

Exam

Name _____

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

Provide an appropriate response. Round relative frequencies to thousandths.

- 1) 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. 1) _____

<u>Class</u>	<u>Frequency</u>
Large	345
Medium	830
Small	645

Answer:

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

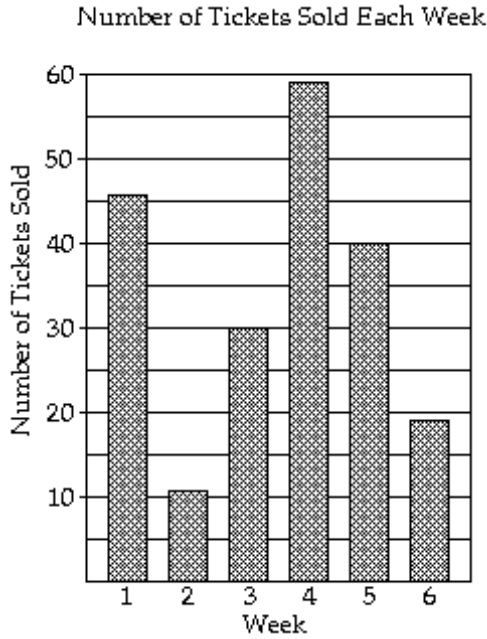
- 2) The results of a survey about a recent judicial appointment are given in the table below. Construct a relative frequency distribution. 2) _____

<u>Response</u>	<u>Frequency</u>
Strongly Favor	38
Favor	37
Neutral	20
Oppose	21
Strongly Oppose	84

Answer:

<u>Response</u>	<u>Frequency</u>	<u>Relative Frequency</u>
Strongly Favor	38	0.19
Favor	37	0.185
Neutral	20	0.1
Oppose	21	0.105
Strongly Oppose	84	0.42

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



- 6) During which week was the most number of tickets sold?
A) week 5 B) week 4 C) week 1 D) week 2 6) _____

Answer: B

- 7) During which week was the fewest number of tickets sold?
A) week 5 B) week 2 C) week 6 D) week 4 7) _____

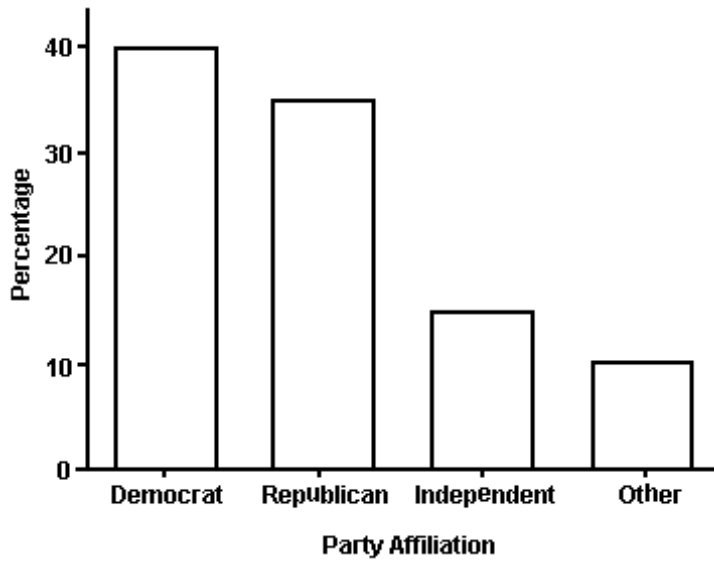
Answer: B

- 8) Approximately how many tickets were sold during week 6?
A) 19 tickets B) 11 tickets C) 30 tickets D) 46 tickets 8) _____

Answer: A

11) 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)?

11) _____

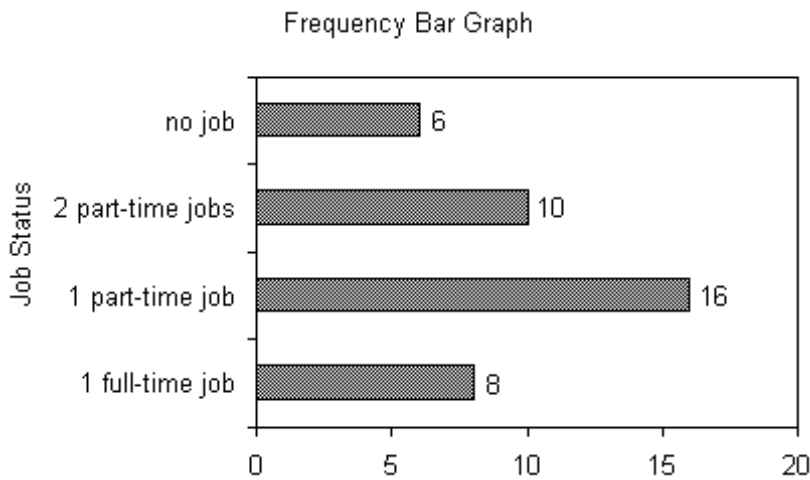


- A) 40% B) 75% C) 35% D) 25%

Answer: B

12) 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?

