Determine whether the underlined value is a parameter or a statistic.

    1) In a survey conducted in the town of Atherton, <u>28%</u> of adult respondents reported that they had been involved in at least one car accident in the past ten years.

    2) <u>26.2%</u> of the mayors of cities in a certain state are from minority groups.

Provide an appropriate response.

    3) Parking at a large university has become a very big problem. University administrators are interested in determining the average parking time (e.g. the time it takes a student to find a parking spot) of its students. An administrator inconspicuously followed 260 students and carefully recorded their parking times. Identify the population of interest to the university administration.

Classify the variable as qualitative or quantitative.

    4) the colors of book covers on a bookshelf

    5) the number of calls received at a company's help desk

Determine whether the quantitative variable is discrete or continuous.

    6) the number of bottles of juice sold in a cafeteria during lunch

    7) the weight of a player on the wrestling team

Provide an appropriate response.

    8) Classify the following random variable: telephone area codes

    9) A student is asked to rate a guest speaker's ability to communicate on a scale of poor–average–good–excellent. The student is to fill in a corresponding circle on a bubble form. This is an example of collecting what type of data?

Determine whether the study depicts an observational study or an experiment.

    10) A medical researcher obtains a sample of adults suffering from diabetes. She randomly assigns 96 people to a treatment group and 96 to a placebo group. The treatment group receives a medication over a period of three months and the placebo group receives a placebo over the same time frame. At the end of three months the patients' symptoms are evaluated.

Determine what type of observational study is described. Explain.

    11) Researchers wanted to determine whether there was an association between city driving and stomach ulcers. They selected a sample of 900 young adults and followed them for a twenty–year period. At the start of the study none of the participants was suffering from a stomach ulcer. Each person kept track of the number of hours per week they spent driving in city traffic. At the end of the study each participant underwent tests to determine whether they were suffering from a stomach ulcer. The researchers analyzed the results to determine whether there was an association between city driving and stomach ulcers.

Identify the type of sampling used.

12) Thirty-five math majors, 47 music majors and 51 history majors are randomly selected from 376 math majors, 591 music majors and 267 history majors at the state university. What sampling technique is used?

13) Thirty-five math majors, 23 music majors and 61 history majors are randomly selected from 351 math majors, 583 music majors and 365 history majors at the state university. What sampling technique is used?

14) Every fifth adult entering an airport is checked for extra security screening. What sampling technique is used?

15) At a local technical school, five auto repair classes are randomly selected and all of the students from each class are interviewed. What sampling technique is used?

Provide an appropriate response.

16) An online newspaper conducted a survey by asking, "Do you support the lowering of air quality standards if it could cause the death of millions of innocent people from pollution related diseases?" Determine the type of bias.

17) A local hardware store wants to know if its customers are satisfied with the customer service they receive. The store posts an interviewer at the front of the store to ask the first 55 shoppers who leave the store, "How satisfied, on a scale of 1 to 10, were you with this store's customer service?" Determine the type of bias.

Identify the type of sampling used.

18) Every fifth adult entering an airport is checked for extra security screening. What sampling technique is used?

19) At a local technical school, five auto repair classes are randomly selected and all of the students from each class are interviewed. What sampling technique is used?

Provide an appropriate response. Round relative frequencies to thousandths.

20) 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.

Class	Frequency
Large	345
Medium	830
Small	645

Construct a frequency distribution for the data.

21) 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:

4 12 6 9 6 4 6 5 3 9
7 5 5 4 7 6 3 3 8 5
3 5 12 7 4 8 4 7 6 5

Construct a frequency distribution for the data.

Construct the specified histogram.

22) 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.

Provide an appropriate response.

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

Class	Frequency
31–32	7
33–34	2
35–36	6
37–38	4
39–40	1

24) 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 Comp
0 – 799	39
800 – 1599	21
1600 – 2399	8
2400 – 3199	5
3200 – 3999	7

Find the class width.

25) 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 – 5.8	8
5.9 – 6.7	20
6.8 – 7.6	19
7.7 – 8.5	9
8.6 – 9.4	5

Find the class limits for the second class.

26) A sample of 15 Boy Scouts 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

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

Construct the specified histogram.

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

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

Provide an appropriate response.

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

```
1|59
1|666789
2|0112344566
2|77788999
3|011234455
3|66678899
4|35
```
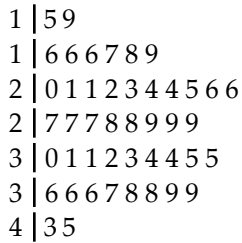
Construct a stem-and-leaf plot for the data.
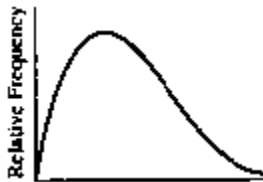
29) The heights (in inches) of 30 mechanics are listed below. Construct a stem-and-leaf plot for the data.

```
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
```
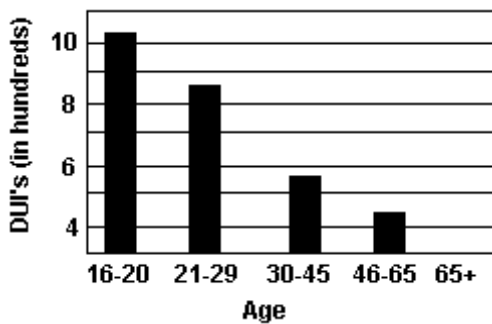
Describe the shape of the distribution.

