Exam

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Construct a pie chart for the data. Label each category with its percentage.

1) A study was conducted to determine how people get jobs. Four hundred subjects were   1) _____
randomly selected and the results are listed below. Round percents to whole numbers.

| Job Sources of Survey Respondents	Frequency
Newspaper want ads	72
Online services	124
Executive search firms	69
Mailings	32
Networking	103

Answer:
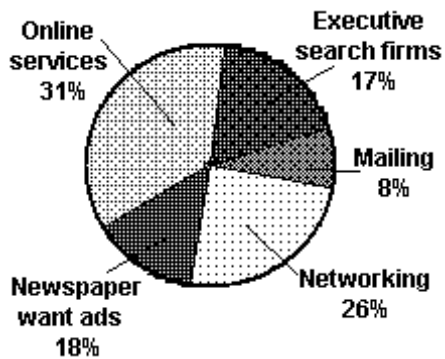
Explanation:

Provide an appropriate response.

2) The local police, using radar, checked the speeds (in mph) of 30 motorists in a construction area. The results are listed below. Construct a frequency bar graph and a relative frequency bar graph.

2) _____

Speed	Frequency
33-35	3
36-38	6
39-41	6
42-44	6
45-47	3
48-50	6

Answer:
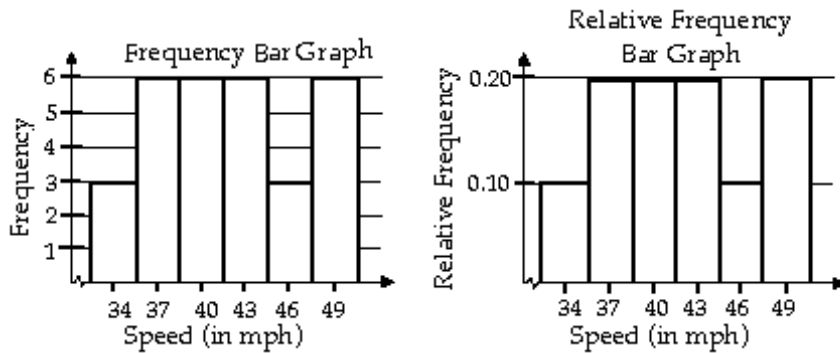
Explanation:

Construct a stem-and-leaf plot for the data.

3) The heights (in inches) of 30 mechanics are listed below. Construct a stem-and-leaf plot for the data.

3) _____

70 72 71 70 69 73 69 68 70 71
67 71 70 74 69 68 71 71 71 72
69 71 68 67 73 74 70 71 69 68

Answer:

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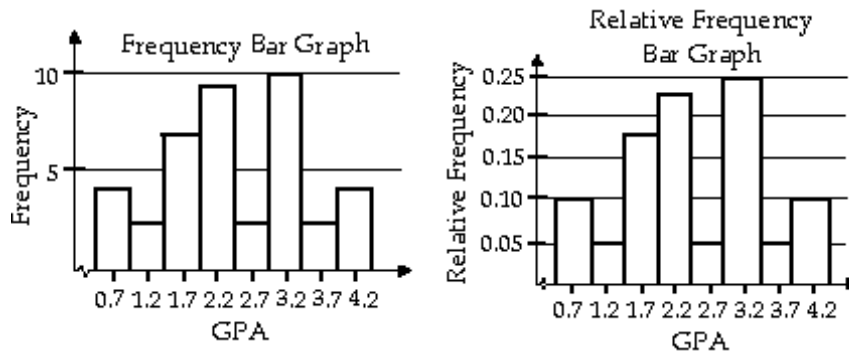7 | 0 0 0 0 0 1 1 1 1 1 1 1 1 2 2 3 3 4 4

Explanation:

Provide an appropriate response.

4) The grade point averages for 40 evening students are listed below. Construct a frequency bar graph and a relative frequency bar graph.

4) _____

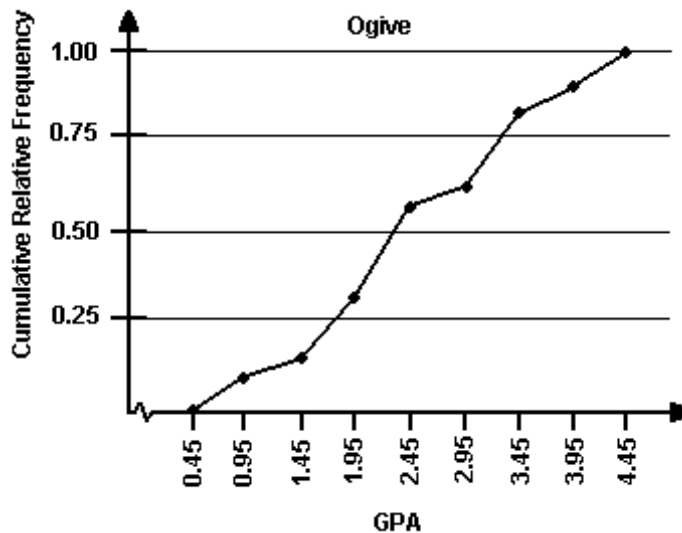| Grade Point Average	Frequency
0.5-0.9	4
1.0-1.4	2
1.5-1.9	7
2.0-2.4	9
2.5-2.9	2
3.0-3.4	10
3.5-3.9	2
4.0-4.4	4

Answer:

Explanation:

Construct the requested ogive.

5) The grade point averages for 40 evening students are listed below. Construct a relative frequency ogive using eight classes.

5) _____

```
2.0  3.2  1.8  2.9  0.9  4.0  3.3  2.9  3.6  0.8
3.1  2.4  2.4  2.3  1.6  1.6  4.0  3.1  3.2  1.8
2.2  2.2  1.7  0.5  3.6  3.4  1.9  2.0  3.0  1.1
3.0  4.0  4.0  2.1  1.9  1.1  0.5  3.2  3.0  2.2
```
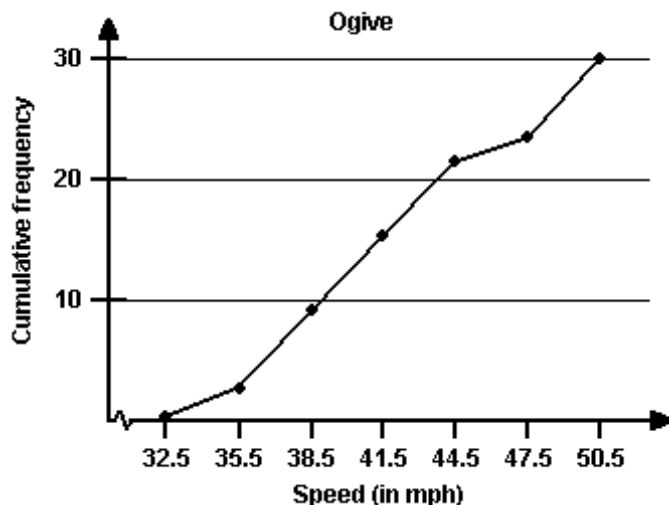
Answer:

Explanation:

3

6) The local police, using radar, checked the speeds (in mph) of 30 motorists on a rural road. The results are listed below. Construct a frequency ogive using six classes.

```
44  38  41  50  36  36  43  42  49  48
35  40  37  41  43  50  45  45  39  38
50  41  47  36  35  40  42  43  48  33
```

Answer:

Explanation:

Construct the specified histogram.

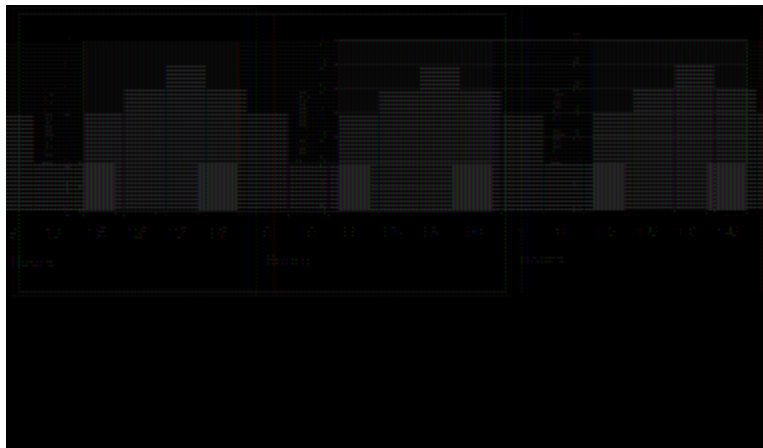7) A random sample of 30 high school students is selected. Each student is asked how much time he or she spent on the Internet during the previous week. The following times (in hours) are recorded:

```
6   14   8  11  8    6   8   7    5   11
9    7   7   6  9    8   5   5   10    7
5    7  14   9  6   10   6   9    8    7
```

Construct a frequency histogram for this data.

Answer:

Explanation:

4

Describe the shape of the distribution.

8) A sample of 15 Little League players was selected and their weights (in pounds) were recorded as follows:

97	120	137	124	117
108	134	126	123	106
130	110	100	120	140

8) _____

Answer: symmetric
Explanation:

Construct a frequency polygon for the data.

9)

Height (in inches)	Frequency
50 – 52	5
53 – 55	8
56 – 58	12
59 – 61	13
62 – 64	11

9) _____

Answer:
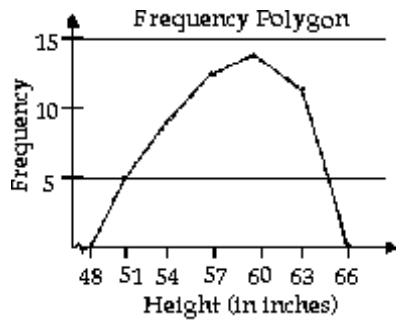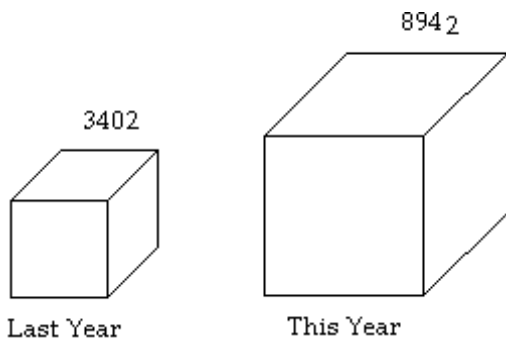

Explanation:

Provide an appropriate response.

10) A parcel delivery store finds that their delivery rates increased over the past year. Last year it delivered 3402 parcels. This year it delivered 8942 parcels.

10) _____

How many times larger should the graphic for this year be than the graphic for last year?

Answer: roughly 3 times larger
Explanation:

Construct the requested frequency distribution.

11) The commute time (in minutes) of 30 executives are listed below. Construct a frequency distribution, a relative frequency distribution, a cumulative frequency distribution, and a relative cumulative frequency distribution using five classes.

70 72 71 70 69 73 69 68 70 71
67 71 70 74 69 68 71 71 71 72
69 71 68 67 73 74 70 71 69 68

Answer:

Commute Time (in min)	Frequency	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency
67.0-68.4	6	0.20	6	0.20
68.5-69.9	5	0.167	11	0.367
70.0-71.4	13	0.433	24	0.80
71.5-72.9	2	0.067	26	0.867
73.0-74.4	4	0.133	30	1

Explanation:
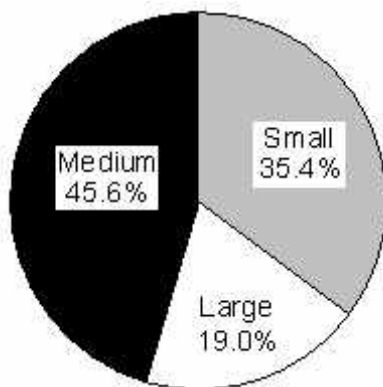
Construct a pie chart for the data. Label each category with its percentage.

12) Scott Tarnowski owns a pet grooming shop. His prices for grooming dogs are based on the size of the dog. His records from last year are summarized below. Round percents to whole numbers.