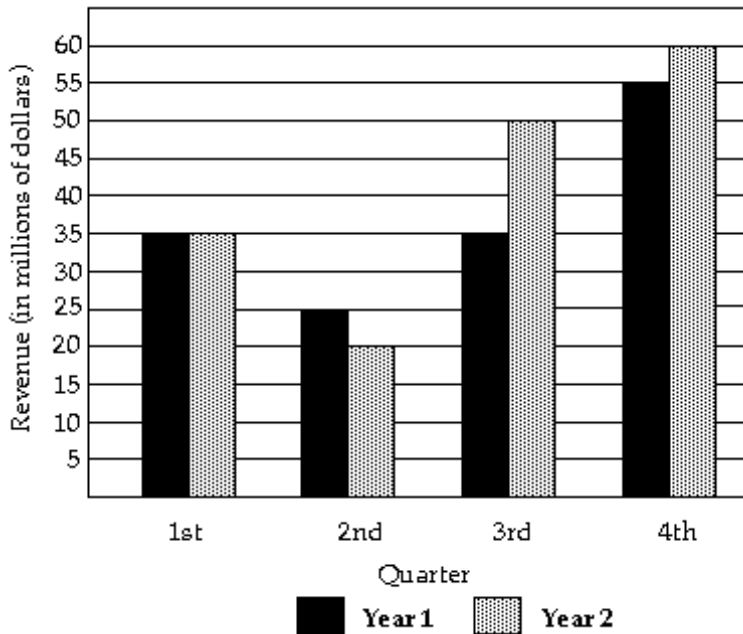
12) _____



- A) 20% B) 15%
 C) cannot determine D) 40%

Answer: B

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.



- 13) In what quarter was the revenue the greatest for Year 1? 13) _____
 A) fourth quarter B) third quarter C) first quarter D) second quarter

Answer: A

- 14) In what quarter was the revenue the least for Year 1? 14) _____
 A) first quarter B) second quarter C) fourth quarter D) third quarter

Answer: B

- 15) What was the revenue for the second quarter of Year 2? 15) _____
 A) \$25 million B) \$5 million C) \$4 million D) \$20 million

Answer: D

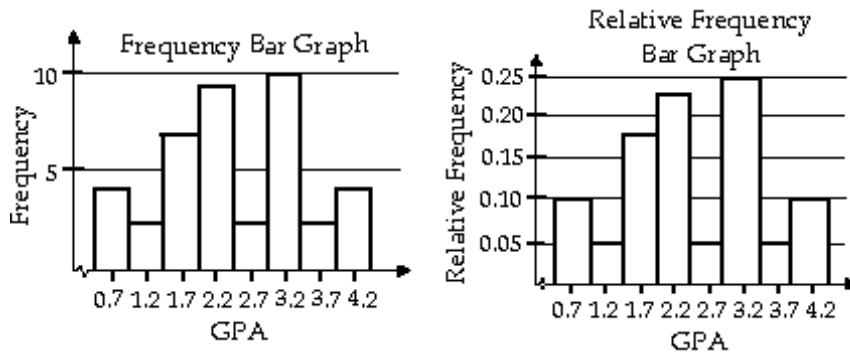
SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

- 16) The grade point averages for 40 evening students are listed below. Construct a frequency bar graph and a relative frequency bar graph. 16) _____

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

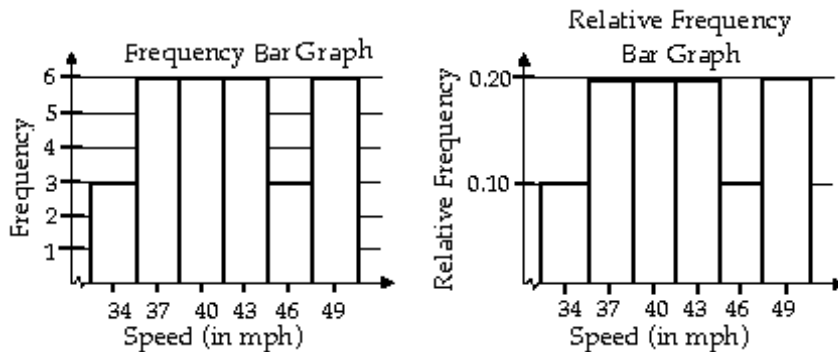
Answer:



- 17) 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. 17) _____

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

Answer:



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

18) _____

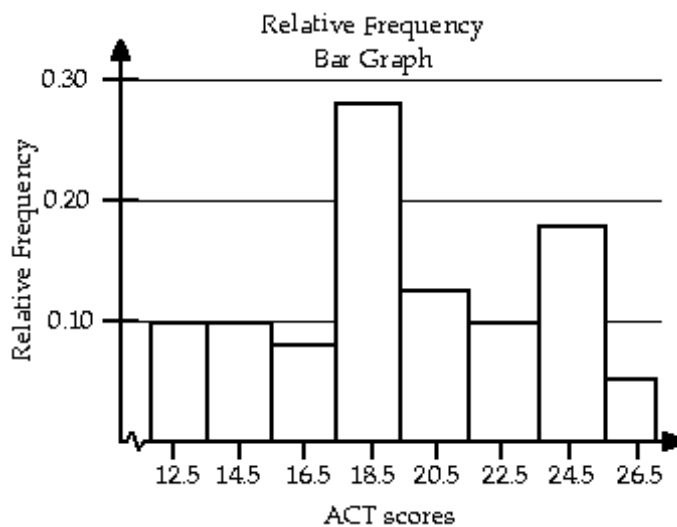
18 22 13 15 24 24 20 19 19 12
 16 25 14 19 21 23 25 18 18 13
 26 26 25 25 19 17 18 15 13 21
 19 19 14 24 20 21 23 22 19 17

- 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

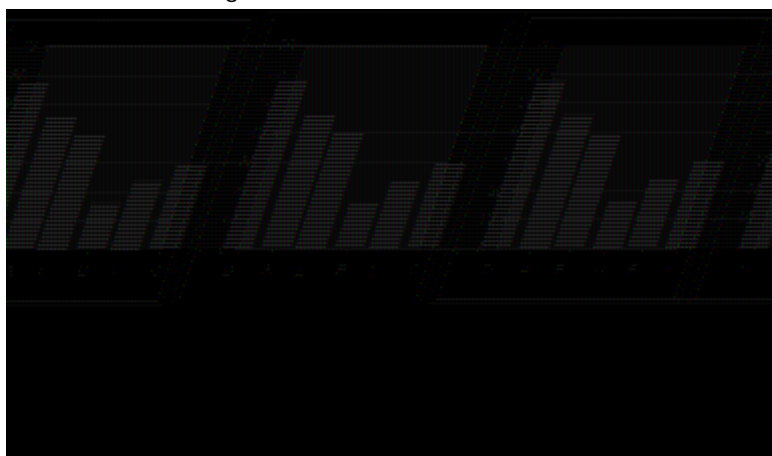
c) The university will accept 76.57% of the applicants.



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

19) Given the bar graph shown below, the Pareto chart that would best represent the data should have the bars in the following order.

19) _____



A) B F C E A D

B) C A D E F B

C) B F E D A C

D) D A E C F B

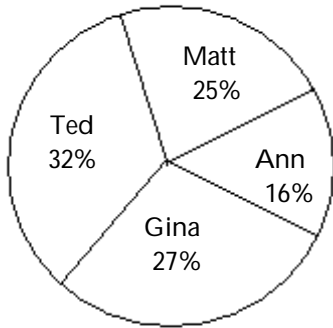
Answer: D

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.

20)

20) _____

Student Council President



700 total votes

Who got the most votes?

A) Ted

B) Ann

C) Matt

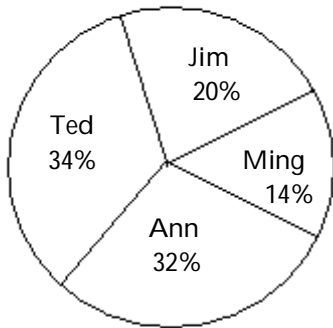
D) Gina

Answer: A

21)

21) _____

Student Council President



500 total votes

Who got the fewest votes?

