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

   ANS: D PTS: 1 TOP: Descriptive Statistics

2. A frequency distribution is
   a. a tabular summary of a set of data showing the relative frequency
   b. a graphical form of representing data
   c. a tabular summary of a set of data showing the frequency of items in each of several nonoverlapping classes
   d. a graphical device for presenting categorical data

   ANS: C PTS: 1 TOP: Descriptive Statistics

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

   ANS: B PTS: 1 TOP: Descriptive Statistics

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

   ANS: D PTS: 1 TOP: Descriptive Statistics

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

   ANS: C PTS: 1 TOP: Descriptive Statistics

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

   ANS: B PTS: 1 TOP: Descriptive Statistics

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. a line chart
   b. only a bar chart
   c. only a pie chart
   d. both a bar chart and a pie chart

   ANS: D PTS: 1 TOP: Descriptive Statistics

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

   ANS: A PTS: 1 TOP: Descriptive Statistics

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

   ANS: D PTS: 1 TOP: Descriptive Statistics

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

    ANS: A PTS: 1 TOP: Descriptive Statistics

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

    ANS: A PTS: 1 TOP: Descriptive Statistics

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

    ANS: C PTS: 1 TOP: Descriptive Statistics

13. The sum of the percent frequencies for all classes will always equal
    a. one
    b. the number of classes

c. the number of items in the study
d. 100

ANS: D PTS: 1 TOP: Descriptive Statistics

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

ANS: A PTS: 1 TOP: Descriptive Statistics

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

ANS: C PTS: 1 TOP: Descriptive Statistics

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

ANS: C PTS: 1 TOP: Descriptive Statistics

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

ANS: A PTS: 1 TOP: Descriptive Statistics

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

ANS: C PTS: 1 TOP: Descriptive Statistics

19. The difference between the lower class limits of adjacent classes provides the
a. number of classes
b. class limits
c. class midpoint
d. class width

ANS: D PTS: 1 TOP: Descriptive Statistics

20. In a cumulative frequency distribution, the last class will always have a cumulative frequency equal to
a. one
b. 100%

c. the total number of elements in the data set
d. None of these alternatives is correct.

ANS: C PTS: 1 TOP: Descriptive Statistics

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

ANS: A PTS: 1 TOP: Descriptive Statistics

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

ANS: B PTS: 1 TOP: Descriptive Statistics

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

ANS: A PTS: 1 TOP: Descriptive Statistics

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

ANS: B PTS: 1 TOP: Descriptive Statistics

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

ANS: D PTS: 1 TOP: Descriptive Statistics

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

ANS: D PTS: 1 TOP: Descriptive Statistics

27. When a histogram has a longer tail to the right, it is said to be

a. symmetrical
b. skewed to the left
c. skewed to the right
d. none of these alternatives is correct

ANS: C PTS: 1 TOP: Descriptive Statistics

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

ANS: B PTS: 1 TOP: Descriptive Statistics

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

ANS: A PTS: 1 TOP: Descriptive Statistics

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

ANS: C PTS: 1 TOP: Descriptive Statistics

31. 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

ANS: C PTS: 1 TOP: Descriptive Statistics

32. An Ogive is constructed by plotting a point corresponding to the ___ frequency of each class.
a. relative
b. cumulative
c. percent
d. octave

ANS: B PTS: 1 TOP: Descriptive Statistics

33. 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

ANS: C PTS: 1 TOP: Descriptive Statistics

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

    ANS: C PTS: 1 TOP: Descriptive Statistics

35. 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

    ANS: A PTS: 1 TOP: Descriptive Statistics

Exhibit 2-1

A sample of 15 children shows their favorite restaurants:

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

36. Refer to Exhibit 2-1. Which of the following is the correct frequency distribution?
    a. McDonalds 4, Friday's 3, Pizza Hut 1, Mellow Mushroom 4, Luppi's 3, Taco Bell 1
    b. McDonalds 6, Friday's 2, Pizza Hut 2, Mellow Mushroom 2, Luppi's 2, Taco Bell 1
    c. McDonalds 6, Friday's 1, Pizza Hut 3, Mellow Mushroom 1, Luppi's 2, Taco Bell 2
    d. None of these alternatives is correct.