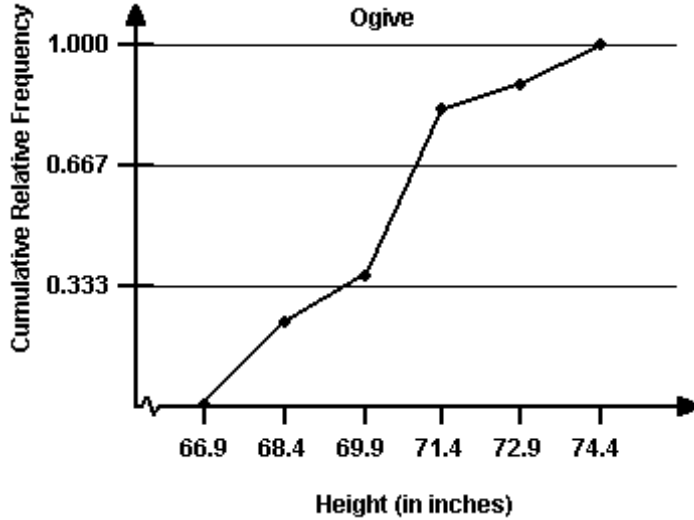| Class	Frequency
Large	345
Medium	830
Small	645

Answer:

Explanation:

Construct the requested ogive.

13) The heights (in inches) of 30 lawyers are listed below. Construct a relative frequency ogive using five classes.

13) _____

```
70  72  71  70  69  73  69  68  70  71
67  71  70  74  69  68  71  71  71  72
69  71  68  67  73  74  70  71  69  68
```

Answer:

Ogive

Explanation:

Construct the requested frequency distribution.

14) The April precipitation amounts (in inches) for 40 cities are listed below. Construct a frequency distribution, a relative frequency distribution, a cumulative frequency distribution, and a relative cumulative frequency distribution using eight classes.

14) _____

```
2.0  3.2  1.8  2.9  0.9  4.0  3.3  2.9  3.6  0.8
3.1  2.4  2.4  2.3  1.6  1.6  4.0  3.1  3.2  1.8
2.2  2.2  1.7  0.5  3.6  3.4  1.9  2.0  3.0  1.1
3.0  4.0  4.0  2.1  1.9  1.1  0.5  3.2  3.0  2.2
```

Answer:

Precip (in.)	Frequency	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency
0.5-0.9	4	0.10	4	0.10
1.0-1.4	2	0.05	6	0.15
1.5-1.9	7	0.175	13	0.325
2.0-2.4	9	0.225	22	0.55
2.5-2.9	2	0.05	24	0.60
3.0-3.4	10	0.25	34	0.85
3.5-3.9	2	0.05	36	0.90
4.0-4.4	4	0.10	40	1

Explanation:

Provide an appropriate response.

15) A sample of 15 Boy Scouts was selected and their weights (in pounds) were recorded as follows:

15) _____

    97 120 137 124 117
  108 134 126 123 106
  130 110 100 120 140

a. Using a class width of 10, give the upper and lower limits for five classes, starting with a lower limit of 95 for the first class.
b. Construct a frequency distribution for the data

Answer: a.   95-104, 105-114, 115-124, 125-134, 135-144

b.

Weight (lb)	Tally	Frequency
95-104	II	2
105-114	III	3
115-124	IIIII	5
125-134	III	3
135-144	II	2

Explanation:
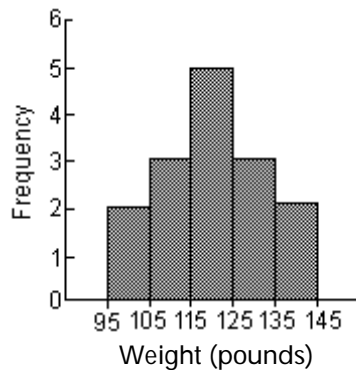
Construct the specified histogram.

16) A sample of 15 Girl Scouts was selected and their weights (in pounds) were recorded. The results are listed below. Construct a frequency histogram for the data using a class width of 10 and using 95 as the lower limit of the first class.

16) _____

  97 120 137 124 117
  108 134 126 123 106
  130 110 100 120 140

Answer:

Explanation:

Determine the original set of data.

17)

Stem	Leaves
5	1
6	9
7	0 1
8	3
9	1 9
10	6 9
11	6 7 9
12	2 3 8 9
13	6 9

Legend: 5|1 represents 5.1

Answer: 5.1, 6.9, 7.0, 7.1, 8.3, 9.1, 9.9, 10.6, 10.9, 11.6, 11.7, 11.9, 12.2, 12.3, 12.8, 12.9, 13.6, 13.9
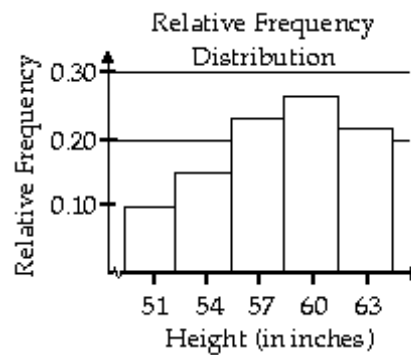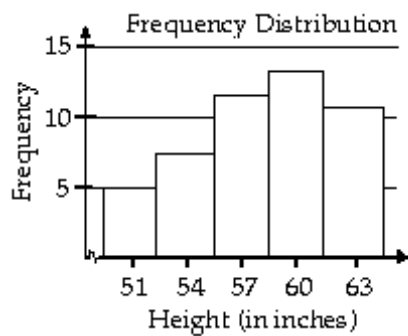Explanation:

Construct the specified histogram.

18) For the data below, construct a frequency distribution and a relative frequency distribution.

18) _____

Height (in inches)	Frequency
50 – 52	5
53 – 55	8
56 – 58	12
59 – 61	13
62 – 64	11

Answer:

Explanation:

9

Construct a stem-and-leaf plot for the data.

19) The numbers of runs batted in by Mark McLemore in the first 13 years of his major league baseball career are listed below. (Source: Major League Handbook) Construct a stem-and-leaf plot for this data.

0 102 56 25 9 9 56 165 88 122 150 91 114

) _____

Answer:
```
 0|0 9 9
 1|
 2|5
 3|
 4|
 5|6 6
 7|
 8|8
 9|1
10|2
11|4
12|2
13|
14|
15|0
16|5
```
Explanation:

Use a time series plot to display the data. Comment on the trend,

20) A transportation engineer wishes to use the following data to illustrate the number of deaths from the collision of passenger cars with motorcycles on a particular highway.

20) _____

Year	Number of Deaths
1	12
2	17
3	22
4	21
5	16
6	13
7	11

Answer:
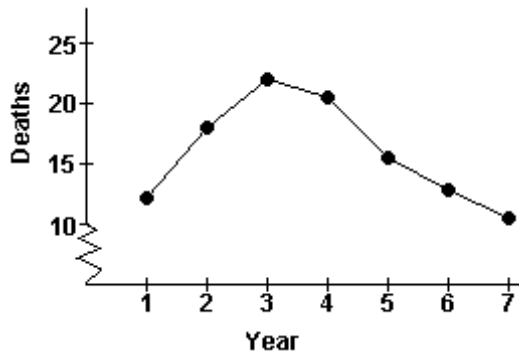
From Year 1 to Year 3, there was an increasing trend in the number of collision deaths. Subsequently, there was a decreasing trend.

Explanation:

10

Construct the requested frequency distribution.

21) The June precipitation amounts (in inches) for 40 cites are listed below. Construct a frequency distribution and a relative frequency distribution using eight classes.

21) _____

```
2.0  3.2  1.8  2.9  0.9  4.0  3.3  2.9  3.6  0.8
3.1  2.4  2.4  2.3  1.6  1.6  4.0  3.1  3.2  1.8
2.2  2.2  1.7  0.5  3.6  3.4  1.9  2.0  3.0  1.1
3.0  4.0  4.0  2.1  1.9  1.1  0.5  3.2  3.0  2.2
```

Answer:

Precip.	Frequency	Relative Frequency
0.5-0.9	4	0.10
1.0-1.4	2	0.05
1.5-1.9	7	0.175
2.0-2.4	9	0.225
2.5-2.9	2	0.05
3.0-3.4	10	0.25
3.5-3.9	2	0.05
4.0-4.4	4	0.10

Explanation:

Construct a dot plot for the data.

22) The heights (in inches) of 30 mechanics are listed below. Construct a dot plot for the data.

22) _____

```
70  72  71  70  69  73  69  68  70  71
67  71  70  74  69  68  71  71  71  72
69  71  68  67  73  74  70  71  69  68
```

Answer:

Explanation:

Construct a stem-and-leaf plot for the data.

23) The March utility bills (in dollars) of 30 homeowners are listed below. Construct a   23) _____
stem-and-leaf plot for the data.

   44 38 41 50 36 36 43 42 49 48
   35 40 37 41 43 50 45 45 39 38
   50 41 47 36 35 40 42 43 48 33

Answer:

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

Explanation:

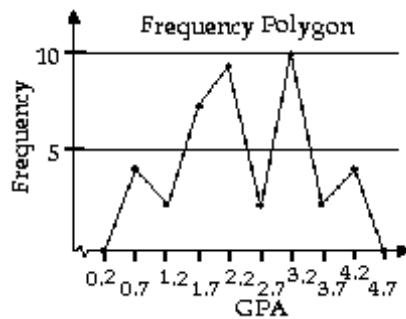Construct a frequency polygon for the data.

24) The grade point averages for 40 evening students are listed below. Construct a frequency   24) _____
polygon using eight classes.

   2.0 3.2 1.8 2.9 0.9 4.0 3.3 2.9 3.6 0.8
   3.1 2.4 2.4 2.3 1.6 1.6 4.0 3.1 3.2 1.8
   2.2 2.2 1.7 0.5 3.6 3.4 1.9 2.0 3.0 1.1
   3.0 4.0 4.0 2.1 1.9 1.1 0.5 3.2 3.0 2.2

Answer:

Explanation:

Use a time series plot to display the data. Comment on the trend,

25) The data below represent the consumption of high-energy drinks (in gallons) by adult Americans over a nine-year period.

25) _____

Year	1	2	3	4	5	6	7	8	9
Consumption (gal)	10	11	11	12	13	14	15	15	13

Answer: In general, there is an increasing trend in high-energy drinks consumption of adult Americans. However, beginning in Year 9, there is sign of a decreasing trend.
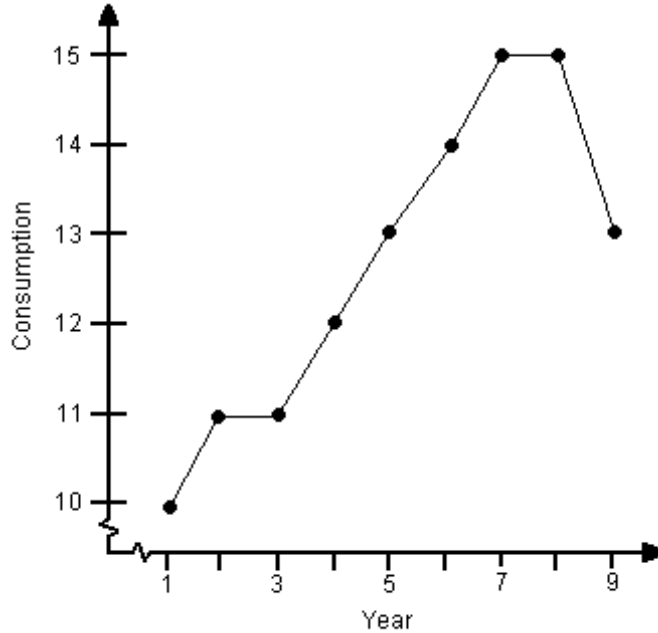
Explanation:

Construct a frequency distribution for the data.

26) A sample of 25 service project scores is taken and is recorded below. Construct a frequency distribution for this data.

26) _____

```
97  96  96   95   96
99  97  97  100   99
95  98  95   96  100
95  98  96   96  100
95  97  99   97   98
```

Answer:

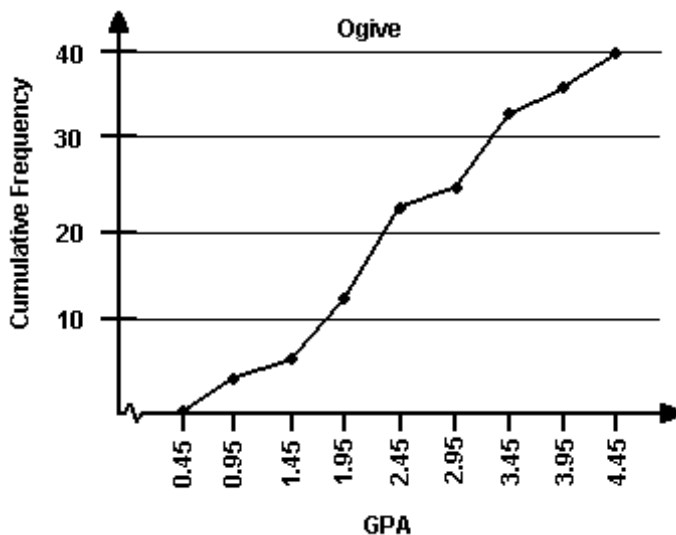| Measure	Frequency
95	5
96	6
97	5
98	3
99	3
100	3

Explanation:

Construct the requested ogive.