A) Jim

B) Ming

C) Ann

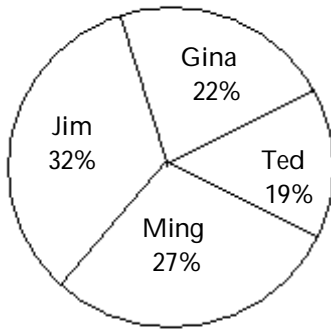
D) Ted

Answer: B

22)

22) _____

Student Council President



500 total votes

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

- A) 41% B) 19% C) 59% D) 22%

Answer: A

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

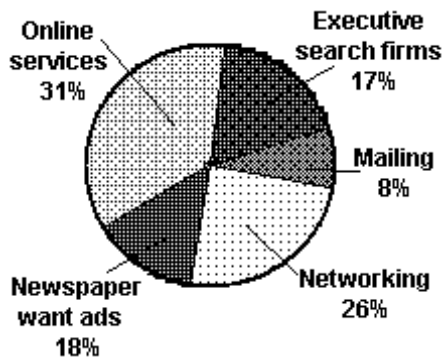
Construct a pie chart for the data. Label each category with its percentage.

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

23) _____

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

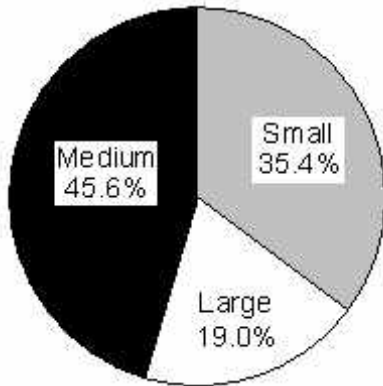
Answer:



24) 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. 24) _____

<u>Class</u>	<u>Frequency</u>
Large	345
Medium	830
Small	645

Answer:



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

Provide an appropriate response.

25) 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? 25) _____

- A) 69° B) 5° C) 52° D) 19°

Answer: A

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

Construct a frequency distribution for the data.

- 26) 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: 26) _____

14 22 16 19 16 14 16 15 13 19
17 15 15 14 17 16 13 13 18 15
13 15 22 17 14 18 14 17 16 15

Construct a frequency distribution for the data.

Answer:

Hours On Net	Number of HS Students
13	4
14	5
15	6
16	5
17	4
18	2
19	2
22	2

- 27) A sample of 25 service project scores is taken and is recorded below. Construct a frequency distribution for this data. 27) _____

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

Construct the specified histogram.

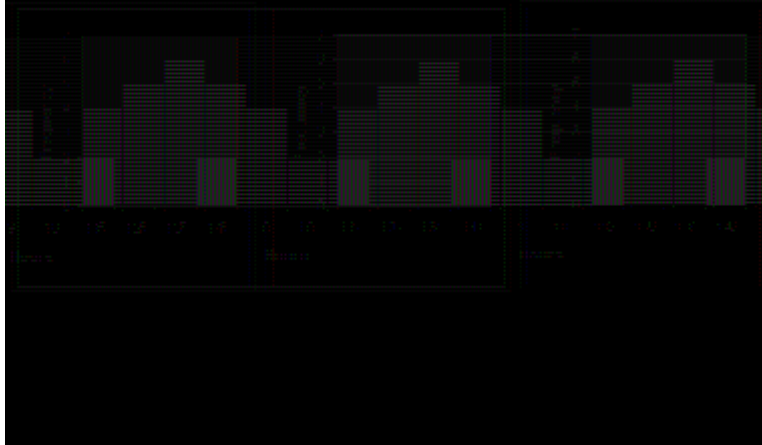
28) A random sample of 30 high school students is selected. Each student is asked how much time he or she spent on the Internet during the previous week. The following times (in hours) are recorded:

28) _____

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:

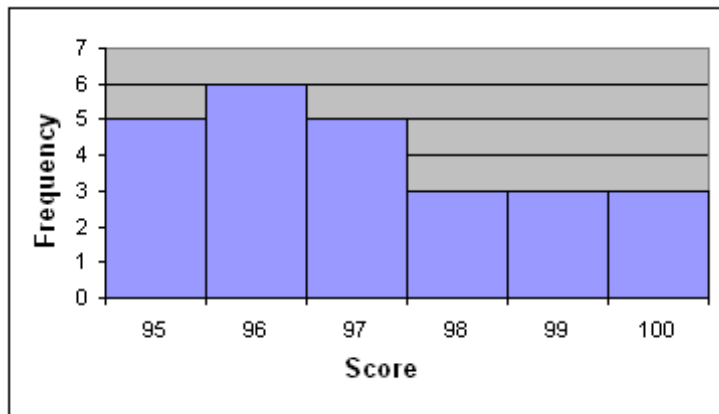


29) A sample of 25 community service projects is obtained and the scores are recorded. The results are shown below. Construct a frequency histogram for this data.

