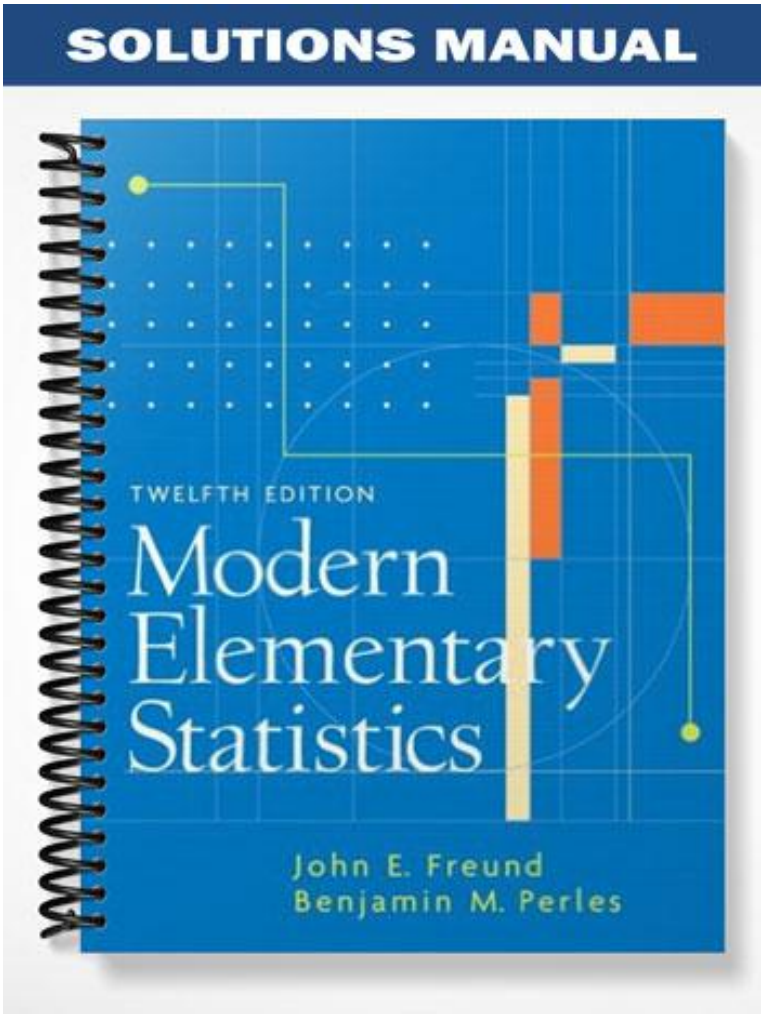
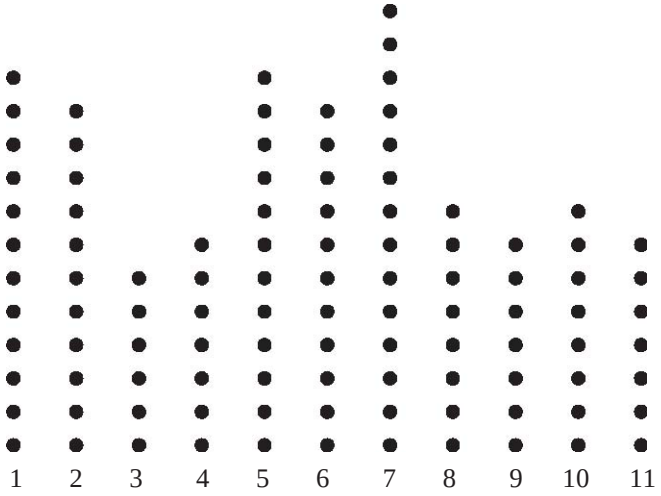
SOLUTIONS MANUAL



CHAPTER 2

Summarizing **D**ata: **L**isting and **G**rouping

2.1



Eleven consecutive years

2.2 Number of Cars entering on 36 separate occasions

2.3 **a.**

Number of days	Number of prescription
4	2
5	3
6	7
7	11
8	9
9	5
10	3
	40

b.

Number of Prescriptions

2.4 a.

2005	○ ○ ○ ○ ○ ○
2004	○ ○ ○ ○ ○ ○ ○ ○
2003	○ ○ ○ ○ ○
2002	○ ○
2001	○ ○ ○ ○

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b.