27) The grade point averages for 40 evening students are listed below. Construct a frequency ogive using eight classes.

    27) _____

2.0	3.2	1.8	2.9	0.9	4.0	3.3	2.9	3.6	0.8
3.1	2.4	2.4	2.3	1.6	1.6	4.0	3.1	3.2	1.8
2.2	2.2	1.7	0.5	3.6	3.4	1.9	2.0	3.0	1.1
3.0	4.0	4.0	2.1	1.9	1.1	0.5	3.2	3.0	2.2

Answer:

Explanation:

Determine the original set of data.

28)

    28) _____

Stem	Leaves
7	6
8	8
9	0 9
10	4
11	1 8
12	6 9
13	6 7 9
14	2 3 8 9
15	7 9

Legend: 5|6 represents 56

Answer: 76, 88, 90, 99, 104, 111, 118, 126, 129, 136, 137, 139, 142, 143, 148, 149, 157, 159
Explanation:

Construct a frequency distribution for the data.

29) A random sample of 30 high school students is selected. Each student is asked how much time he or she spent on the Internet during the previous week. The following times (in hours) are obtained:

    6 14 8 11 8 6 8 7 5 11
    9 7 7 6 9 8 5 5 10 7
    5 7 14 9 6 10 6 9 8 7

Construct a frequency distribution for the data.

29) _____

Answer:

Hours On Net	Number of HS Students
5	4
6	5
7	6
8	5
9	4
10	2
11	2
14	2

Explanation:

Provide an appropriate response. Round relative frequencies to thousandths.

30) Scott Tarnowski owns a pet grooming shop. His prices for grooming dogs are based on the size of the dog. His records from last year are summarized below. Construct a frequency distribution and a relative frequency distribution. Show the percentage represented by each relative frequency.

30) _____

Class	Frequency
Large	345
Medium	830
Small	645

Answer:

Class	Frequency	Relative Frequency	Percentage
Large	345	0.190	19.0
Medium	830	0.456	45.6
Small	645	0.354	35.4
Total	1820	1.000	100.0

Explanation:

Provide an appropriate response.

31) Listed below are the ACT scores of 40 randomly selected students at a major university.   31) _____

   18 22 13 15 24 24 20 19 19 12
    16 25 14 19 21 23 25 18 18 13
    26 26 25 25 19 17 18 15 13 21
    19 19 14 24 20 21 23 22 19 17

a) Construct a relative frequency bar graph of the data, using eight classes.
b) If the university wants to accept the top 90% of the applicants, what should the minimum score be?
c) If the university sets the minimum score at 17, what percent of the applicants will be accepted?

Answer: a) See graph below
         b) The minimum score = 14
         c) The university will accept 76.57% of the applicants.

Relative Frequency Bar Graph
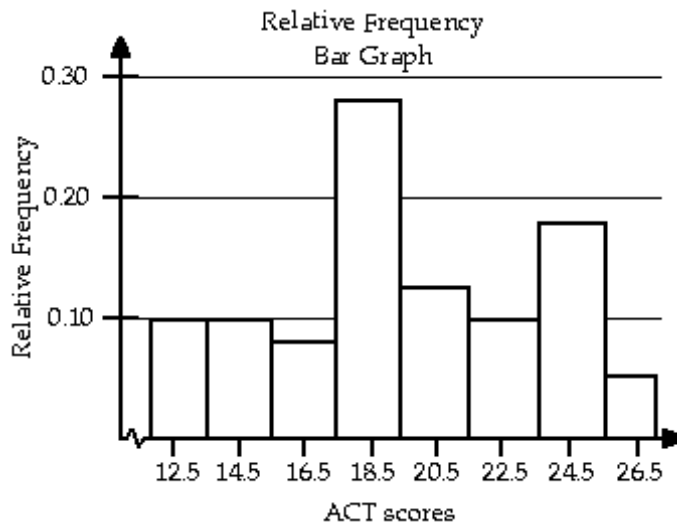
Explanation:

Construct the requested frequency distribution.

32) The local police, using radar, checked the speeds (in mph) of 30 motorists in a construction area. The results are listed below. Construct a frequency distribution, a relative frequency distribution, a cumulative frequency distribution, and a relative cumulative frequency distribution using six classes.

    44 38 41 50 36 36 43 42 49 48
    35 40 37 41 43 50 45 45 39 38
    50 41 47 36 35 40 42 43 48 33

Answer:

| Speed (in mph)	Frequency	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency
33-35	3	0.10	3	0.10
36-38	6	0.20	9	0.30
39-41	6	0.20	15	0.50
42-44	6	0.20	21	0.70
45-47	3	0.10	24	0.80
48-50	6	0.20	30	1

Explanation:

Construct a frequency polygon for the data.

33) The local police, using radar, checked the speeds (in mph) of 30 motorists in a construction area. The results are listed below. Construct a frequency polygon using six classes and a class width of 3.

    44 38 41 50 36 36 43 42 49 48
   35 40 37 41 43 50 45 45 39 38
    50 41 47 36 35 40 42 43 48 33

Answer:
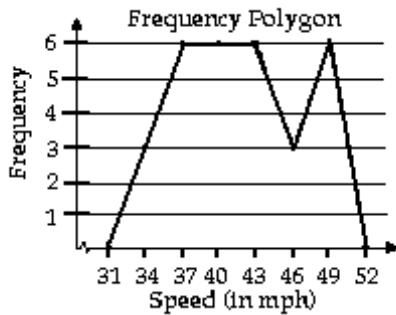
Explanation:

Provide an appropriate response.

34) The following graph shows the number of car accidents occurring in one city in each of the   34) _____
years 2006 through 2011 (Year 1 = 2006, Year 2 = 2007 etc). The number of accidents
dropped in 2008 after a new speed limit was imposed. How is the bar graph misleading?
How would you redesign the graph to be less misleading?
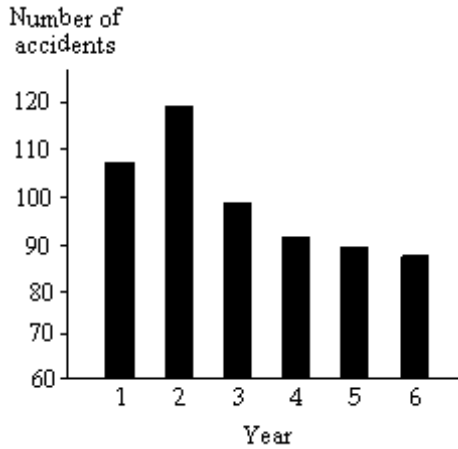
Answer: The bar graph is misleading because the vertical axis starts at 60 instead of 0. This
tends to indicate that the number of accidents decreased at a faster rate than they
actually did. The graph would be less misleading if the vertical scale began at 0 or if
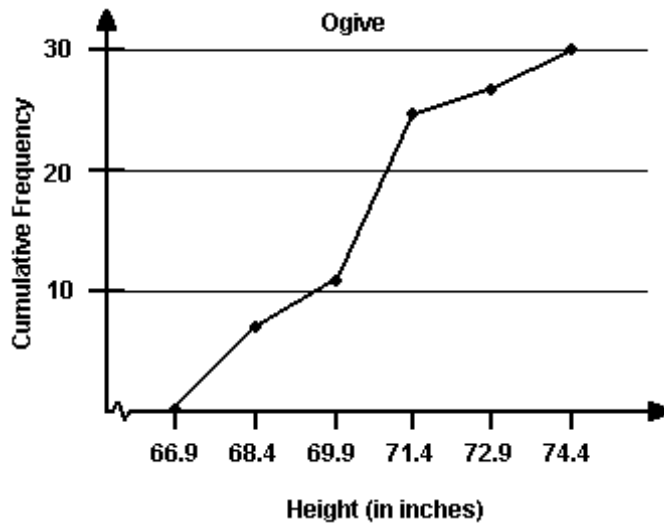a symbol were used to clearly indicate that the vertical scale is truncated and has a
gap.

Explanation:

Construct the requested ogive.

35) The heights (in inches) of 30 lawyers are listed below. Construct a frequency ogive using   35) _____
five classes.

    70 72 71 70 69 73 69 68 70 71
    67 71 70 74 69 68 71 71 71 72
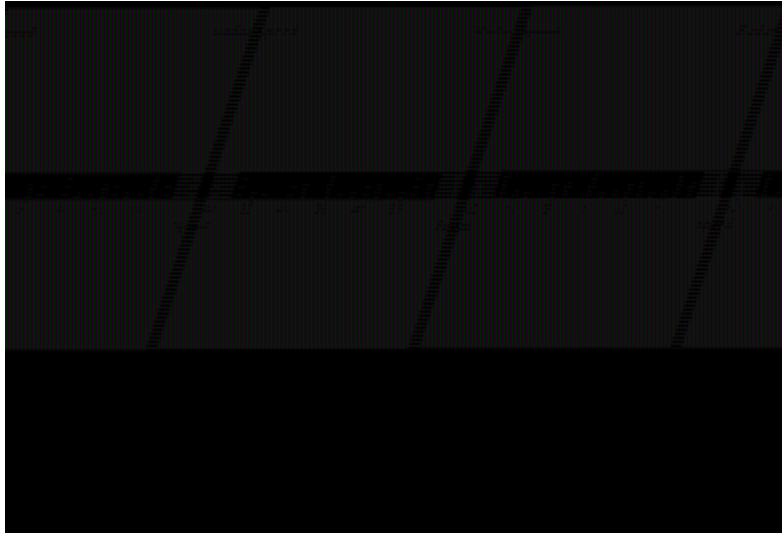   69 71 68 67 73 74 70 71 69 68

Answer:

Explanation:

18

Construct a dot plot for the data.

36) The local police, using radar, checked the speeds (in mph) of 30 motorists at a busy   36) _____
intersection. The results are listed below. Construct a dot plot for the data.

    44 38 41 50 36 36 43 42 49 48
    35 40 37 41 43 50 45 45 39 38
    50 41 47 36 35 40 42 43 48 33

Answer:

Explanation:

Construct a frequency polygon for the data.

37)   37) _____

Weight (in pounds)	Frequency
135 - 139	6
140 - 144	4
145 - 149	11
150 - 154	15
155 - 159	8

Answer:

Frequency Polygon
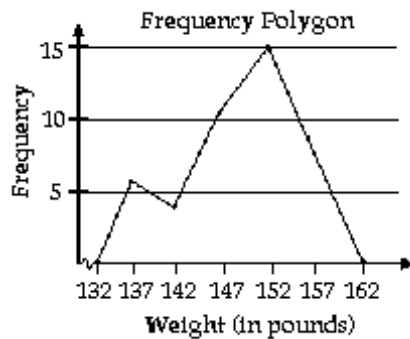
Explanation:

Construct the specified histogram.

38) A sample of 25 community service projects is obtained and the scores are recorded. The results are shown below. Construct a frequency histogram for this data.

97	96	96	95	96
99	97	97	100	99
95	98	95	96	100
95	98	96	96	100
95	97	99	97	98

Answer:
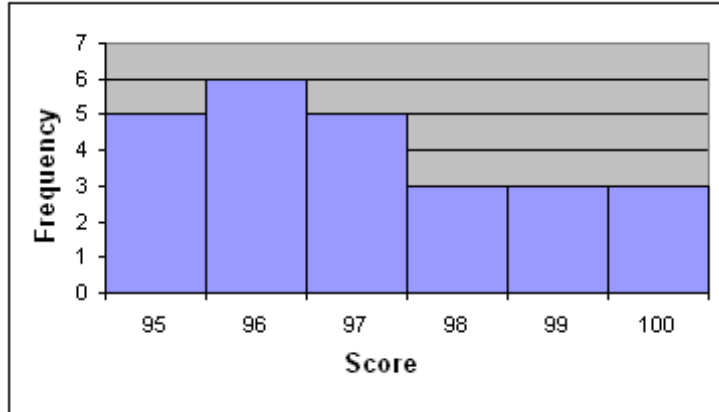
Explanation:

Construct a stem-and-leaf plot for the data.