    ANS: B PTS: 1 TOP: Descriptive Statistics

37. Refer to Exhibit 2-1. Which of the following is the correct relative frequency for McDonalds?
    a. 0. 27
    b. 0.5
    c. 0.4
    d. 6

    ANS: C PTS: 1 TOP: Descriptive Statistics

38. Refer to Exhibit 2-1. Which of the following is the correct percent frequency for McDonalds?
    a. 10%
    b. 27%
    c. 2%
    d. 40%

    ANS: D PTS: 1 TOP: Descriptive Statistics

Exhibit 2-2

The numbers 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 2-2. 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

    ANS: B PTS: 1 TOP: Descriptive Statistics

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

    ANS: B PTS: 1 TOP: Descriptive Statistics

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

    ANS: D PTS: 1 TOP: Descriptive Statistics

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

    ANS: B PTS: 1 TOP: Descriptive Statistics

43. Refer to Exhibit 2-2. 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

    ANS: C PTS: 1 TOP: Descriptive Statistics

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

    ANS: A PTS: 1 TOP: Descriptive Statistics

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

d. is 0.5

ANS: B PTS: 1 TOP: Descriptive Statistics

46. Refer to Exhibit 2-2. 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

ANS: D PTS: 1 TOP: Descriptive Statistics

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

ANS: C PTS: 1 TOP: Descriptive Statistics

48. Refer to Exhibit 2-2. The number of students who work 19 hours or less is
a. 80
b. 100
c. 200
d. 400

ANS: B PTS: 1 TOP: Descriptive Statistics

49. Refer to Exhibit 2-2. The midpoint of the last class is
a. 50
b. 34
c. 35
d. 34.5

ANS: D PTS: 1 TOP: Descriptive Statistics

Exhibit 2-3
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.

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

50. Refer to Exhibit 2-3. What percentage of the students does not plan to go to graduate school?
a. 280
b. 520
c. 65
d. 32

ANS: C PTS: 1 TOP: Descriptive Statistics

51. Refer to Exhibit 2-3. What percentage of the students' undergraduate major is engineering?

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

ANS: D PTS: 1 TOP: Descriptive Statistics

52. Refer to Exhibit 2-3. 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

ANS: A PTS: 1 TOP: Descriptive Statistics

53. Refer to Exhibit 2-3. Among the students who plan to go to graduate school, what percentage indicated "Other" majors?
a. 15.75
b. 45
c. 54
d. 35

ANS: B PTS: 1 TOP: Descriptive Statistics

Exhibit 2-4
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 2-4. The class width of the above distribution is
a. 0 to 100
b. 20
c. 80
d. 5

ANS: B PTS: 1 TOP: Descriptive Statistics

55. Refer to Exhibit 2-4. The lower limit of the first class is
a. 5
b. 80
c. 0
d. 20

ANS: C PTS: 1 TOP: Descriptive Statistics

56. Refer to Exhibit 2-4. If one develops a cumulative frequency distribution for the above data, the last class will have a frequency of
    a. 10
    b. 100
    c. 0 to 100
    d. 80

    ANS: D PTS: 1 TOP: Descriptive Statistics

57. Refer to Exhibit 2-4. The percentage of days in which the company sold at least 40 laptops is
    a. 37.5%
    b. 62.5%
    c. 90.0%
    d. 75.0%

    ANS: D PTS: 1 TOP: Descriptive Statistics

58. Refer to Exhibit 2-4. The number of days in which the company sold less than 60 laptops is
    a. 20
    b. 30
    c. 50
    d. 60

    ANS: C PTS: 1 TOP: Descriptive Statistics

PROBLEM

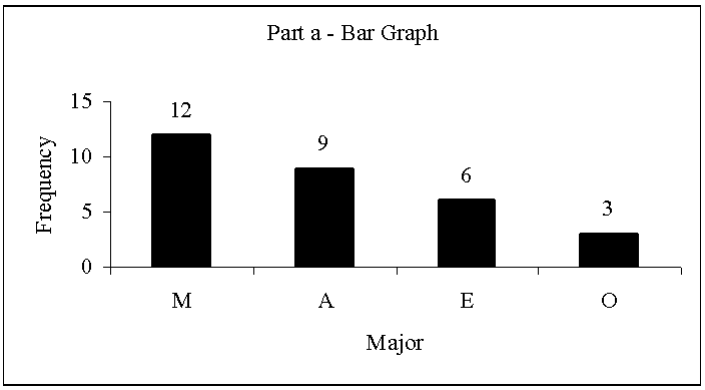
1. Thirty students in the School of Business were asked what their majors were. The following represents their responses (M = Management; A = Accounting; E = Economics; O = Others).