29) _____

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:



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

Provide an appropriate response.

- 30) The class width is the difference between 30) _____
A) The high and the low data values
B) Two successive lower class limits
C) The largest frequency and the smallest frequency
D) The upper class limit and the lower class limit of a class

Answer: B

- 31) Determine the number of classes in the frequency table below. 31) _____

Class	Frequency
23-24	7
25-26	2
27-28	6
29-30	4
31-32	1

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

Answer: A

- 32) Find the class width for the frequency table below. 32) _____

Class	Frequency
22-23	3
24-25	1
26-27	3
28-29	6
30-31	2

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

Answer: D

- 33) Use the following frequency distribution to determine the class limits of the third class. 33) _____

Class	Frequency
9-15	5
16-22	9
23-29	6
30-36	3
37-43	7
44-50	4

- A) lower limit: 22; upper limit: 30 B) lower limit: 23; upper limit: 29
C) lower limit: 23; upper limit: 30 D) lower limit: 22.5; upper limit: 29.5

Answer: B

34) 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.

34) _____

Number of Employees	Number of IT Companies
0 - 749	34
750 - 1499	24
1500 - 2249	9
2250 - 2999	7
3000 - 3749	5

Find the class width.

- A) 5 B) 3749 C) 749.5 D) 750

Answer: D

35) 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.

35) _____

Number of Employees	Number of IT Companies
0 - 399	32
400 - 799	21
800 - 1199	5
1200 - 1599	10
1600 - 1999	10

Find the class limits of the third class.

- A) lower limit: 799.5; upper limit: 1199.5 B) lower limit: 799; upper limit: 1200
 C) lower limit: 800; upper limit: 1199 D) lower limit: 800; upper limit: 1200

Answer: C

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

36) _____

Weight (lb)	Number of Babies
5.0 - 5.8	8
5.9 - 6.7	18
6.8 - 7.6	20
7.7 - 8.5	9
8.6 - 9.4	4

Find the class width.

- A) 0.85 lb B) 0.95 lb C) 0.9 lb D) 0.8 lb

Answer: C

37) The weights (in pounds) of babies born at St Mary's hospital last month are summarized in the table. 37) _____

Weight (lb)	Number of Babies
5.0 - 5.8	8
5.9 - 6.7	20
6.8 - 7.6	18
7.7 - 8.5	10
8.6 - 9.4	4

Find the class limits for the second class.

- A) lower limit: 5.9; upper limit: 6.8 B) lower limit: 5.85; upper limit: 6.75
 C) lower limit: 5.9; upper limit: 6.7 D) lower limit: 5.8; upper limit: 6.8

Answer: C

38) The table below summarizes the weights of the almonds (in grams) in a one-pound bag. What is the class width? 38) _____

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) 0.059 B) 0.06 C) 0.4 D) 0.408

Answer: B

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

Construct the requested frequency distribution.

39) The June precipitation amounts (in inches) for 40 cities are listed below. Construct a frequency distribution and a relative frequency distribution using eight classes. 39) _____

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

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

41) The March utility bills (in dollars) of 30 homeowners are listed below. Construct a frequency distribution and a relative frequency distribution 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:

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

Provide an appropriate response.

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

42) _____

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.

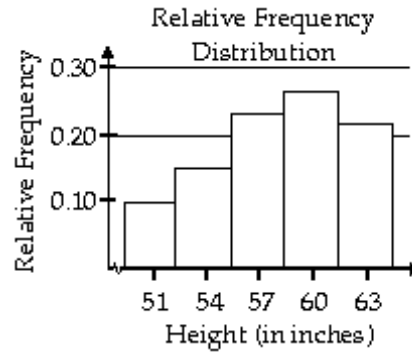
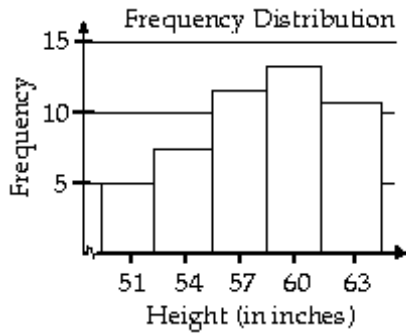
Weight (lb)	Tally	Frequency
95-104	II	2
105-114	III	3
115-124	IIII	5
125-134	III	3
135-144	II	2

Construct the specified histogram.