39) The number of home runs that Mark McGwire hit in the first 13 years of his major league baseball career are listed below. (Source: Major League Handbook) Construct a stem-and-leaf plot for this data.

3 49 32 33 39 22 42 9 9 39 52 58 70

Answer:

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

Explanation:

Construct the requested frequency distribution.

40) The commute times (in minutes) of 30 executives are listed below. Construct a frequency distribution and a relative frequency distribution using five classes. Round relative frequency values to three decimal places.

40) _____

```
70  72  71  70  69  73  69  68  70  71
67  71  70  74  69  68  71  71  71  72
69  71  68  67  73  74  70  71  69  68
```

Answer:

| Commute Time (in min)	Frequency	Relative Frequency
67.0-68.4	6	0.200
68.5-69.9	5	0.167
70.0-71.4	13	0.433
71.5-72.9	2	0.067
73.0-74.4	4	0.133

Explanation:

Construct the requested ogive.

41) The local police, using radar, checked the speeds (in mph) of 30 motorists on a rural road. The results are listed below. Construct a relative frequency ogive using six classes.

41) _____

```
44  38  41  50  36  36  43  42  49  48
35  40  37  41  43  50  45  45  39  38
50  41  47  36  35  40  42  43  48  33
```
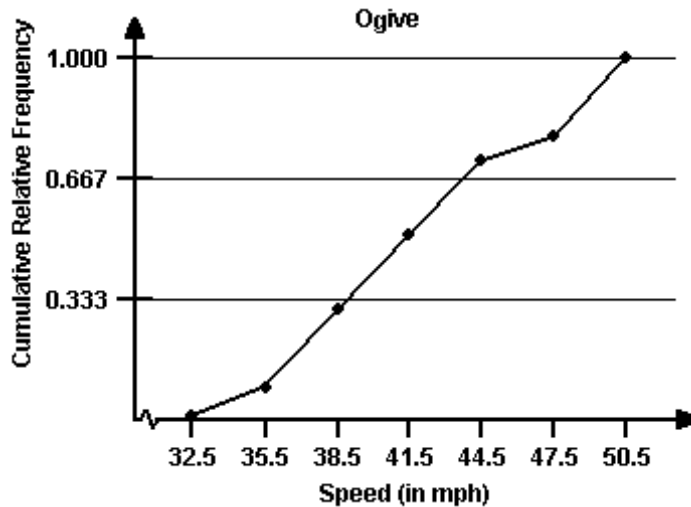
Answer:

Explanation:

21

Provide an appropriate response. Round relative frequencies to thousandths.

42) The preschool children at Elmwood Elementary School were asked to name their favorite color. The results are listed below. Construct a frequency distribution and a relative frequency distribution.

42) _____

purple	purple	blue	yellow	red
red	red	purple	red	blue
red	blue	yellow	yellow	yellow
blue	red	yellow	red	green

Answer:

Color	Frequency	Relative Frequency
purple	3	0.15
blue	4	0.20
yellow	5	0.25
red	7	0.35
green	1	0.05

Explanation:

Construct the requested frequency distribution.

43) The March utility bills (in dollars) of 30 homeowners are listed below. Construct a frequency distribution and a relative frequency distribution using six classes.

43) _____

44 38 41 50 36 36 43 42 49 48
35 40 37 41 43 50 45 45 39 38
50 41 47 36 35 40 42 43 48 33

Answer:

Util. Bill (dollars)	Frequency	Relative Frequency
33-35	3	0.10
36-38	6	0.20
39-41	6	0.20
42-44	6	0.20
45-47	3	0.10
48-50	6	0.20

Explanation:

Provide an appropriate response. Round relative frequencies to thousandths.

44) The results of a survey about a recent judicial appointment are given in the table below. Construct a relative frequency distribution.

44) _____

Response	Frequency
Strongly Favor	35
Favor	13
Neutral	7
Oppose	25
Strongly Oppose	120

Answer:

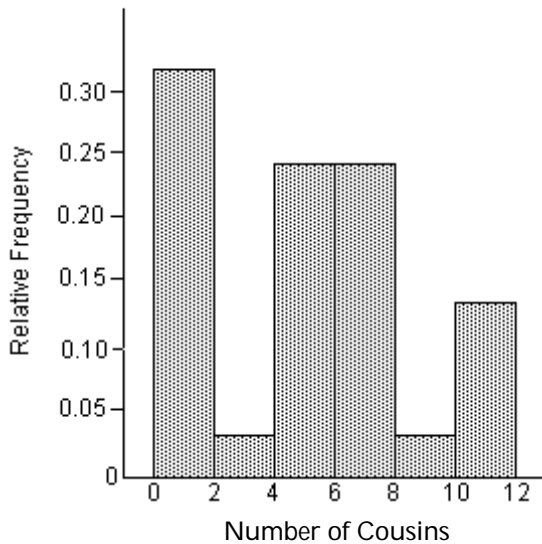| Response	Frequency	Relative Frequency
Strongly Favor	35	0.175
Favor	13	0.065
Neutral	7	0.035
Oppose	25	0.125
Strongly Oppose	120	0.6

Explanation:

Construct the specified histogram.

45) The 30 students in Mrs Harrison's literature class were asked how many cousins they had. The results are shown below. Construct a relative-frequency histogram using a class width of 2.

45) _____

```
10   1   3   5    4    7
 5   1   0   9   11    1
 5   4   1   7    7   11
 0   6   6   1    5    7
10   1   1   5    6    0
```
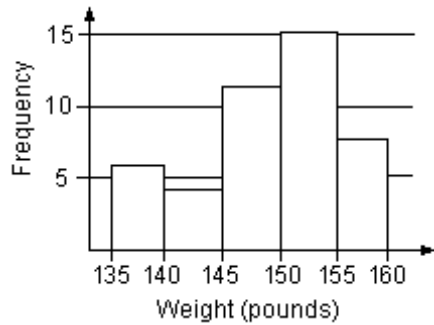
Answer:

Explanation:

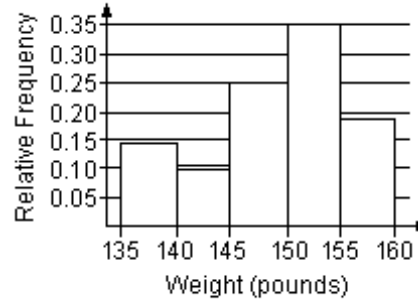46) For the data below, construct a frequency histogram and a relative frequency histogram.   46) _____

Weight (in pounds)	Frequency
135 - 139	6
140 - 144	4
145 - 149	11
150 - 154	15
155 - 159	8

Answer: Frequency Histogram: Relative Frequency Histogram:

Explanation:

Construct a stem-and-leaf plot for the data.

47) The scores for an economics test are listed below. Create a stem-and-leaf plot for the data.   47) _____

87 76 92 77 90 94 88 85 66 89
79 98 52 95 83 88 82 54 14 69

Answer: The stem will consist of the tens digit and range from 1 to 9. The leaves will be
drawn in the appropriate stems based on the data values.

```
Stem|Leaves
   1|4
   2|
   3|
   4|
   5|2 4
   6|6 9
   7|6 7 9
   8|7 8 5 9 3 8 2
   9|2 0 4 8 5
```

Explanation:

Construct the specified histogram.

48) The 30 students in Mrs Harrison's literature class were asked how many cousins they had.   48) _____
The results are shown below. Create a frequency histogram for the data using a class width
of 2.

10	1	3	5	4	7
5	1	0	9	11	1
5	4	1	7	7	11
0	6	6	1	5	7
10	1	1	5	6	0

Answer:

Explanation:

Use a time series plot to display the data. Comment on the trend,

49) Women were allowed to enter the Boston Marathon for the first time in 1972. Listed below   49) _____
are the winning women's times (in minutes) for the first 10 years.

Year	1	2	3	4	5	6	7	8	9	10
Time	190	186	167	162	167	168	165	155	154	147

Answer:

In general, there was a decreasing trend in women's Boston marathon times.

Explanation:

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine whether the statement is true or false.

50) The class midpoint can be determined by adding to the lower class limit one-half of the class   50) _____
width.

   A) False   B) True
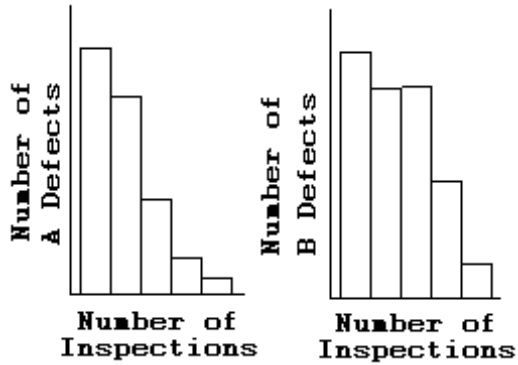
Answer: B

Explanation: A)

                     B)

Use the histograms shown to answer the question.

51)

Is either histogram symmetric?
   A) Neither is symmetric.
   B) The second is symmetric, but the first is not symmetric.
   C) Both are symmetric.
   D) The first is symmetric, but the second is not symmetric.

Answer: A
Explanation: A)
                B)
                C)
                D)

51) _____

Provide an appropriate response. Round relative frequencies to thousandths.

52) True or False: Relative frequency is the proportion (or percent) of observations within a category and is found using the formula: relative frequency $= \dfrac{\text{sum of all frequencies}}{\text{frequency}}$.

   A) True   B) False

Answer: B
Explanation: A)
                B)

52) _____

Provide an appropriate response.

53) The weights (in pounds) of babies born at St Mary's hospital last month are summarized in the table.

Weight (lb)	Number of Babies
5.0 – 6	5
6.1 – 7.1	19
7.2 – 8.2	19
8.3 – 9.3	9
9.4 – 10.4	5

Find the class limits for the second class.
   A) lower limit: 6.05; upper limit:7.15   B) lower limit: 6.1; upper limit: 7.2
   C) lower limit: 6.1; upper limit: 7.1   D) lower limit: 6; upper limit: 7.2

Answer: C
Explanation: A)
                B)
                C)
                D)

53) _____

27

54) The weights (in pounds) of babies born at St Mary's hospital last month are summarized in the table.

Weight (lb)	Number of Babies
5.0 – 6	7
6.1 – 7.1	20
7.2 – 8.2	19
8.3 – 9.3	9
9.4 – 10.4	5

Find the class width.

  A) 1.15 lb   B) 1.1 lb   C) 1 lb   D) 1.05 lb

Answer: B

Explanation: A)

                  B)

                  C)

                  D)

Determine whether the statement is true or false.

55) A frequency polygon always begins and ends with a frequency of zero.

  A) False   B) True

Answer: B

Explanation: A)

                  B)

Provide an appropriate response.

56) A researcher records the number of employees of each of the IT companies in the town of Westmoore. The results are summarized in the table.

Number of Employees	Number of IT Companies
0 – 799	35
800 – 1599	20
1600 – 2399	9
2400 – 3199	8
3200 – 3999	5

Find the class limits of the third class.

  A) lower limit: 1599; upper limit: 2400   B) lower limit: 1600; upper limit: 2399
  C) lower limit: 1600; upper limit: 2400   D) lower limit: 1599.5; upper limit: 2399.5

Answer: B

Explanation: A)

                  B)

                  C)

                  D)

57) The payroll amounts for 26 major-league baseball teams are shown below. Aprroximately what   57) _____
percentage of the payrolls were in the $30-$40 million range? Round to the nearest whole percent.