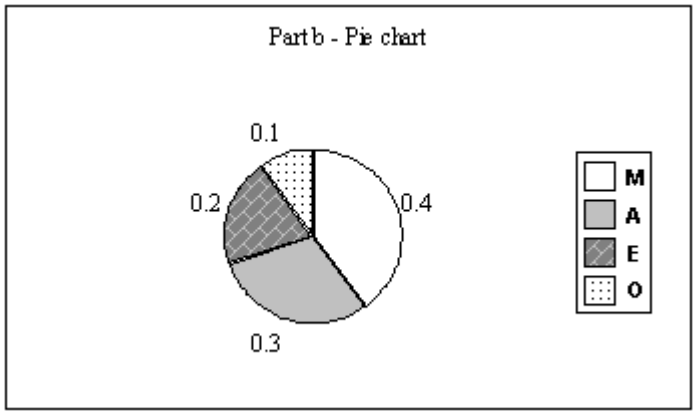
A	M	M	A	M	M	E	M	O	A
E	E	M	A	O	E	M	A	M	A
M	A	O	A	M	E	E	M	A	M

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

    ANS:

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





PTS: 1 TOP: Descriptive Statistics

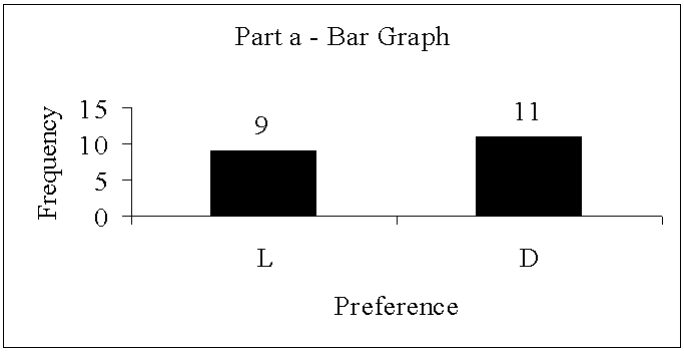
2. Twenty employees of the Ahmadi Corporation were asked if they liked or disliked the new district manager. Below you are given their responses. Let L represent liked and D represent disliked.

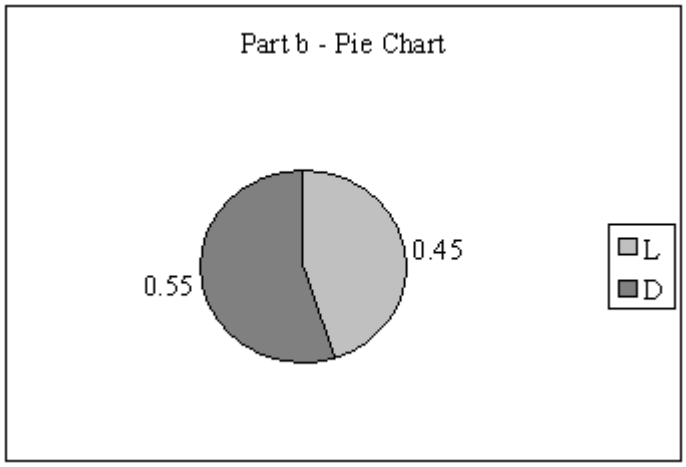
L	L	D	L	D
D	D	L	L	D
D	L	D	D	L
D	D	L	D	L

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

ANS:
a and b

Preferences	**Frequency**	**Relative Frequency**
L	9	0.45
D	11	0.55
Total	20	1.00





PTS: 1 TOP: Descriptive Statistics

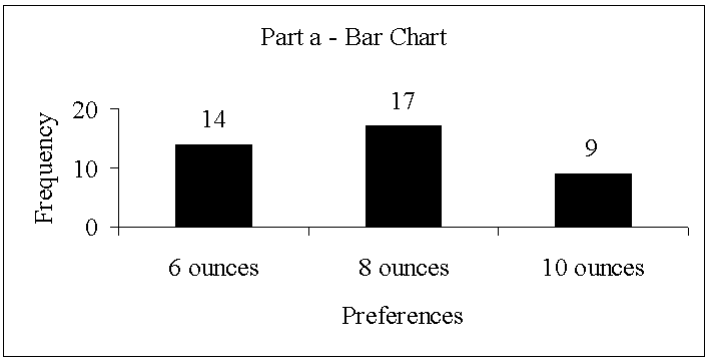
3. Forty shoppers were asked if they preferred the weight of a can of soup to be 6 ounces, 8 ounces, or 10 ounces. Below you are given their responses.