LeSabre	○ ○ ○ ○ ○ ○ ○ ○
Regal	○ ○ ○ ○ ○
Park Ave	○ ○
Skylark	○ ○ ○ ○ ○ ○
Century	○ ○ ○
Riviera	○

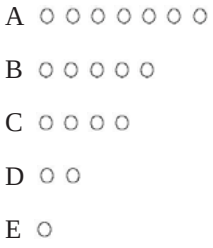
2.5


Afghan
Basset
Beagle
Bloodhound
Dachshund
Greyhound

2.6


Afghan 5
Basset 2
Beagle 8
Bloodhound 1
Dachshund 8
Greyhound 6

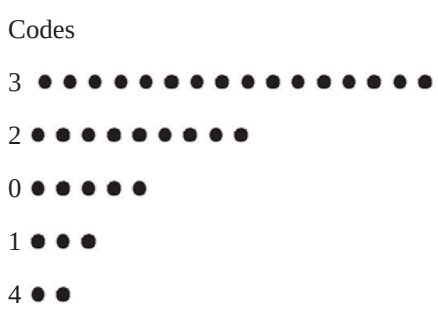
2.7


A
B
C
D
E

2.8


Beagle
Dachshund
Greyhound
Afghan
Basset
Bloodhound

2.9



2.10 **a.** 14, 17, 10, 11, and 15

b. 42, 40, 43, 49, and 48

c. 73, 75, 71, 71, and 76

2.11 **a.** 36, 31, 37, 35, and 32

b. 415, 438, 450, and 477

c. 254, 254, 250, 253, and 259

2.12 **a.** 53, 50, 54, 54, 51, 52, 59, 59, 57, 55, 58, and 56

b. 67, 68, 65, 69, 66, 71, 71, 70, 74, 73, 75, 75, 78, 79, and 76

2.13

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

2.14

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

2.15

16.	6
17.	3 0
18.	4 9 1 3 3 2 6 5 6
19.	2 6 3 5 0 4 4 8 6 7 5 8 4 3 5 8 9 5 5 0 7 4
20.	4 4 2 1 3 7 3 8 4 2 9 5 7 6 1
21.	8 0 4 5 5 7 9 1
22.	9 7
23.	5

2.17

6	55 75 32
7	84 83 60 60 18
8	34 65 39 88 31 86 42 54 26 66 65
9	19 12 39 61 54 01

2.18

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

2.19

1.3	7
1.4	2 4 6 9
1.5	0 2 3 3 4 4 8 8 9
1.6	0 2 3 6 8
1.7	2

2.20

1.3	7
1.4	2 4
1.4	6 9
1.5	0 2 3 3 4 4
1.5	8 8 9
1.6	0 2 3
1.6	6 8
1.7	2

2.21

8	4 8
9	2 3 6 7 7 9
10	1 3 3 3 4 5 5 6 8 9
11	0 3 5
12	2 4 7

2.22

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

2.23 A convenient choice would be 220–239, 240–259, 260–279, 280–299, 300–319, 320–339, 340–359, 360–379.

2.24 3.0–3.4, 3.5–3.9, 4.0–4.4, 4.5–4.9, 5.0–5.4, and 5.5–5.9.

2.25 **a.** 0–49.99, 50.00–99.99, 100.00–149.99, 150.00–199.99

b. 20.00–49.99, 50.00–79.99, 80.00–109.99, 110.00–139.99, 140.00–169.99, 170.00–199.99

c. 30.00–49.99, 50.00–69.99, 70.00–89.99, 90.00–109.99, 110.00–129.99, 130.00–149.99, 150.00–169.99, 170.00–189.99

2.26 **a.** Cannot be determined

b. 315 + 678 = 993

c. Cannot be determined

d. 2,405 + 1,088 = 3,493

2.27 **a.** 5.0, 20.0, 35.0, 50.0, 65.0, and 80.0

b. 19.9, 34.9, 49.9, 64.9, 79.9, and 94.9

c. 4.95, 19.95, 34.95, 49.95, 64.95, 79.95, and 94.95

d. 15

2.28 Overlap. 25 falls into 2 classes.

2.29 There is no provision for values from 50.00 to 59.99, and values from 70.00 to 79.99 go into two classes.

2.30 There is no provision for, say, cotton or linen, and ambiguity when it comes to shirts made from combinations of fibers.

