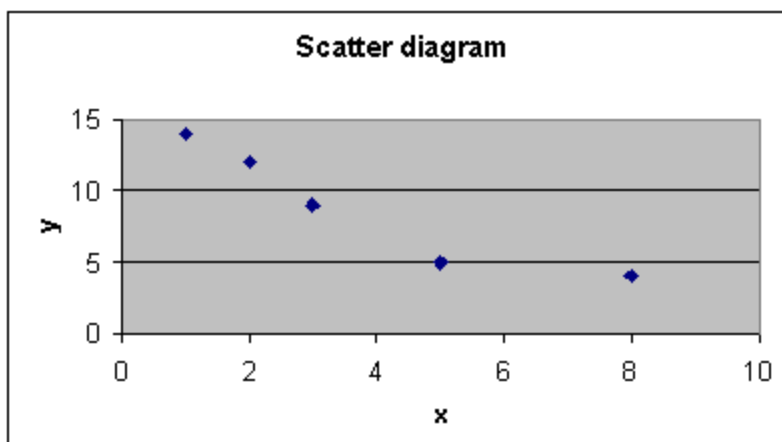
ANSWER: A positive relationship between x and y appears to exist.



76. For the following observations, plot a scatter diagram and indicate what kind of relationship (if any) exist between x and y .

x	y
8	4
5	5
3	9
2	12
1	14

ANSWER: A negative relationship between x and y appears to exist.



Chapter 2: Descriptive Statistics: Tabular and Graphical Displays

77. Five hundred recent graduates indicated their majors as follows.

Major	Frequency
Accounting	60
Finance	100
Economics	40
Management	120
Marketing	80
Engineering	60
Computer Science	<u>40</u>
Total	500

- a. Construct a relative frequency distribution.
- b. Construct a percent frequency distribution.

ANSWER:

Major	Frequency	a.	b.
		Relative Frequency	Percent Frequency
Accounting	60	0.12	12
Finance	100	0.20	20
Economics	40	0.08	8
Management	120	0.24	24
Marketing	80	0.16	16
Engineering	60	0.12	12
Computer Science	<u>40</u>	<u>0.08</u>	<u>8</u>
Total	500	1.00	100

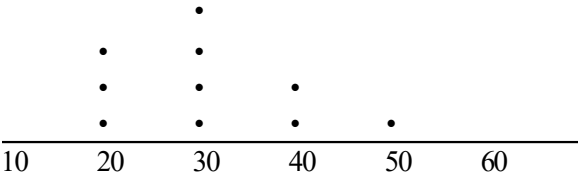
Chapter 2: Descriptive Statistics: Tabular and Graphical Displays

78. A sample of the ages of 10 employees of a company is shown below.

20 30 40 30 50
30 20 30 20 40

Construct a dot plot for the above data.

ANSWER:



79. The sales record of a real estate company for the month of May shows the following house prices (rounded to the nearest \$1,000). Values are in thousands of dollars.

105 55 45 85 75
30 60 75 79 95

- a. Develop a frequency distribution and a percent frequency distribution for the house prices. (Use 5 classes and have your first class be 20 - 39.)
- b. Develop a cumulative frequency and a cumulative percent frequency distribution for the above data.
- c. What percentage of the houses sold at a price below \$80,000?

ANSWER:

Sales Price (In Thousands of Dollars)	a.	a.	b.	b.
	Freq.	Percent Freq.	Cum. Freq.	Cum. Percent Freq.
20 - 39	1	10	1	10
40 - 59	2	20	3	30
60 - 79	4	40	7	70
80 - 99	2	20	9	90
100 - 119	1	10	10	100

c. 70%

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80. The following data set shows the number of hours of sick leave that some of the employees of Bastien's, Inc. have taken during the first quarter of the year (rounded to the nearest hour).

19	22	27	24	28	12
23	47	11	55	25	42
36	25	34	16	45	49
12	20	28	29	21	10
59	39	48	32	40	31

- Develop a frequency distribution for the above data. (Let the width of your classes be 10 units and start your first class as 10 - 19.)
- Develop a relative frequency distribution and a percent frequency distribution for the data.
- Develop a cumulative frequency distribution.
- How many employees have taken less than 40 hours of sick leave?