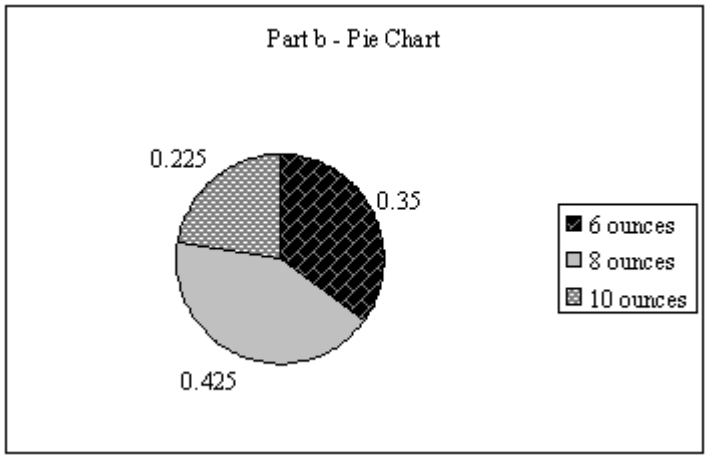
6	6	6	10	8	8	8	10	6	6
10	10	8	8	6	6	6	8	6	6
8	8	8	10	8	8	6	10	8	6
6	8	8	8	10	10	8	10	8	6

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

ANS:
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





PTS: 1 TOP: Descriptive Statistics

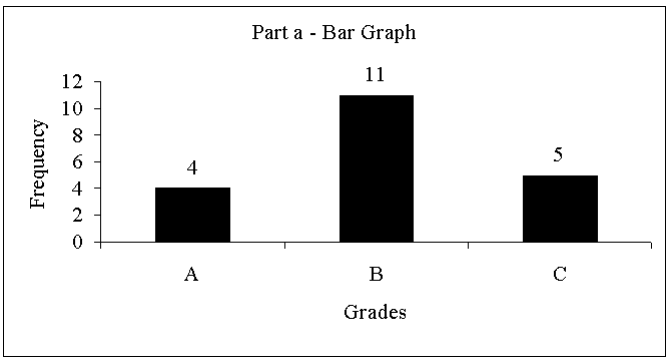
4. A student has completed 20 courses in the School of Arts and Sciences. Her grades in the 20 courses are shown below.

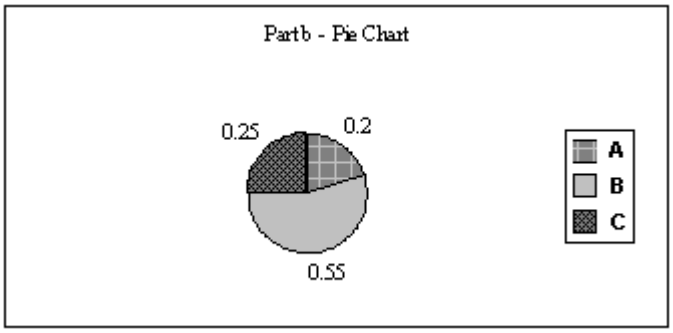
A	B	A	B	C
C	C	B	B	B
B	A	B	B	B
C	B	C	B	A

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

ANS:
a and b

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





PTS: 1 TOP: Descriptive Statistics

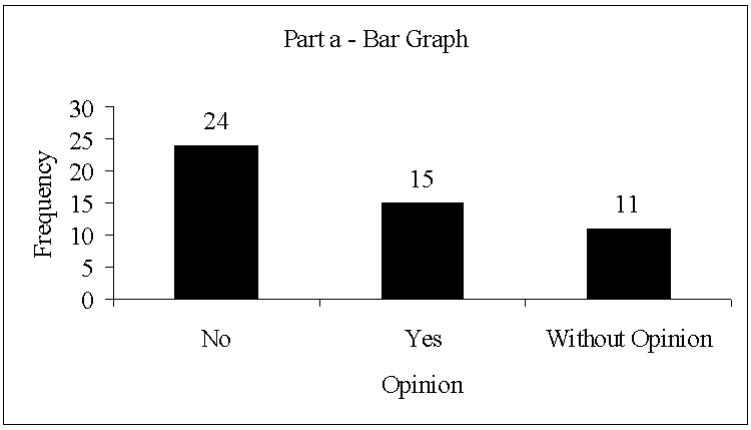
5. A sample of 50 TV viewers were asked, "Should TV sponsors pull their sponsorship from programs that draw numerous viewer complaints?" Below are the results of the survey. (Y = Yes; N = No; W = Without Opinion)