Payroll of Baseball Teams (in millions of dollars)
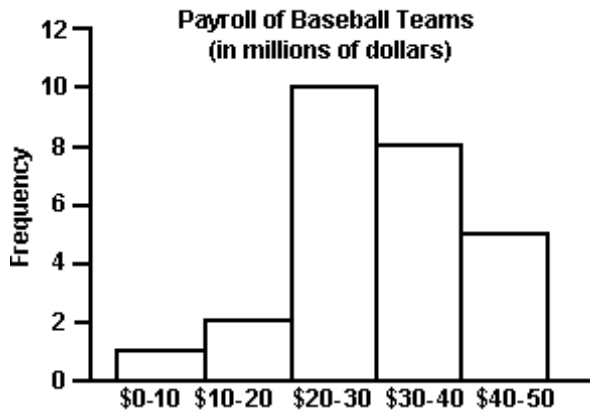
A) 42%   B) 8%   C) 31%   D) 19%

Answer: C

Explanation: A)
              B)
              C)
   D)

58) What is the difference between a bar chart and a histogram?   58) _____
   A) The bars on a bar chart do not touch while the bars of a histogram do touch.
   B) There is no difference between these two graphical displays.
   C) The bars in a bar chart may be of various widths while the bars of a histogram are all the
   same width.
   D) The bars in a bar chart are all the same width while the bars of a histogram may be of various
   widths.

Answer: A

Explanation: A)
              B)
              C)
              D)

59) The bar graph below shows the political party affiliation of 1000 registered U.S. voters. What percentage of the 1000 registered U.S. voters belonged to one of the traditional two parties (Democratic and Republican)?
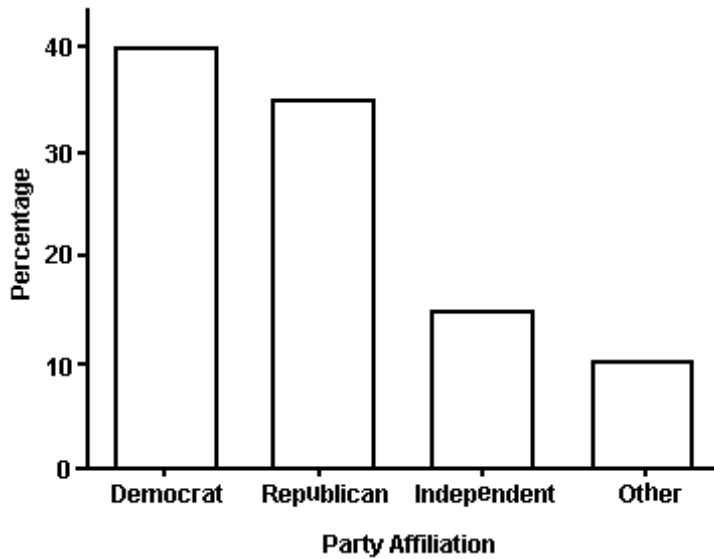
A) 40%   B) 35%   C) 75%   D) 25%

Answer: C

Explanation: A)
                B)
                C)
                D)

60) Use the following frequency distribution to determine the class limits of the third class.

Class	Frequency
5-11	7
12-18	11
19-25	8
26-32	5
33-39	9
40-46	6

A) lower limit: 19; upper limit: 25   B) lower limit: 19; upper limit: 26
C) lower limit: 18; upper limit: 26   D) lower limit: 18.5; upper limit: 25.5

Answer: A

Explanation: A)
                B)
                C)
                D)

The pie chart shows the percentage of votes received by each candidate in the student council presidential election. Use the pie chart to answer the question.

61)

Student Council President
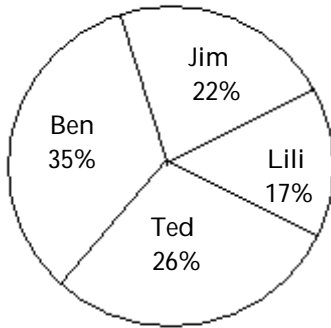
600 total votes

Who got the most votes?

A) Lili   B) Ben   C) Ted   D) Jim

Answer: B

Explanation: A)
                B)
                C)
                D)

Describe the shape of the distribution.

62)
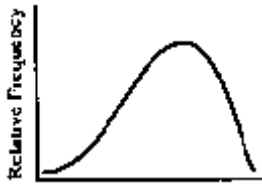
A) skewed to the left   B) uniform
C) skewed to the right   D) bell shaped

Answer: A

Explanation: A)
                B)
                C)
                D)

The bar graph shows the number of tickets sold each week by the garden club for their annual flower show.

Number of Tickets Sold Each Week
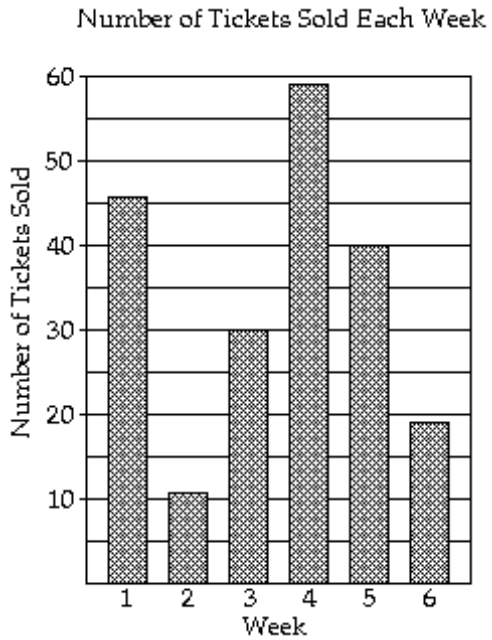
63) Approximately how many tickets were sold during week 5?   63) _____
   A) 40 tickets   B) 11 tickets   C) 46 tickets   D) 19 tickets

   Answer: A
   Explanation: A)
                   B)
                   C)
                   D)

The following double-bar graph illustrates the revenue for a company for the four quarters of the year for two different years. Use the graph to answer the question.
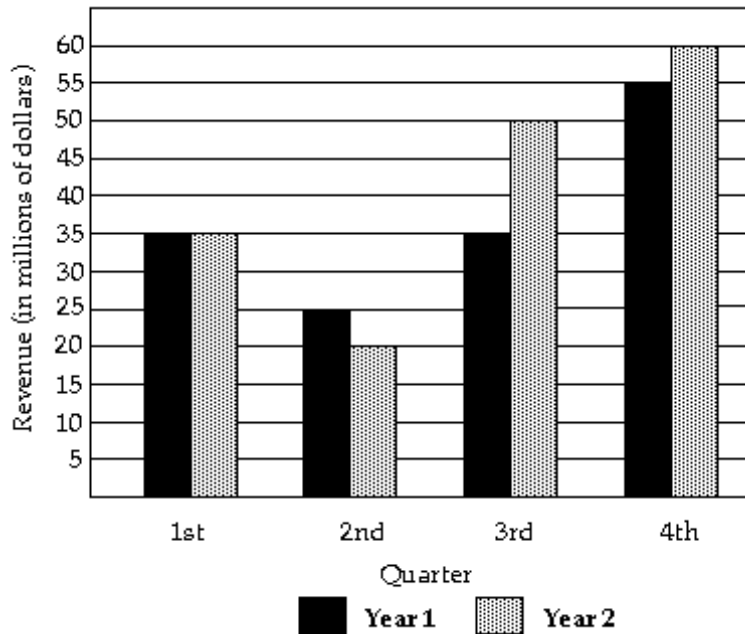
64) What was the revenue for the third quarter of Year 2?   64) _____
   A) $10 million   B) $7 million   C) $35 million   D) $50 million

Answer: D
Explanation: A)
               B)
               C)
               D)

Provide an appropriate response.
65) The class width is the difference between   65) _____
   A) The high and the low data values
   B) The largest frequency and the smallest frequency
   C) The upper class limit and the lower class limit of a class
   D) Two successive lower class limits

Answer: D
Explanation: A)
               B)
               C)
               D)

Explain what is misleading about the graphic.

66)

Annual Sales of Widgets at Company X
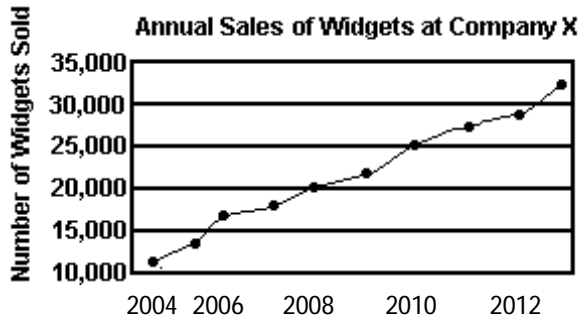
A) The horizontal label is incomplete.
B) The graphic is not misleading.
C) The trend is depicted in the wrong direction.
D) The vertical scale does not begin at zero.

Answer: D
Explanation: A)
                      B)
                      C)
                      D)

66) _____

Provide an appropriate response. Round relative frequencies to thousandths.

67) True or False: The sum of all the relative frequencies of a distribution will always add up to 1.   67) _____

A) False   B) True

Answer: A
Explanation: A)
                      B)

Describe the shape of the distribution.

68)
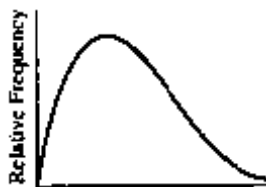
A) skewed to the right   B) bell shaped
C) uniform   D) skewed to the left

Answer: A
Explanation: A)
                      B)
                      C)
                      D)

68) _____

34

The pie chart shows the percentage of votes received by each candidate in the student council presidential election. Use the pie chart to answer the question.

69)

69) _____

Student Council President
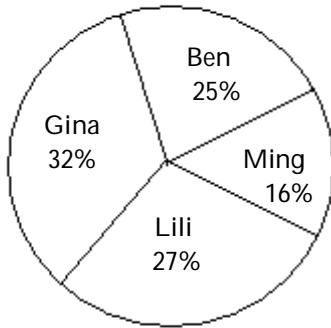
200 total votes

Who got the fewest votes?

A) Ben   B) Lili   C) Gina   D) Ming

Answer: D

Explanation: A)
                 B)
                 C)
                 D)

Provide an appropriate response.

70) For the stem-and-leaf plot below, what are the maximum and minimum entries?

70) _____

```
1 | 3 7
1 | 6 6 6 7 8 9
2 | 0 1 1 2 3 4 4 5 6 6
2 | 7 7 7 8 8 9 9 9
3 | 0 1 1 2 3 4 4 5 5
3 | 6 6 6 7 8 8 9 9
4 | 0 5
```
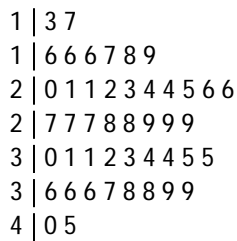
A) max: 47; min: 17   B) max: 40; min: 13
C) max: 45; min: 13   D) max: 38; min: 7

Answer: C

Explanation: A)
                 B)
                 C)
                 D)

The following double-bar graph illustrates the revenue for a company for the four quarters of the year for two different years. Use the graph to answer the question.
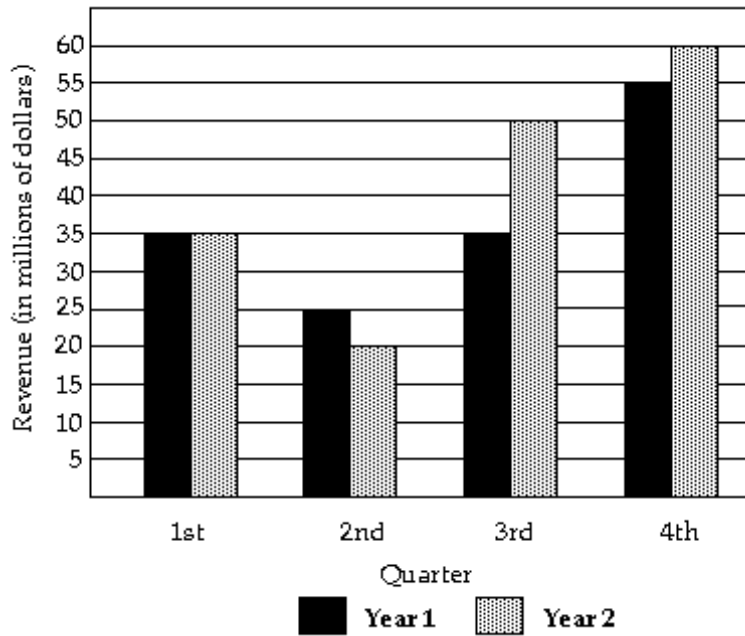
71) In what quarter was the revenue the least for Year 1?   71) _____
   A) second quarter   B) fourth quarter   C) first quarter   D) third quarter

   Answer: A
   Explanation: A)
                   B)
                   C)
                   D)

72) In what quarter was the revenue the greatest for Year 1?   72) _____
   A) second quarter   B) fourth quarter   C) third quarter   D) first quarter

   Answer: B
   Explanation: A)
                   B)
                   C)
                   D)

Provide an appropriate response.