ANSWER:

	a.	b.	b.	c.
Hours of Sick Leave Taken	Freq.	Relative Freq.	Percent Freq.	Cum. Freq.
10 - 19	6	0.20	20	6
20 - 29	11	0.37	37	17
30 - 39	5	0.16	16	22
40 - 49	6	0.20	20	28
50 - 59	2	0.07	7	30

d. 22

81. The test scores of 14 individuals on their first statistics examination are shown below.

95	87	52	43	77	84	78
75	63	92	81	83	91	88

Construct a stem-and-leaf display for these data.

ANSWER:

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

Chapter 2: Descriptive Statistics: Tabular and Graphical Displays

82. A survey of 400 college seniors resulted in the following crosstabulation regarding their undergraduate major and whether or not they plan to go to graduate school.

Graduate School	Undergraduate Major			Total
	Business	Engineering	Others	
Yes	35	42	63	140
No	91	104	65	260
Total	126	146	128	400

- Are a majority of the seniors in the survey planning to attend graduate school?
- Which discipline constitutes the majority of the individuals in the survey?
- Compute row percentages and comment on the relationship between the students' undergraduate major and their intention of attending graduate school.
- Compute the column percentages and comment on the relationship between the students' intention of going to graduate school and their undergraduate major.

ANSWER: a. No, majority (260) will not attend graduate school
b. Majority (146) are engineering majors
c.

Graduate School	Undergraduate Major			Total
	Business	Engineering	Others	
Yes	25%	30%	45%	100%
No	35%	40%	25%	100%

Majority who plan to go to graduate school are from "Other" majors. Majority of those who will not go to graduate school are engineering majors.

d.

Graduate School	Undergraduate Major		
	Business	Engineering	Others
Yes	27.8%	28.8%	49.2%
No	72.2%	71.2%	50.8%
Total	100%	100%	100%

Approximately the same percentages of Business and engineering majors plan to attend graduate school (27.8% and 28.8% respectively). Of the "Other" majors approximately half (49.2%) plan to go to graduate school.

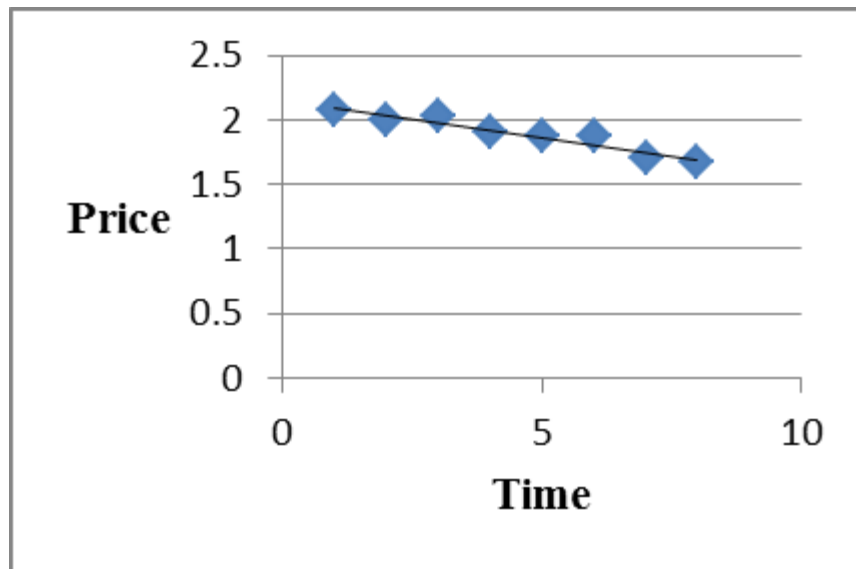
Chapter 2: Descriptive Statistics: Tabular and Graphical Displays

83. The following data shows the price of PAO, Inc. stock over the last eight months.

Month	Price (\$)
1	2.08
2	2.00
3	2.03
4	1.91
5	1.88
6	1.87
7	1.70
8	1.67

- Develop a scatter diagram and draw a trend line through the points.
- What kind of relationship exists between stock price and time (negative, positive, or no relation)?

ANSWER: a.



- negative