43) For the data below, construct a frequency distribution and a relative frequency distribution. 43) _____

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

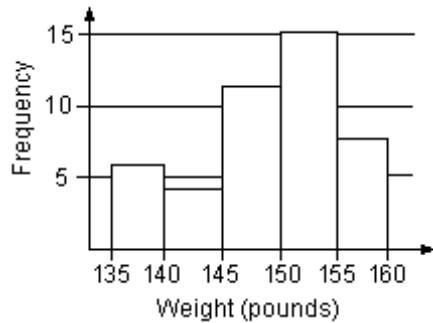
Answer:



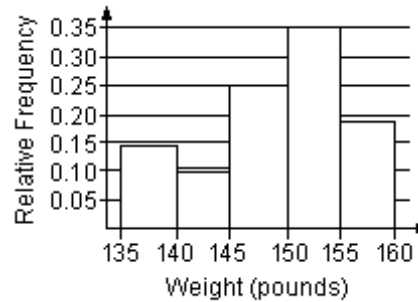
44) For the data below, construct a frequency histogram and a relative frequency histogram. 44) _____

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

Answer: Frequency Histogram:



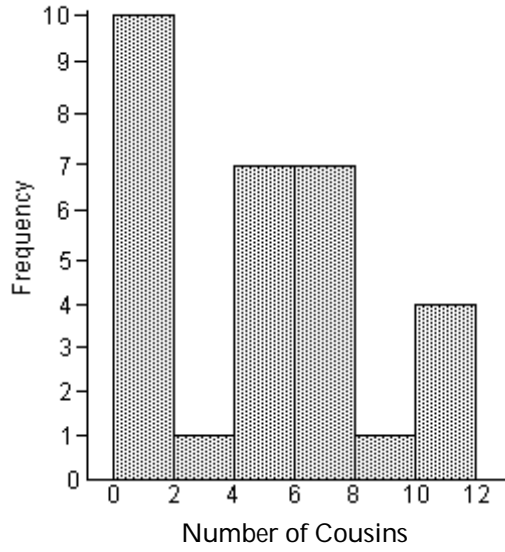
Relative Frequency Histogram:



45) The 30 students in Mrs Harrison's literature class were asked how many cousins they had. 45) _____
 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:

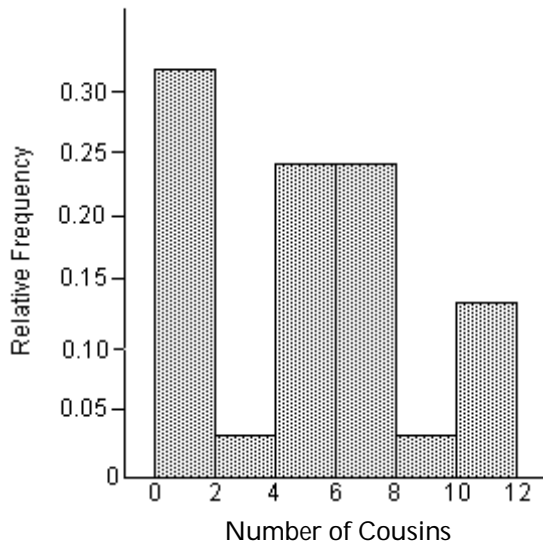


46) The 30 students in Mrs Harrison's literature class were asked how many cousins they had. The results are shown below. Construct a relative-frequency histogram using a class width of 2.

46) _____

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:

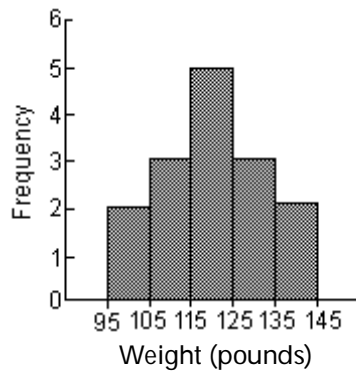


47) A sample of 15 Girl Scouts was selected and their weights (in pounds) were recorded. The results are listed below. Construct a frequency histogram for the data using a class width of 10 and using 95 as the lower limit of the first class.

47) _____

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

Answer:



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

Provide an appropriate response.