73) A researcher records the number of employees of each of the IT companies in the town of Westmoore. The results are summarized in the table.

73) _____

Number of Employees	Number of IT Companies
0 - 249	32
250 - 499	24
500 - 749	5
750 - 999	7
1000 - 1249	10

Find the class width.

A) 250   B) 5   C) 1249   D) 249.5

Answer: A

Explanation: A)
            B)
            C)
            D)

74) Determine the number of classes in the frequency table below.

74) _____

Class	Frequency
17-18	7
19-20	2
21-22	6
23-24	4
25-26	1

A) 20   B) 2   C) 5   D) 6

Answer: C

Explanation: A)
            B)
            C)
            D)

Construct a frequency distribution for the data using five classes. Describe the shape of the distribution.

75) The data set: weekly grocery bills (in dollars) for 20 randomly selected households

75) _____

135   120   115   132   136   124   119   145   98   110
125   120   115   130   140   105   116   121   125   108

A) uniform   B) bell shaped
C) skewed to the right   D) skewed to the left

Answer: B

Explanation: A)
            B)
            C)
            D)

Provide an appropriate response.

76) An ogive is a graph that represents cumulative frequencies or cumulative relative frequencies. The   76) _____
points labeled on the horizontal axis are the

   A) Upper class limits   B) Frequencies

   C) Lower class limits   D) Midpoints

Answer: A

Explanation: A)

                          B)

                          C)

                          D)

The pie chart shows the percentage of votes received by each candidate in the student council presidential election. Use the pie chart to answer the question.

77)   77) _____

Student Council President
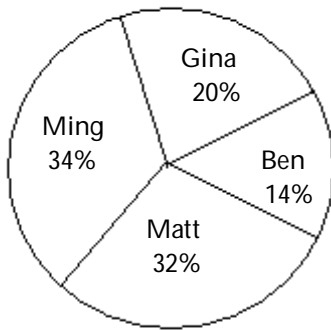
300 total votes

What percent of the votes did Ben and Gina receive together?

   A) 20%   B) 14%   C) 34%   D) 66%

Answer: C

Explanation: A)

                          B)

                          C)

                          D)

Explain what is misleading about the graphic.

78)
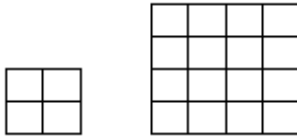
The volume of our sales has doubled!!!
   A) The length of a side has doubled, but the area has been multiplied by 4.
   B) The graphic is not misleading.
   C) The length of a side has doubled, but the area has been unchanged.
   D) The length of a side has doubled, but the area has been multiplied by 8.

Answer: A
Explanation: A)
                B)
                C)
                D)

Provide an appropriate response.

79) A two-pound bag of assorted candy contained 100 caramels, 83 mint patties, 93 chocolate squares, 80 nut clusters, and 79 peanut butter taffy pieces. To create a pie chart of this data, the angle for the slice representing each candy type must be computed. What is the degree measure of the slice representing the mint patties rounded to the nearest degree?
   A) 5°   B) 69°   C) 52°   D) 19°

Answer: B
Explanation: A)
                B)
                C)
                D)

80) The Excel frequency bar graph below describes the employment status of a random sample of U.S. adults. What is the percentage of those having no job?

Frequency Bar Graph
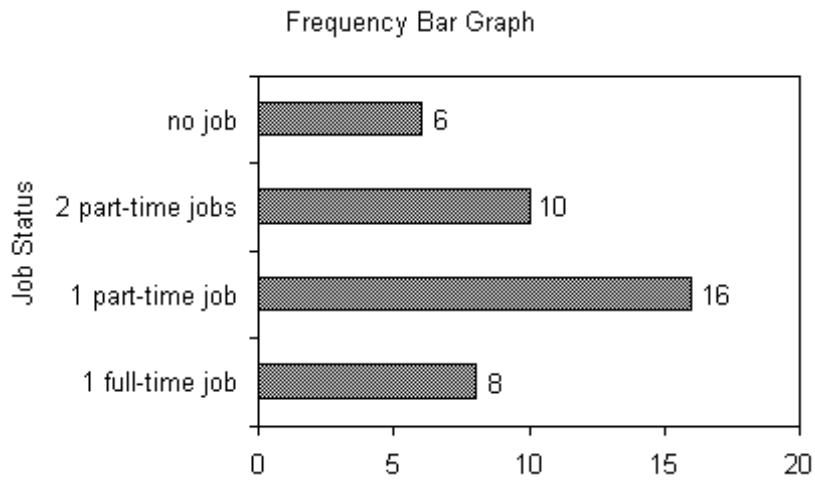
A) cannot determine   B) 40%
C) 15%   D) 20%

Answer: C
Explanation: A)
                B)
                C)
                D)

The bar graph shows the number of tickets sold each week by the garden club for their annual flower show.

Number of Tickets Sold Each Week
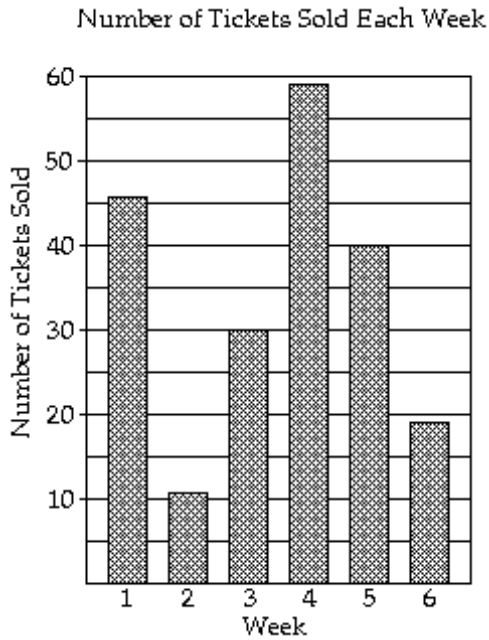
81) During which week was the fewest number of tickets sold?   81) _____
   A) week 6   B) week 5   C) week 2   D) week 4

   Answer: C
   Explanation: A)
                   B)
                   C)
                   D)

82) During which week was the most number of tickets sold?   82) _____
   A) week 5   B) week 4   C) week 1   D) week 2

   Answer: B
   Explanation: A)
                   B)
                   C)
                   D)

Provide an appropriate response.

83) Find the class width for the frequency table below.   83) _____

Class	Frequency
8-9	3
10-11	1
12-13	3
14-15	6
16-17	2

A) 1.5   B) 2.5   C) 1   D) 2

Answer: D

Explanation: A)
                B)
                C)
                D)

84) The table below summarizes the weights of the almonds (in grams) in a one-pound bag. What is   84) _____
the class width?

Weight (g)	Frequency
0.7585 - 0.8184	1
0.8185 - 0.8784	1
0.8785 - 0.9384	1
0.9385 - 0.9984	3
0.9985 - 1.0584	157
1.0585 - 1.1184	171
1.1185 - 1.1784	8

A) 0.4   B) 0.059   C) 0.408   D) 0.06

Answer: D

Explanation: A)
                B)
                C)
                D)

Construct a frequency distribution for the data using five classes. Describe the shape of the distribution.

85) The data set: ages of dishwashers (in years) in 20 randomly selected households   85) _____

    12   6 4   9 11 1 7 8 9 8
     9 13 5 15   7 6 8 8 2 1

A) skewed to the right   B) skewed to the left
C) uniform   D) bell shaped

Answer: D

Explanation: A)
                B)
                C)
                D)

86) The data set: Pick Three Lottery Outcomes for 10 Consecutive Weeks   86) _____

    3 6 7 6 0 6 1 7 8 4

    1 5 7 5 9 1 5 3 9 9

    2 2 3 0 8 8 4 0 2 4

A) uniform   B) skewed to the left

C) bell shaped   D) skewed to the right

Answer: A

Explanation: A)

                   B)

                   C)

                   D)

Provide an appropriate response.

87) Given the bar graph shown below, the Pareto chart that would best represent the data should have   87) _____
the bars in the following order.
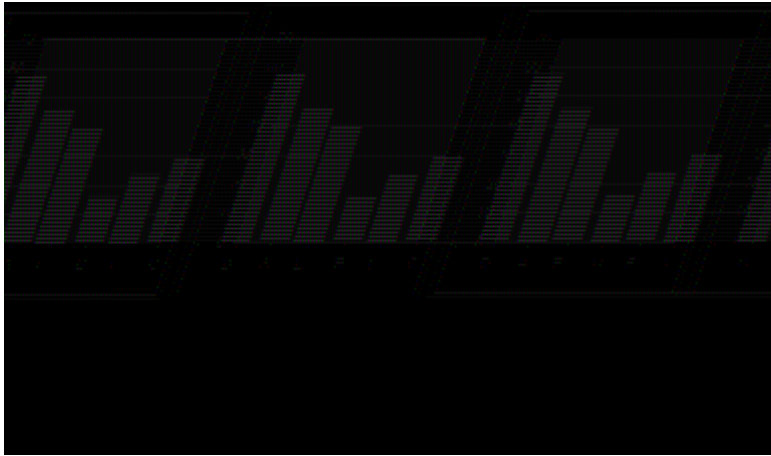
A) D A E C F B   B) B F E D A C   C) B F C E A D   D) C A D E F B

Answer: A

Explanation: A)

                   B)

                   C)

                   D)

Explain what is misleading about the graphic.

88)   2012 DUI Figures for State County   88) _____
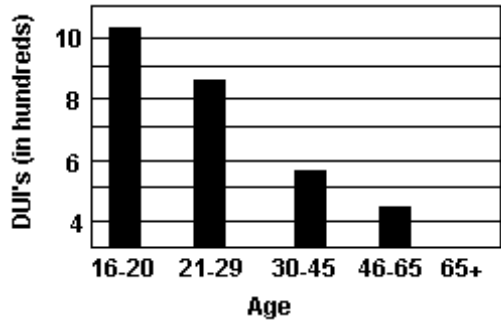
A) The horizontal scale does not begin at zero.
B) The graphic may give the impression that drivers over age 65 had no DUI's in 2012.
C) The graphic only includes information for one year.
D) The graphic is not misleading.

Answer: B
Explanation: A)
                    B)
                    C)
                    D)

Provide an appropriate response.

89) Retailers are always interested in determining why a customer selected their store to make a   89) _____
purchase. A sporting goods retailer conducted a customer survey to determine why its customers
shopped at the store. The results are shown below. What percentage of the customers responded
that the merchandise was the reason they shopped at the store? Round to the nearest whole percent

A) 43%   B) 29%   C) 30%   D) 50%

Answer: A
Explanation: A)
                    B)
                    C)
                    D)

1)

2)
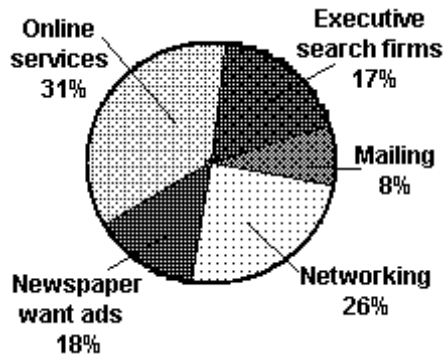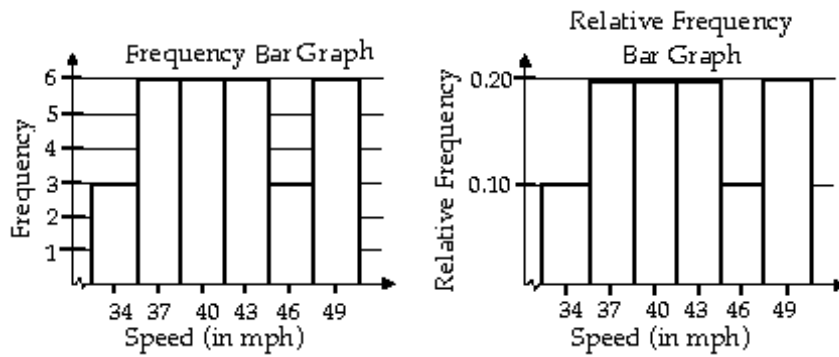
3)
```
6 | 7 7 8 8 8 8 8 9 9 9 9 9
7 | 0 0 0 0 0 1 1 1 1 1 1 1 1 2 2 3 3 4 4
```