2.31 There is no provision, for example, for cookies or jello. Also, there is ambiguity about classifying, say, fruit cake, pie and ice cream, fruit with ice cream, etc.

2.32 **a.** 54.5, 60.5, 66.5, 72.5, 78.5, and 84.5

b. 57.5, 63.5, 69.5, 75.5, and 81.5

2.33 **a.** 20–24, 25–29, 30–34, 35–39, 40–44

b. 22, 27, 32, 37, and 42

c. All 5's

2.34 **a.** 19.5, 34.5, 49.5, 64.5, 79.5, 94.5, and 109.5

b. 20–34, 35–49, 50–64, 65–79, 80–94, and 95–109

2.35 **a.** 60.0–74.9, 75.0–89.9, 90.0–104.9, 105.0–119.9, and 120.0–134.9

b. 67.45, 82.45, 97.45, 112.45, and 127.45

2.36 The class frequencies are 1, 2, 15, 16, 4, and 2.

2.37 The respective percentages are 2.5, 5.0, 37.5, 40.0, 10.0, and 5.0 percent.

2.38 The cumulative "less than" frequencies are 0, 1, 3, 18, 34, 38, and 40.

2.39 The respective class frequencies are 13, 14, 16, 12, 4, and 1.

2.40 The percentages are 21.67, 23.33, 26.67, 20.00, 6.67, and 1.67.

2.41 The cumulative percentages corresponding to 19 or less, 24 or less, 29 or less, 34 or less, 39 or less, 44 or less, and 49 or less, are, respectively, 0, 21.67, 45.0, 71.67, 91.67, 98.33, and 100.00 percent.

2.42 The respective class frequencies are 2, 6, 12, 38, 26, 13, 7, 8, 5, and 3.

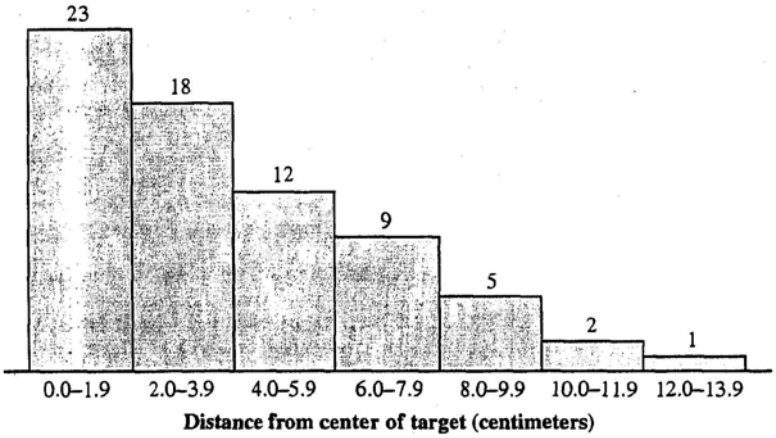
2.43 The cumulative class frequencies corresponding to more than 0.49, more than 0.59, ..., and more than 149 are 120, 118, 112, 100, 62, 36, 23, 16, 8, 3, and 0.

2.44 The class frequencies are 3, 7, 11, 12, 8, 4, and 3.

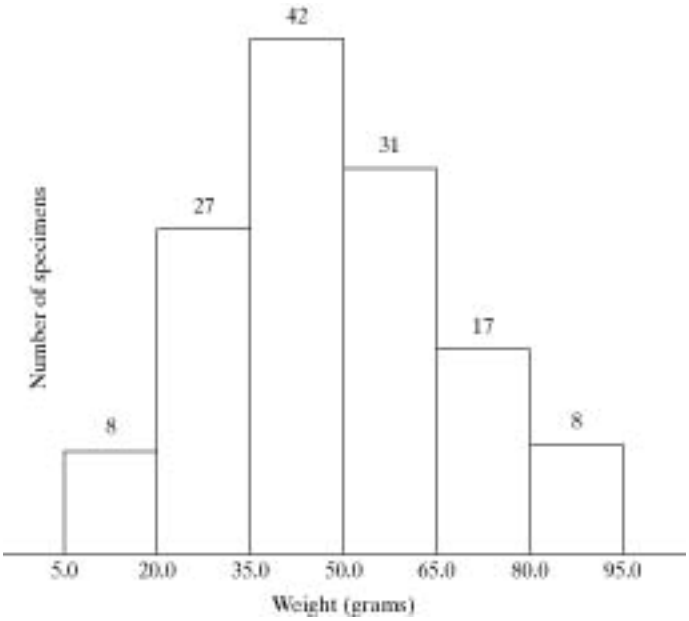
2.45 The cumulative percentages corresponding to 20 or more, 25 or more, ..., and 55 or more are, respectively, 100, 93.75, 79.17, 56.25, 31.25, 14.58, 6.25, 0.