- 48) What is the difference between a bar chart and a histogram? 48) _____
- A) The bars in a bar chart may be of various widths while the bars of a histogram are all the same width.
 - B) There is no difference between these two graphical displays.
 - C) The bars on a bar chart do not touch while the bars of a histogram do touch.
 - D) The bars in a bar chart are all the same width while the bars of a histogram may be of various widths.

Answer: C

- 49) For the stem-and-leaf plot below, what are the maximum and minimum entries? 49) _____

```
1 | 3 4
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 | 1 3
```

- A) max: 41; min: 13
- B) max: 38; min: 7
- C) max: 43; min: 13
- D) max: 47; min: 14

Answer: C

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

Determine the original set of data.

- 50) 50) _____

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

Legend: 5|1 represents 51

Answer: 71, 87, 90, 99, 102, 110, 111, 126, 129, 136, 137, 139, 142, 143, 148, 149, 150, 159

51)

Stem	Leaves
5	5
6	4
7	0 1
8	5
9	2 4
10	6 9
11	6 7 9
12	2 3 8 9
13	7 9

Legend: 5|5 represents 5.5

Answer: 5.5, 6.4, 7.0, 7.1, 8.5, 9.2, 9.4, 10.6, 10.9, 11.6, 11.7, 11.9, 12.2, 12.3, 12.8, 12.9, 13.7, 13.9

51) _____

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

52) 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

52) _____

53) 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

53) _____

54) The heights (in inches) of 30 mechanics are listed below. Construct a stem-and-leaf plot for the data. 54) _____

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 1 1 1 1 1 1 1 2 2 3 3 4 4
```

55) The March utility bills (in dollars) of 30 homeowners are listed below. Construct a stem-and-leaf plot for the data. 55) _____

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
```

56) The scores for an economics test are listed below. Create a stem-and-leaf plot for the data. 56) _____

87 76 91 77 90 96 88 85 66 89
 79 95 51 94 83 88 82 59 13 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	3
2	
3	
4	
5	1 9
6	6 9
7	6 7 9
8	7 8 5 9 3 8 2
9	1 0 6 5 4

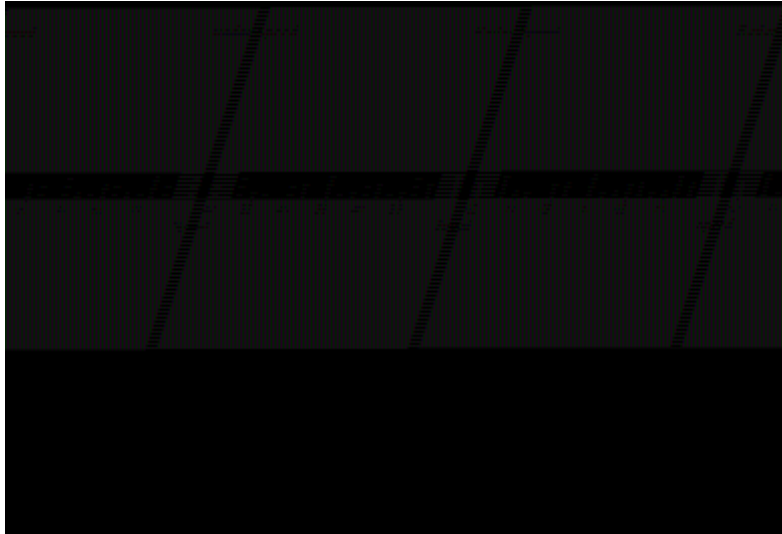
Construct a dot plot for the data.

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

57) _____

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:



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

58) _____

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:



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

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

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

59) _____

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 right
C) skewed to the left
D) bell shaped

Answer: A

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

60) _____

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) uniform
C) bell shaped
D) skewed to the left

Answer: C

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

61) _____

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

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

Answer: D

Describe the shape of the distribution.

62)

62) _____

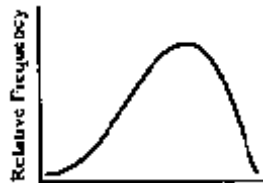


- A) skewed to the left
B) skewed to the right
C) bell shaped
D) uniform

Answer: B

63)

63) _____



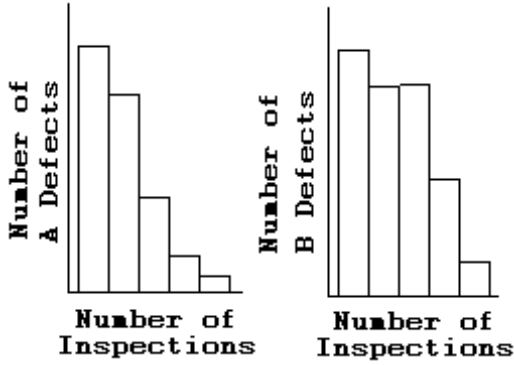
- A) uniform
B) skewed to the left
C) skewed to the right
D) bell shaped

Answer: B

Use the histograms shown to answer the question.