4)

5)

6)

7)

8) symmetric

9)

Frequency Polygon
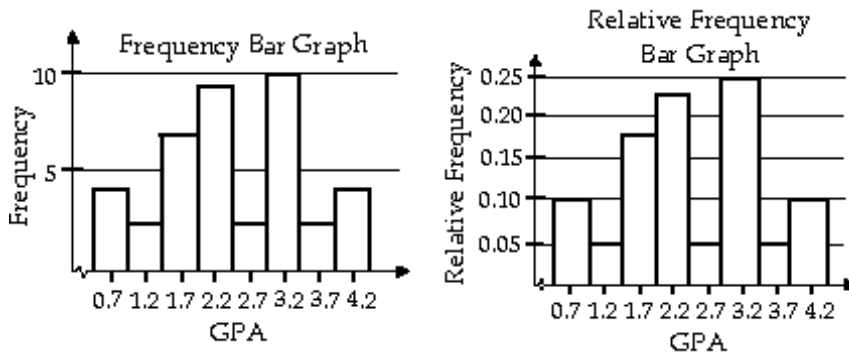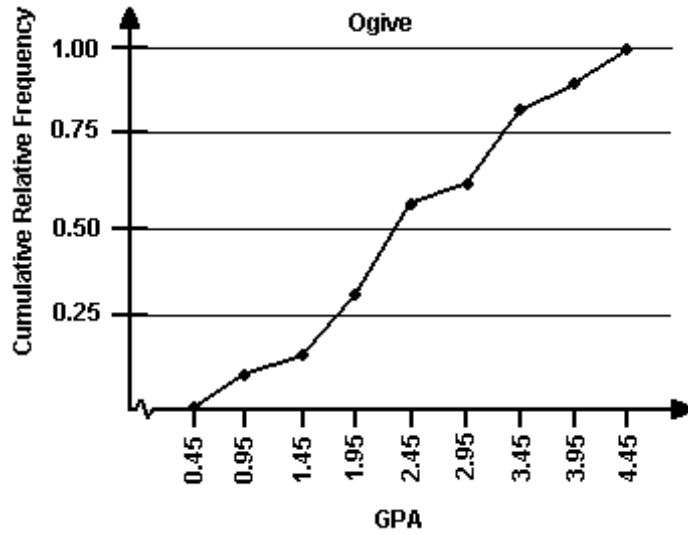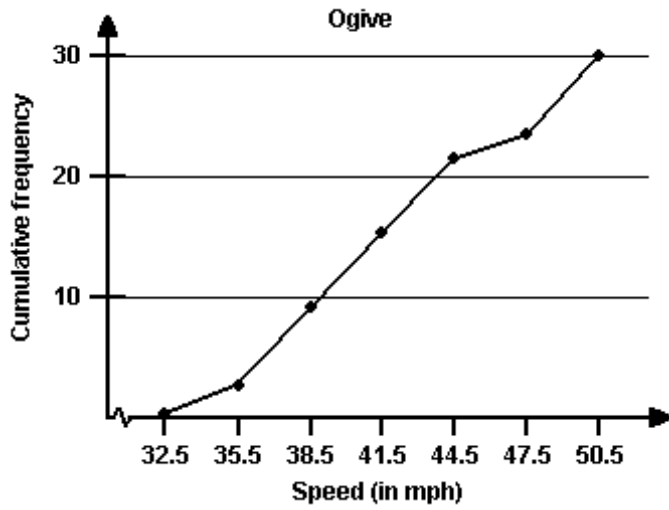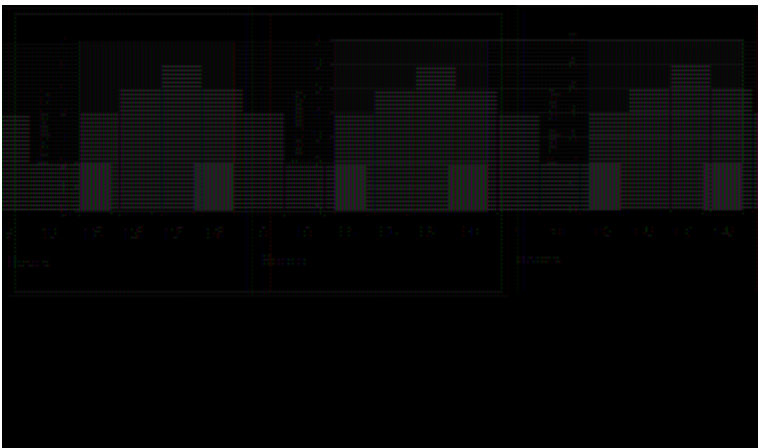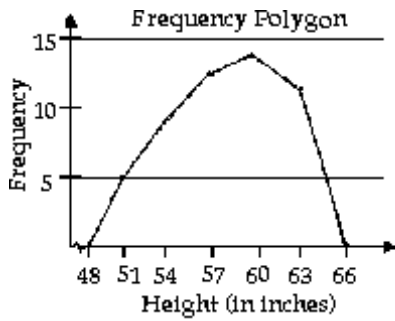
10) roughly 3 times larger

11)

Commute Time (in min)	Frequency	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency
67.0–68.4	6	0.20	6	0.20
68.5–69.9	5	0.167	11	0.367
70.0–71.4	13	0.433	24	0.80
71.5–72.9	2	0.067	26	0.867
73.0–74.4	4	0.133	30	1

12)

13)

Ogive

14)

Precip (in.)	Frequency	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency
0.5-0.9	4	0.10	4	0.10
1.0-1.4	2	0.05	6	0.15
1.5-1.9	7	0.175	13	0.325
2.0-2.4	9	0.225	22	0.55
2.5-2.9	2	0.05	24	0.60
3.0-3.4	10	0.25	34	0.85
3.5-3.9	2	0.05	36	0.90
4.0-4.4	4	0.10	40	1

15) a.   95-104, 105-114, 115-124, 125-134, 135-144

b.

Weight (lb)	Tally	Frequency
95-104	II	2
105-114	III	3
115-124	IIIII	5
125-134	III	3
135-144	II	2

16)
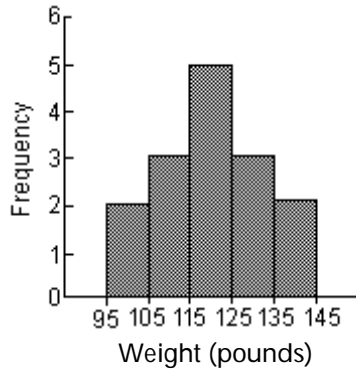
17) 5.1, 6.9, 7.0, 7.1, 8.3, 9.1, 9.9, 10.6, 10.9, 11.6, 11.7, 11.9, 12.2, 12.3, 12.8, 12.9, 13.6, 13.9

18)
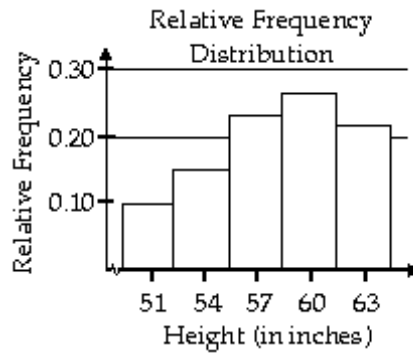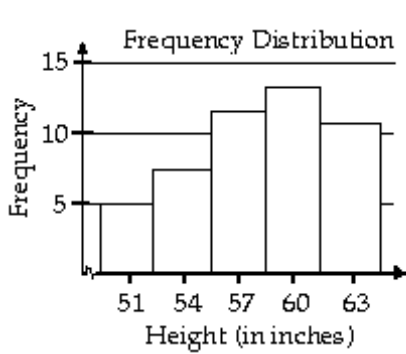
19)
```
 0 | 0 9 9
 1 |
 2 | 5
 3 |
 4 |
 5 | 6 6
 7 |
 8 | 8
 9 | 1
10| 2
11| 4
12| 2
13|
14|
15| 0
16| 5
```

20)
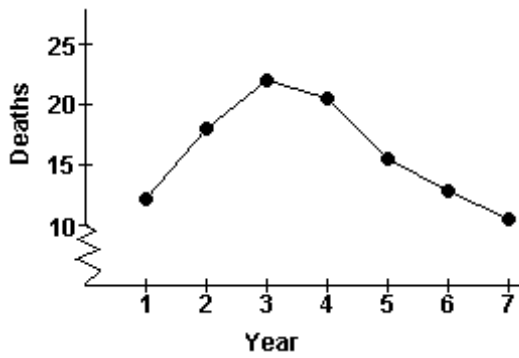
From Year 1 to Year 3, there was an increasing trend in the number of collision deaths. Subsequently, there was a decreasing trend.

21)

Precip.	Frequency	Relative Frequency
0.5–0.9	4	0.10
1.0–1.4	2	0.05
1.5–1.9	7	0.175
2.0–2.4	9	0.225
2.5–2.9	2	0.05
3.0–3.4	10	0.25
3.5–3.9	2	0.05
4.0–4.4	4	0.10

22)

23)

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

24)
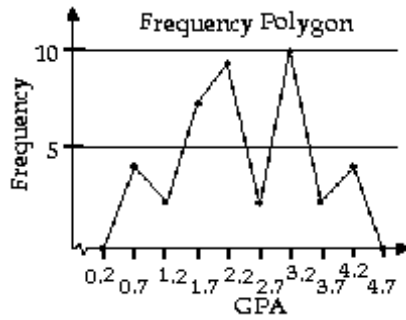
25) In general, there is an increasing trend in high-energy drinks consumption of adult Americans. However, beginning in Year 9, there is sign of a decreasing trend.
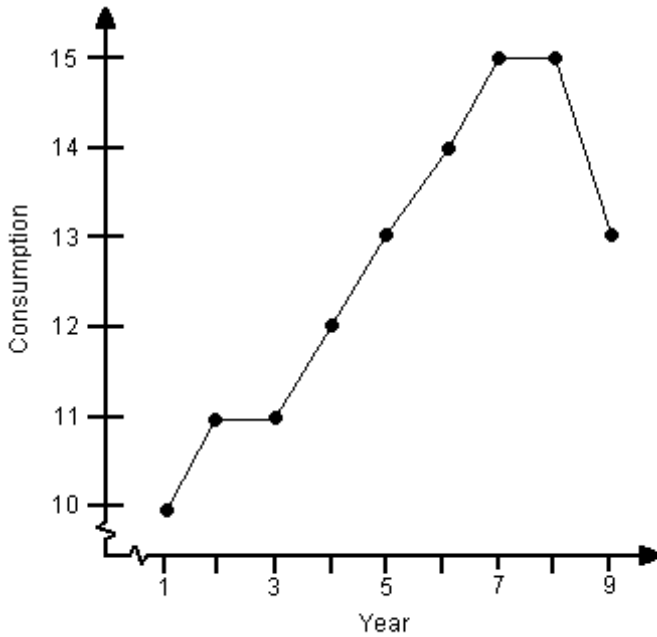
26)

Measure	Frequency
95	5
96	6
97	5
98	3
99	3
100	3

27)
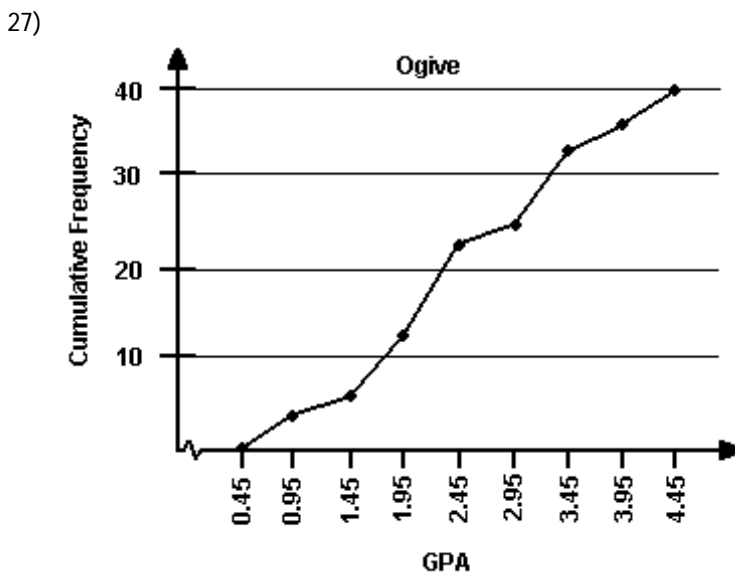
28) 76, 88, 90, 99, 104, 111, 118, 126, 129, 136, 137, 139, 142, 143, 148, 149, 157, 159

29)

Hours On Net	Number of HS Students
5	4
6	5
7	6
8	5
9	4
10	2
11	2
14	2

30)

Class	Frequency	Relative Frequency	Percentage
Large	345	0.190	19.0
Medium	830	0.456	45.6
Small	645	0.354	35.4
Total	1820	1.000	100.0

31) a) See graph below
b) The minimum score = 14
c) The university will accept 76.57% of the applicants.