2.46, 2.47, 2.48 Student projects.

2.49



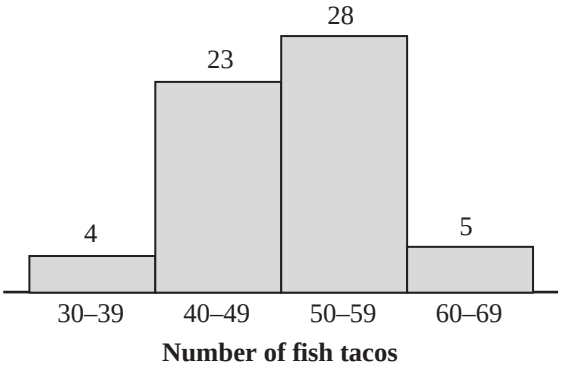
2.50



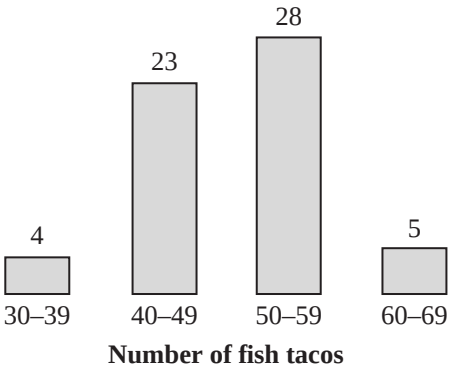
2.51 Various possibilities

2.52 Various possibilities

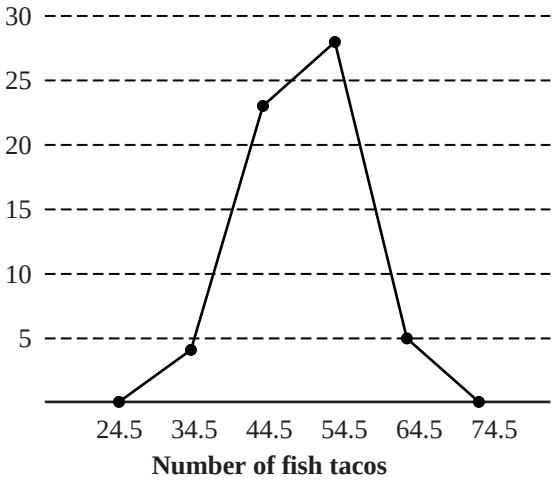
2.53 **a.**


28
23
4
5
30–39
40–49
50–59
60–69
Number of fish tacos

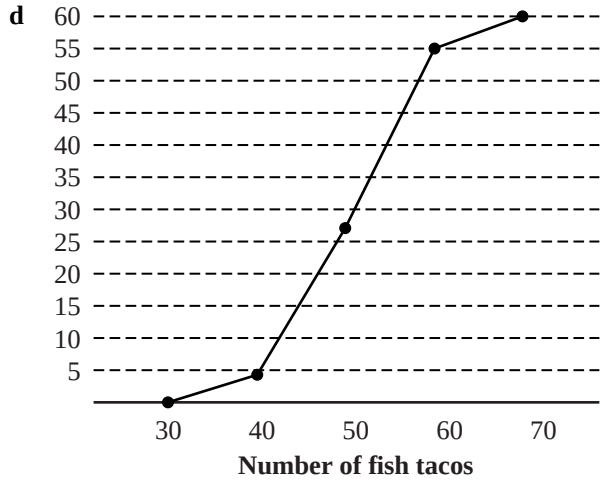
b


28
23
4
5
30–39
40–49
50–59
60–69
Number of fish tacos

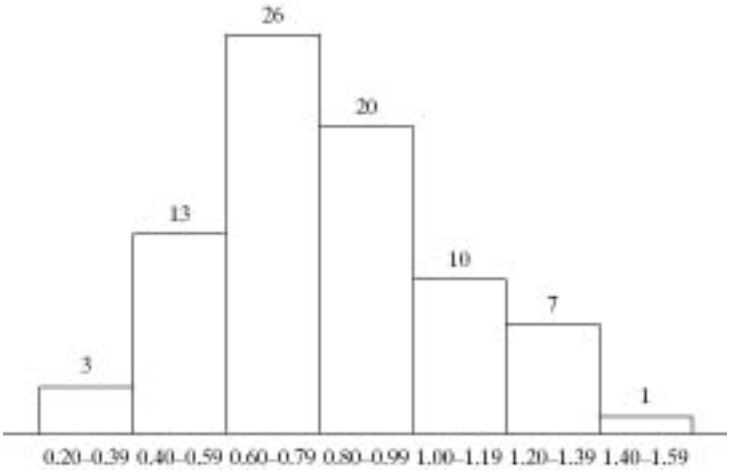