64)

64) _____



Is either histogram symmetric?

- A) Both are symmetric.
- B) The second is symmetric, but the first is not symmetric.
- C) The first is symmetric, but the second is not symmetric.
- D) Neither is symmetric.

Answer: D

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

Describe the shape of the distribution.

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

65) _____

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

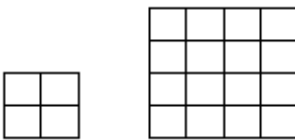
Answer: symmetric

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

Explain what is misleading about the graphic.

66)

66) _____



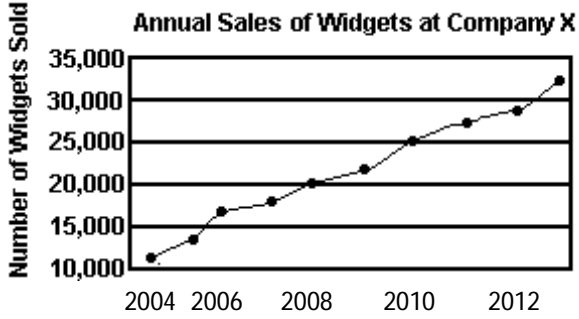
The volume of our sales has doubled!!!

- 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 multiplied by 8.
- D) The length of a side has doubled, but the area has been unchanged.

Answer: A

67)

67) _____

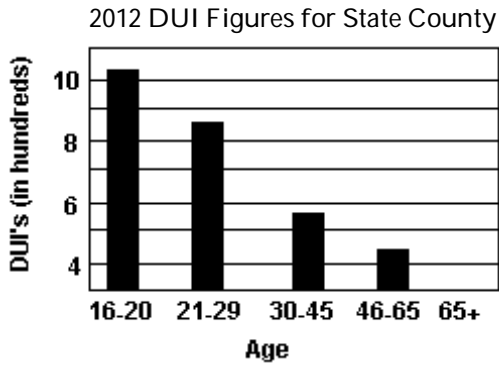


- A) The trend is depicted in the wrong direction.
- B) The graphic is not misleading.
- C) The horizontal label is incomplete.
- D) The vertical scale does not begin at zero.

Answer: D

68)

68) _____



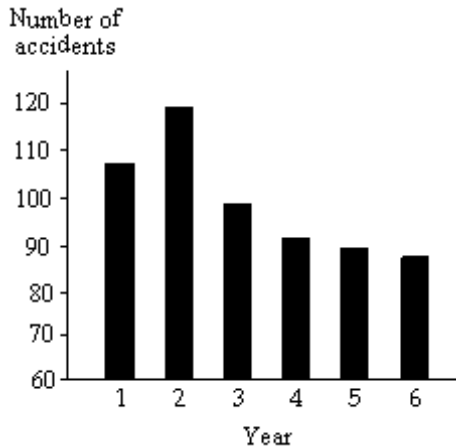
- A) The graphic may give the impression that drivers over age 65 had no DUI's in 2012.
- B) The horizontal scale does not begin at zero.
- C) The graphic is not misleading.
- D) The graphic only includes information for one year.

Answer: A

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

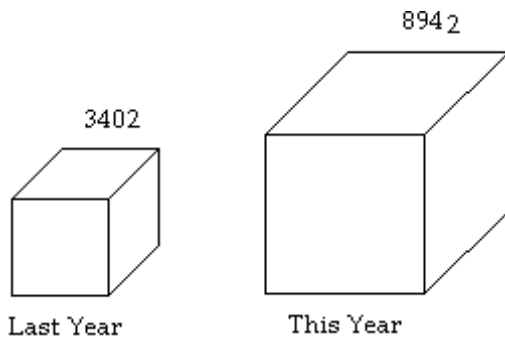
Provide an appropriate response.

- 69) The following graph shows the number of car accidents occurring in one city in each of the 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? 69) _____



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.

- 70) 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. 70) _____



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

Answer: roughly 3 times larger