30)

Explain what is misleading about the graphic.
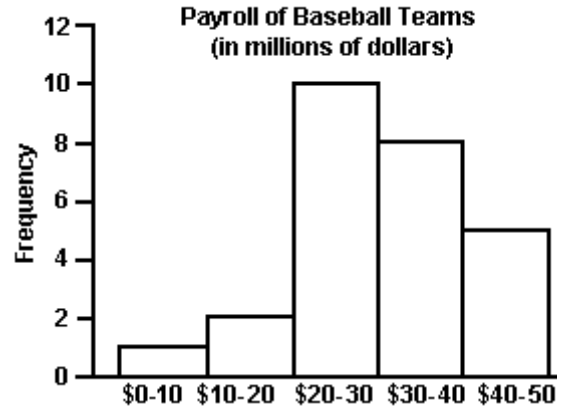
31)   **2012 DUI Figures for State County**

Provide an appropriate response.

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

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

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

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

34) 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.

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

4

1) statistic
2) parameter
3) the parking times of the entire set of students that park at the university
4) qualitative
5) quantitative
6) discrete
7) continuous
8) qualitative data
9) qualitative
10) experiment
11) cohort; Individuals are observed over a long period of time.
12) stratified
13) stratified
14) systematic
15) cluster
16) Response bias; poorly worded question
17) Sampling bias; the customers are not chosen through a random sample.
18) systematic
19) cluster
20)

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

21)

Hours On Net	Number of HS Students
3	4
4	5
5	6
6	5
7	4
8	2
9	2
12	2

22)

23) 5
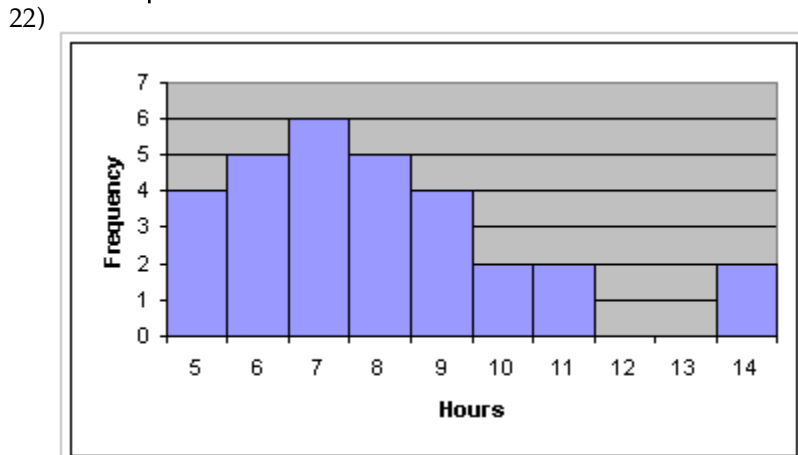
24) 800

25) lower limit: 5.9; upper limit: 6.7

26) a.   95–104, 105–114, 115–124, 125–134, 135–144

b.

Weight (lb)	Tally	Frequency
95–104	ll	2
105–114	lll	3
115–124	lllll	5
125–134	lll	3
135–144	ll	2

27) Frequency Histogram: Relative Frequency Histogram:
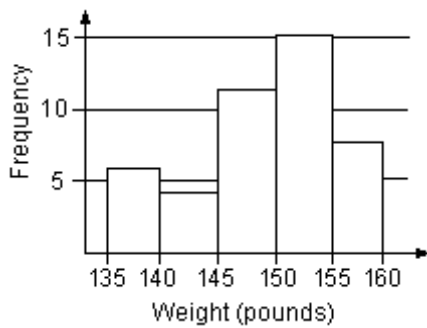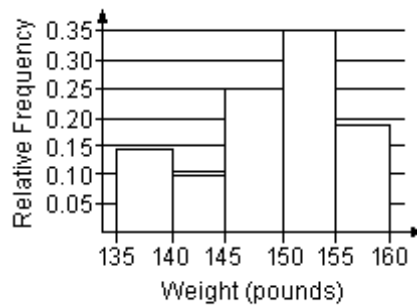
28) max: 45; min: 15
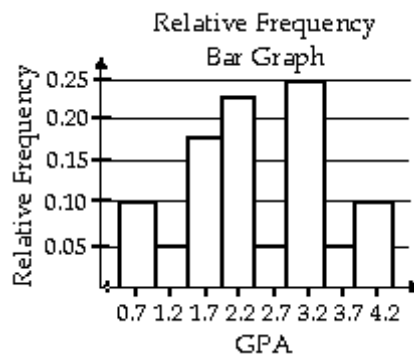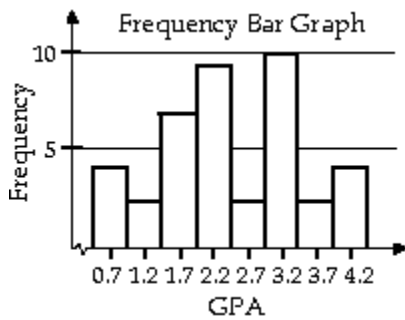
29)

```
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
```

30) skewed to the right

31) The graphic may give the impression that drivers over age 65 had no DUI's in 2012.

32) 31%

33)

34)

Online services 31%
Executive search firms 17%
Mailing 8%
Networking 26%
Newspaper want ads 18%