Relative Frequency Bar Graph

32)

Speed (in mph)	Frequency	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency
33-35	3	0.10	3	0.10
36-38	6	0.20	9	0.30
39-41	6	0.20	15	0.50
42-44	6	0.20	21	0.70
45-47	3	0.10	24	0.80
48-50	6	0.20	30	1

33)

34) The bar graph is misleading because the vertical axis starts at 60 instead of 0. This tends to indicate that the number of accidents decreased at a faster rate than they actually did. The graph would be less misleading if the vertical scale began at 0 or if a symbol were used to clearly indicate that the vertical scale is truncated and has a gap.
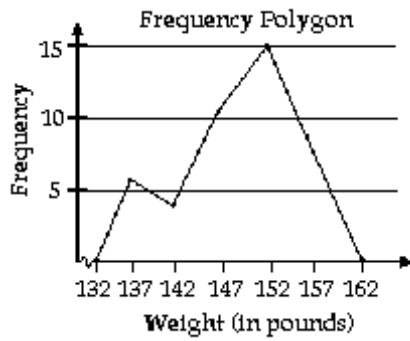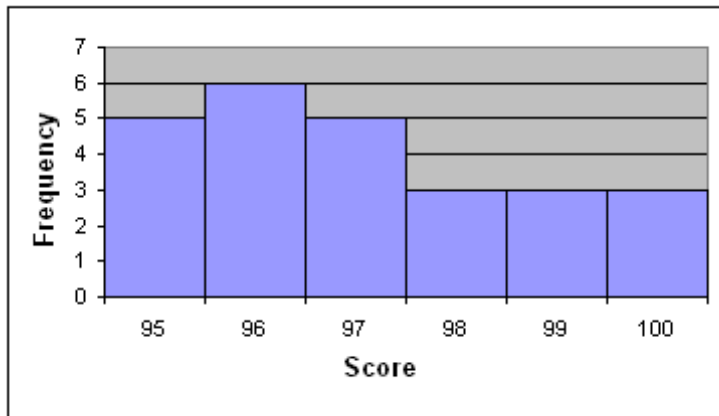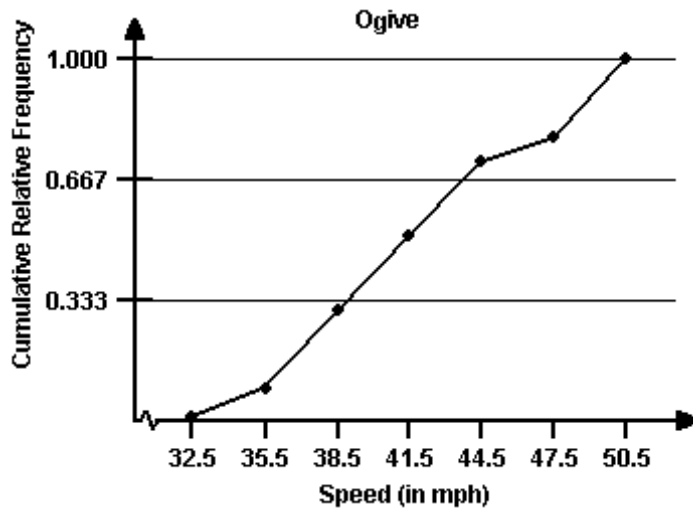
35)
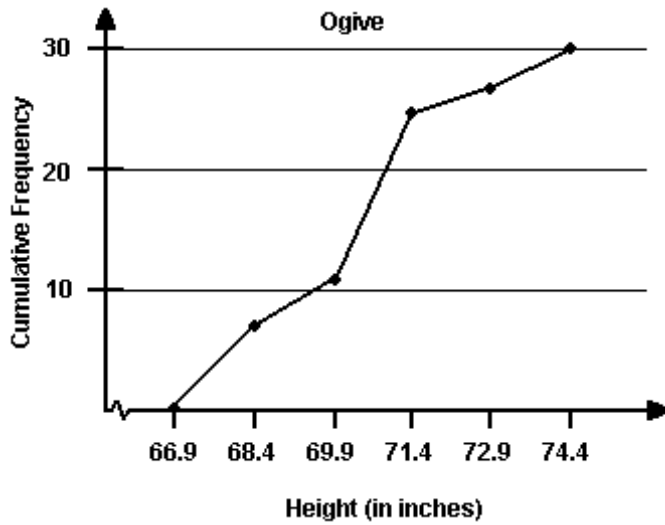
36)
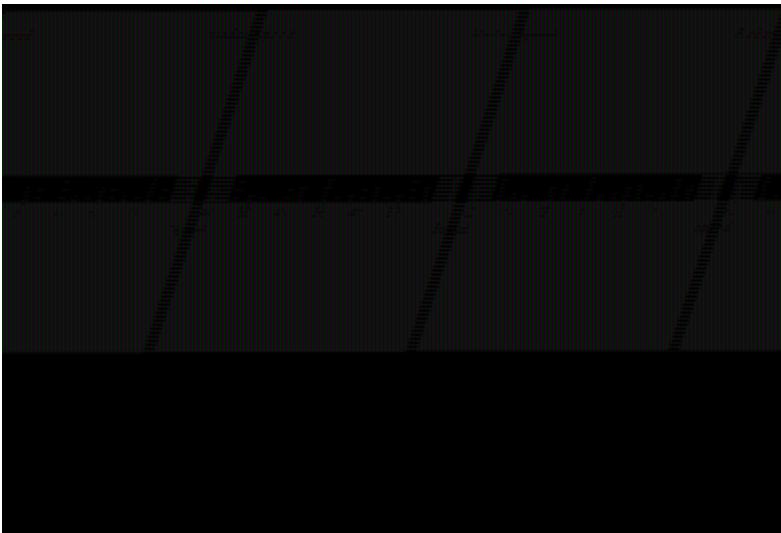
37)

38)

39)
```
0 | 3 9 9
1 |
2 | 2
3 | 2 3 9 9
4 | 2 9
5 | 2 8
6 |
7 | 0
```

40)

Commute Time (in min)	Frequency	Relative Frequency
67.0-68.4	6	0.200
68.5-69.9	5	0.167
70.0-71.4	13	0.433
71.5-72.9	2	0.067
73.0-74.4	4	0.133

41)

42)

Color	Frequency	Relative Frequency
purple	3	0.15
blue	4	0.20
yellow	5	0.25
red	7	0.35
green	1	0.05

43)

Util. Bill (dollars)	Frequency	Relative Frequency
33-35	3	0.10
36-38	6	0.20
39-41	6	0.20
42-44	6	0.20
45-47	3	0.10
48-50	6	0.20

44)

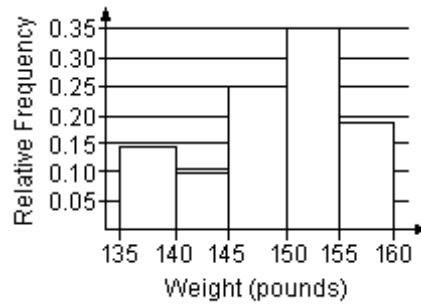| Response	Frequency	Relative Frequency
Strongly Favor	35	0.175
Favor	13	0.065
Neutral	7	0.035
Oppose	25	0.125
Strongly Oppose	120	0.6

45)

Number of Cousins
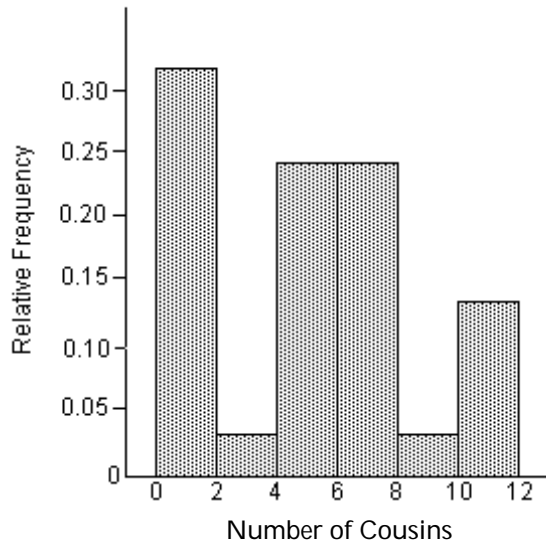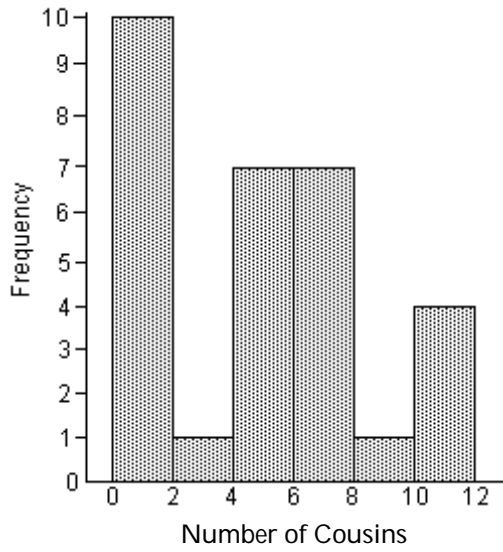
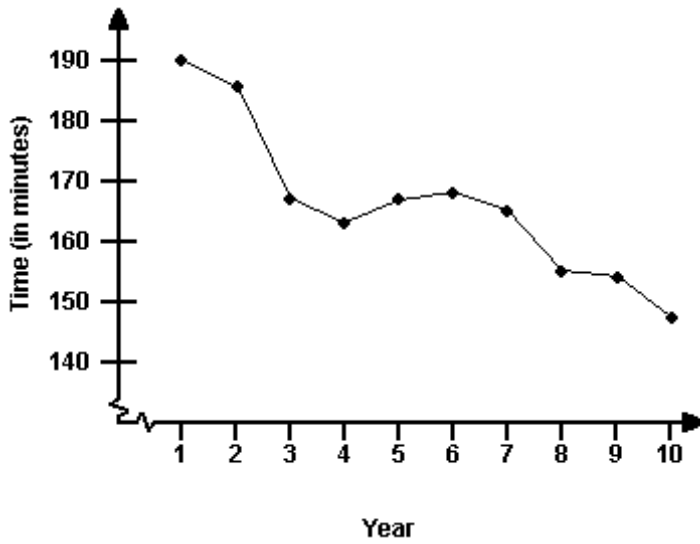46) Frequency Histogram: Relative Frequency Histogram:
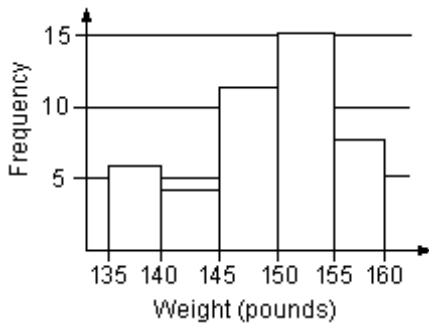
47) The stem will consist of the tens digit and range from 1 to 9. The leaves will be drawn in the appropriate stems based on the data values.

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

48)

Number of Cousins

49)

Year

In general, there was a decreasing trend in women's Boston marathon times.
50) B
51) A
52) B
53) C
54) B
55) B
56) B
57) C
58) A
59) C
60) A
61) B
62) A

63) A
64) D
65) D
66) D
67) A
68) A
69) D
70) C
71) A
72) B
73) A
74) C
75) B
76) A
77) C
78) A
79) B
80) C
81) C
82) B
83) D
84) D
85) D
86) A
87) A
88) B
89) A