c.


30
25
20
15
10
5
24.5
34.5
44.5
54.5
64.5
74.5
Number of fish tacos

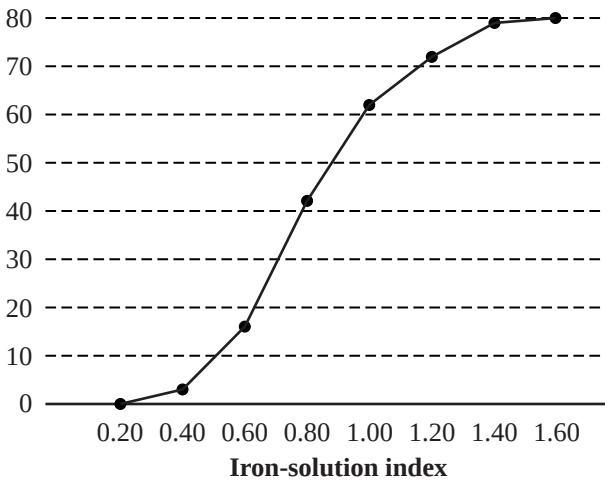
d



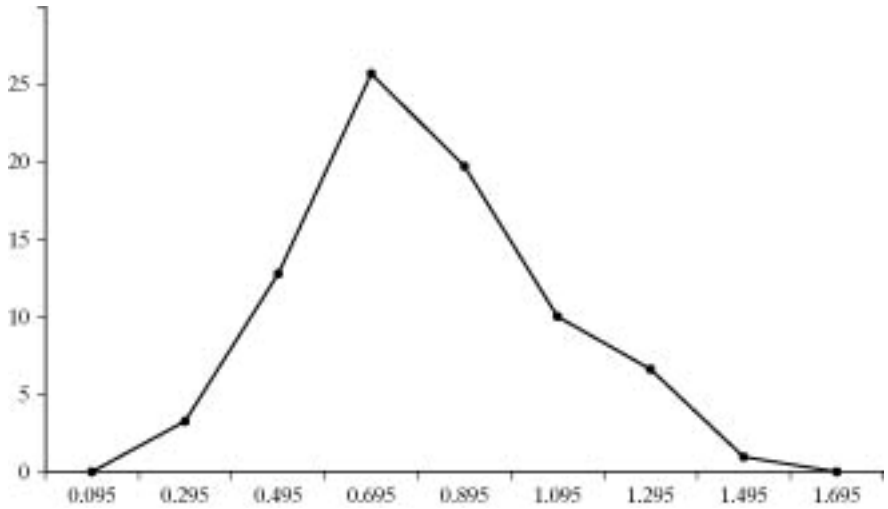
2.54 The class frequencies are 3, 13, 26, 20, 10, 7, and 1.



2.55 The cumulative frequencies corresponding to less than 0.20, less than 0.40, less than 0.60, less than 0.80, less than 1.00, less than 1.20, less than 1.40, and less than 1.60 are 0, 3, 16, 42, 62, 72, 79, and 80.