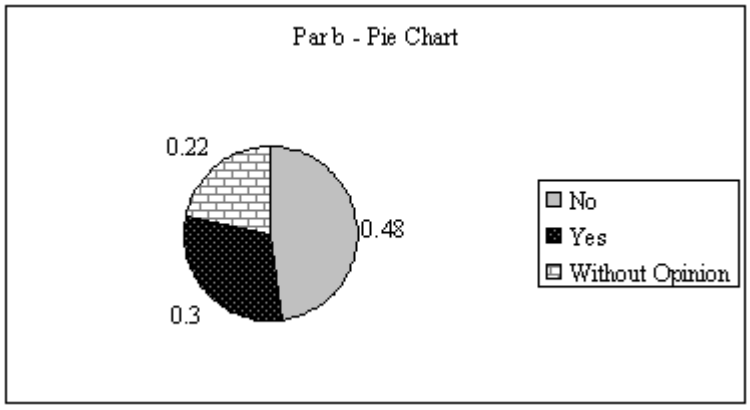
N	W	N	N	Y	N	N	N	Y	N
N	Y	N	N	N	N	N	Y	N	N
Y	N	Y	W	N	Y	W	W	N	Y
W	W	N	W	Y	W	N	W	Y	W
N	Y	N	Y	N	W	Y	Y	N	Y

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

ANS:
a and b

	Frequency	**Relative Frequency**
No	24	0.48
Yes	15	0.30
Without Opinion	11	0.22
Total	50	1.00





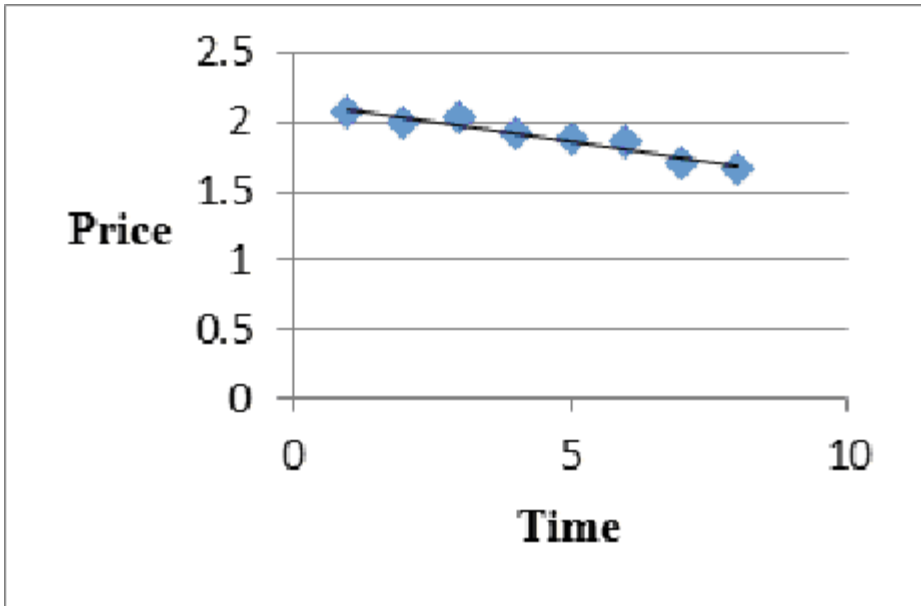
PTS: 1 TOP: Descriptive Statistics

6. The following data shows the price of PAO, Inc. stock over the last 8 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

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

ANS:
a.



b. Negative

PTS: 1 TOP: Descriptive Statistics

7. 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

a. Construct a frequency distribution for this data. Let the first class be 50 - 59.
b. Construct a cumulative frequency distribution.
c. Construct a relative frequency distribution.
d. Construct a cumulative relative frequency distribution.