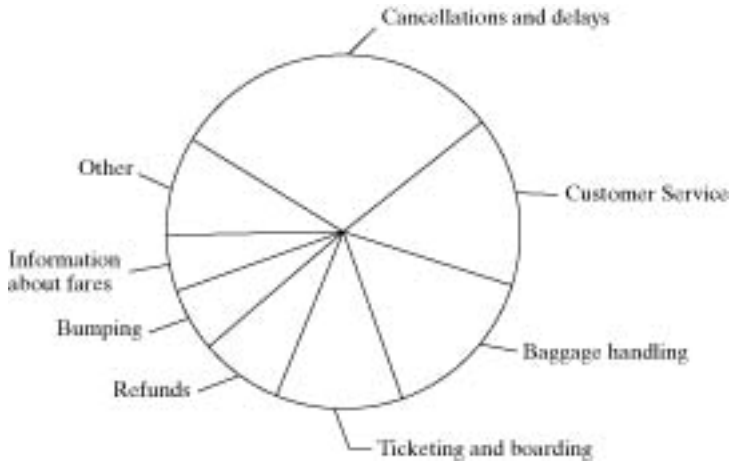
2.56



2.57 It might easily give a misleading impression because we tend to compare the areas of rectangles rather than their heights. Since the 80–99 class is twice as wide as the others, we could make the areas of the four rectangles proportional to the class frequencies by dividing the height of the 80–99 rectangle by 2.

2.58 The heights of the rectangles of the histogram are 23, 15, 9, 5, 2, and 1.

2.59 The central angles corresponding to the eight classes are, $\frac{1{,}586}{5{,}179}\cdot 360° = 110.2°$, $\frac{805}{5{,}179}\cdot 360° = 56.0°$, $\frac{761}{5{,}179}\cdot 360° = 52.9°$, $\frac{598}{5{,}179}\cdot 360° = 41.6°$, $\frac{393}{5{,}179}\cdot 360° = 27.3°$, $\frac{301}{5{,}179}\cdot 360° = 20.9°$, $\frac{267}{5{,}179}\cdot 360° = 18.6°$, and $\frac{468}{5{,}179}\cdot 360° = 32.5°$.

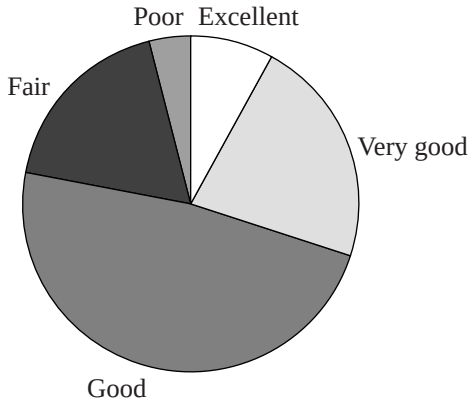


2.60 Student project.

2.61 Student project.

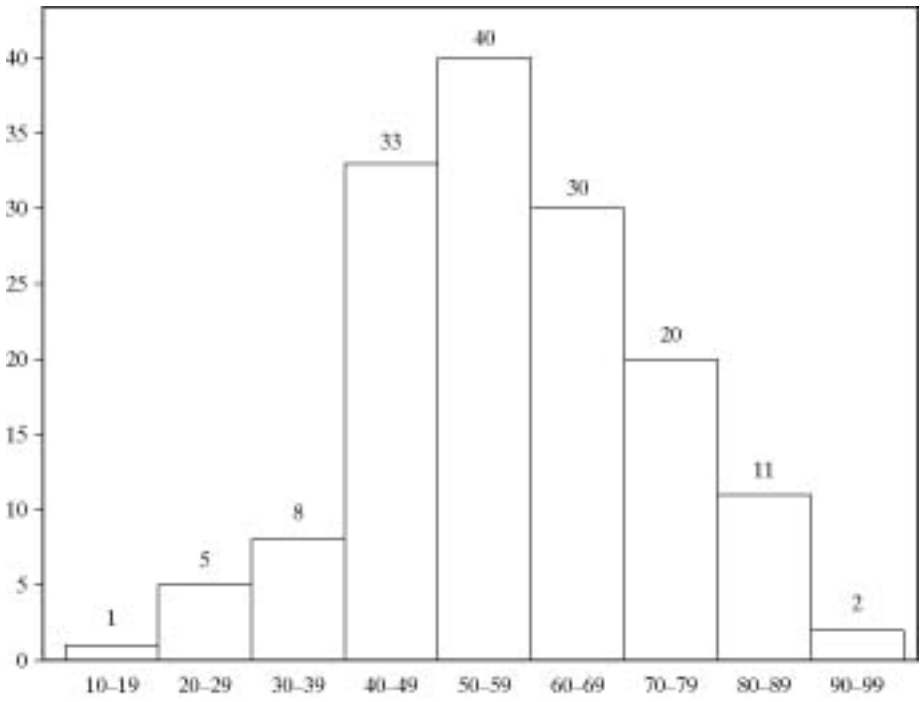
2.62 Computer exercise.