ANS:

	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	6	20	0.30	1.00
Total	20		1.00	

PTS: 1 TOP: Descriptive Statistics

8. 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

a. Construct a relative frequency distribution.
b. Construct a cumulative frequency distribution.
c. Construct a cumulative relative frequency distribution.

ANS:

		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	0.08	25	1.00
		1.00		

PTS: 1 TOP: Descriptive Statistics

9. 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

a. Construct a relative frequency distribution.
b. Construct a cumulative frequency distribution.
c. Construct a cumulative relative frequency distribution.

ANS:

		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	2	0.10	20	1.00
Total	20	1.00		

PTS: 1 TOP: Descriptive Statistics

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

94	61	96	66	92
68	75	85	84	78

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

ANS:

	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
Total	10		1.0

PTS: 1 TOP: Descriptive Statistics

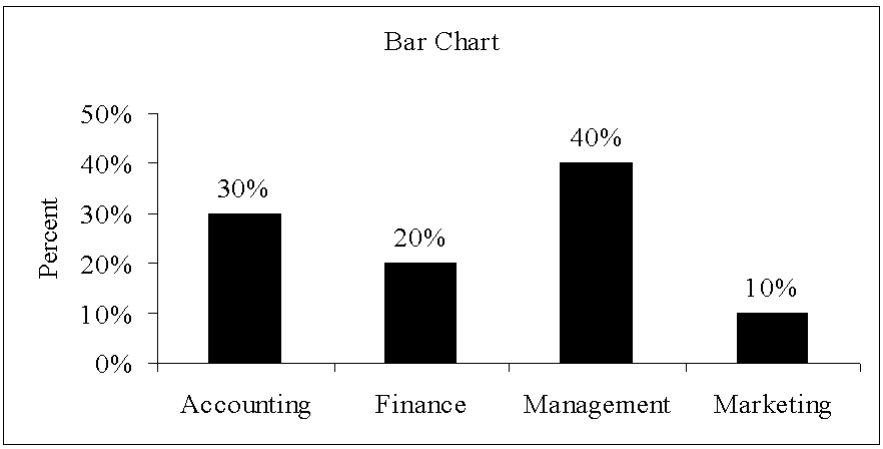
11. There are 800 students in the School of Business Administration. There are four majors in the School: Accounting, Finance, Management, and Marketing. The following shows the number of students in each major.

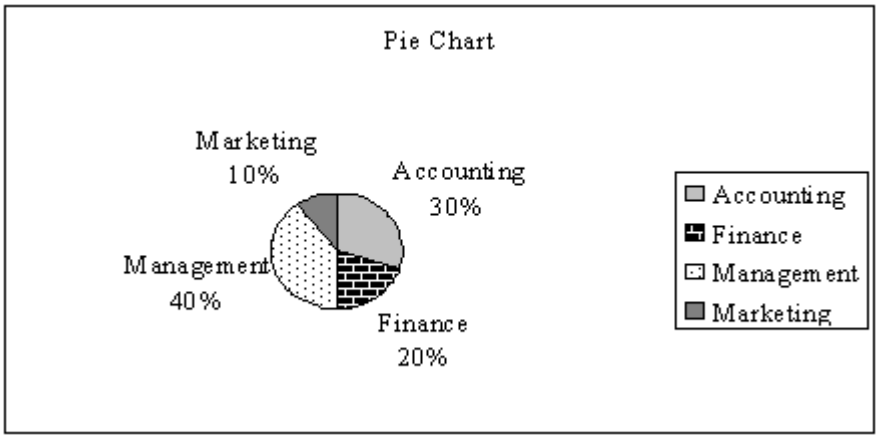
Major	**Number of Students**
Accounting	240
Finance	160
Management	320
Marketing	80

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

ANS:

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





PTS: 1 TOP: Descriptive Statistics

12. 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

ANS:

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

PTS: 1 TOP: Descriptive Statistics

13. 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

ANS:

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				

PTS: 1 TOP: Descriptive Statistics

14. The ACT scores of a sample of business school students and their genders are shown below.

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

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

ANS:

a. 64
b. 240
c. 24

d.

	ACT Scores			
Gender	**Less than 20**	**20 up to 25**	**25 and more**	**Total**
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' ACT scores are in the 20 to 25 range. However, 70% of females and only 60% of males have ACT scores in this range. Also it can be noted that 10% of females' ACT scores are under 20, whereas, 25% of males' ACT scores fall in this category.

e.

	SAT Scores		
Gender	**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%

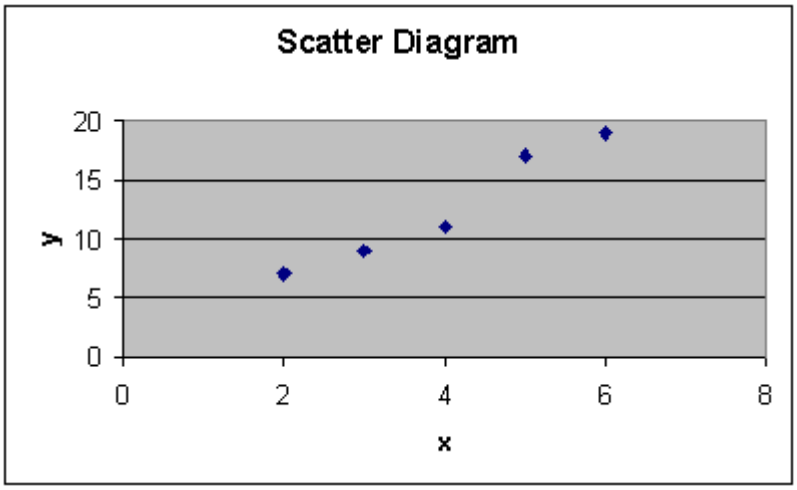
PTS: 1 TOP: Descriptive Statistics

15. 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

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

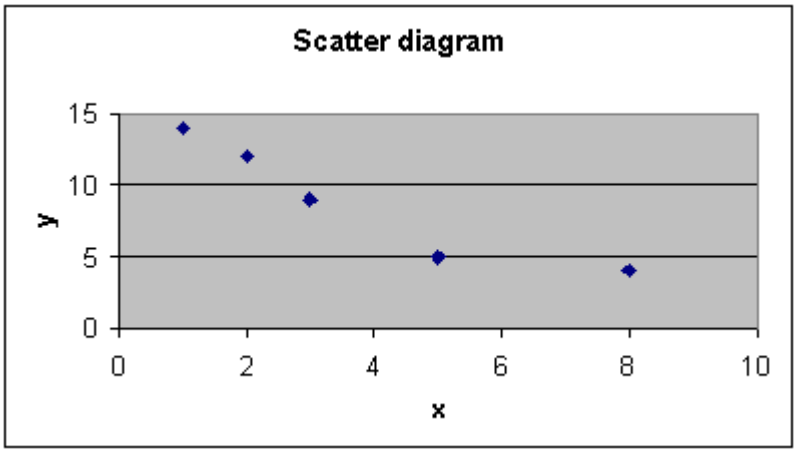


PTS: 1 TOP: Descriptive Statistics

16. 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

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



PTS: 1 TOP: Descriptive Statistics

17. 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	40
Total	500

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

ANS:

Major	Frequency	a. Relative Frequency	b. 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	40	0.08	8
Total	500	1.00	100

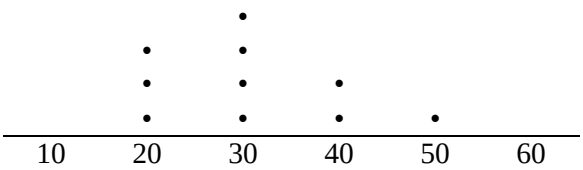
PTS: 1 TOP: Descriptive Statistics

18. 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.

ANS:



PTS: 1 TOP: Descriptive Statistics

19. 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

a. 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.)
b. Develop a relative frequency distribution and a percent frequency distribution for the data.
c. Develop a cumulative frequency distribution.
d. How many employees have taken less than 40 hours of sick leave?

ANS:

	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

PTS: 1 TOP: Descriptive Statistics

20. The sales records 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?

ANS:

	a.	a.	b.	b.
Sales Price (In Thousands of Dollars)	**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%

PTS: 1 TOP: Descriptive Statistics

21. 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.

ANS:

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

PTS: 1 TOP: Descriptive Statistics

22. 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.

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

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

ANS:

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

	Undergraduate Major			
Graduate School	Business	Engineering	Others	Total
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.

	Undergraduate Major		
Graduate School	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.

PTS: 1 TOP: Descriptive Statistics