2.63 The frequencies corresponding to the five categories are 4, 11, 24, 9, and 2, and the corresponding central angles are 28.8, 79.2, 172.8, 64.8, and 14.4 degrees.

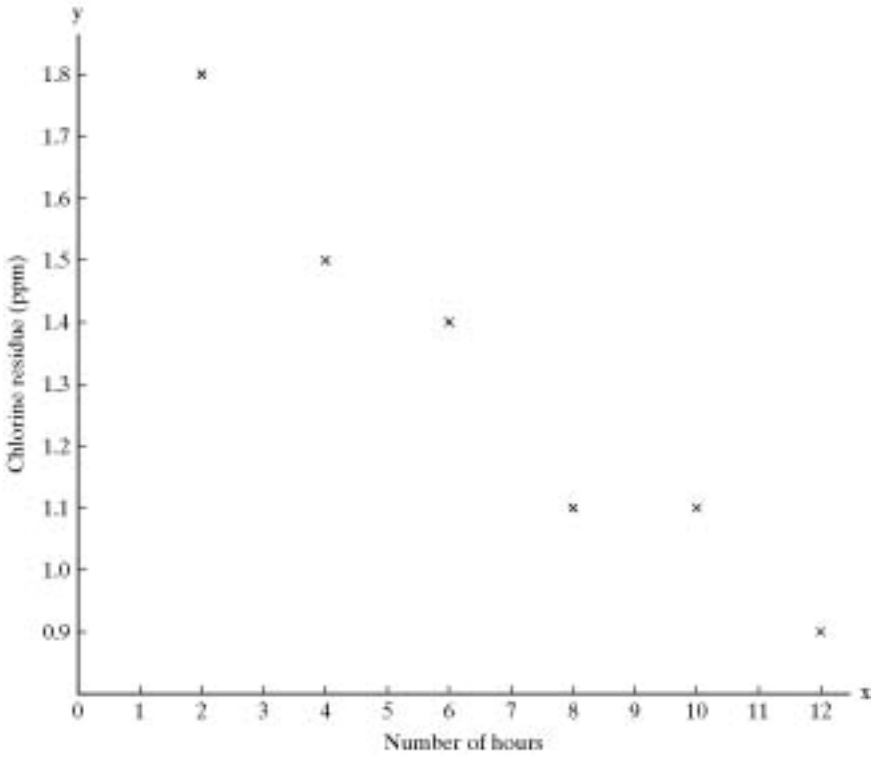


2.64 The area pf the $20,000 bag is much greater than twice the area of the $10,000 bag, creating a misleading impression. To correct this false impression the bags should be made proportional; or perhaps the bags could be replaced by bars with the $20,000 bar being twice the height of the $10,000 bar.

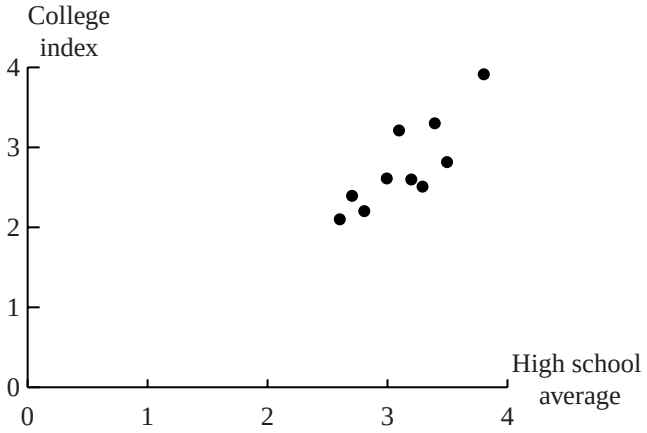
2.65 The Exercise requires the use of a computer or of a graphing calculator.



2.66 The relationship appears to be linear with a downward trend.



2.67



There is an upward linear trend, but the points are fairly widely scattered.

2.68 The pattern is similar to that of a parabola going down and then back up.