TEST BANK

Elementary STATISTICS

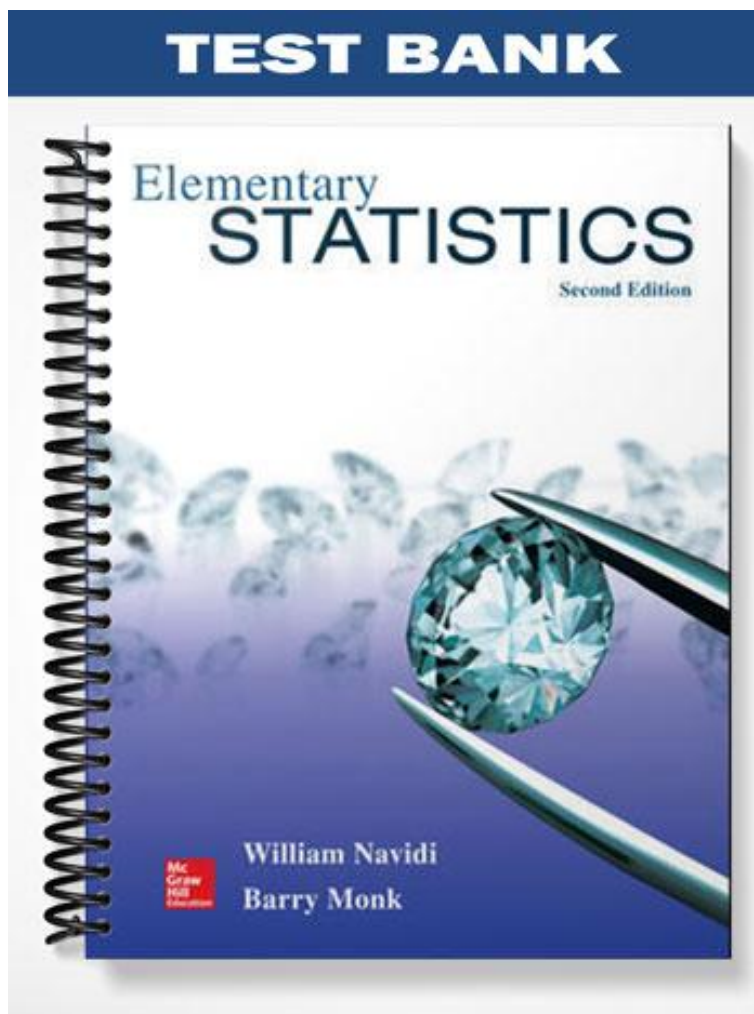## Second Edition

William Navidi

Barry Monk

McGraw Hill Education

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

1) The following bar graph presents the average amount a certain family spent, in dollars, on various food categories in a recent year.

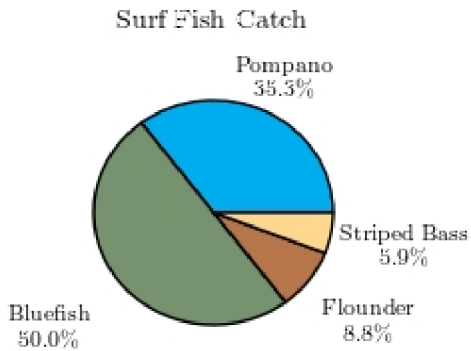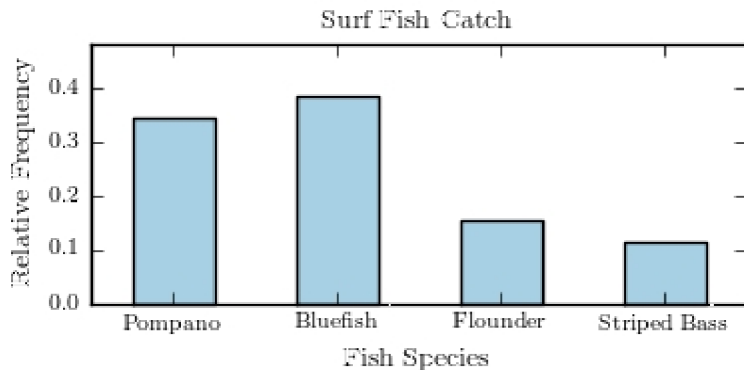On which food category was the most money spent?

1) _____

Food Expenditures
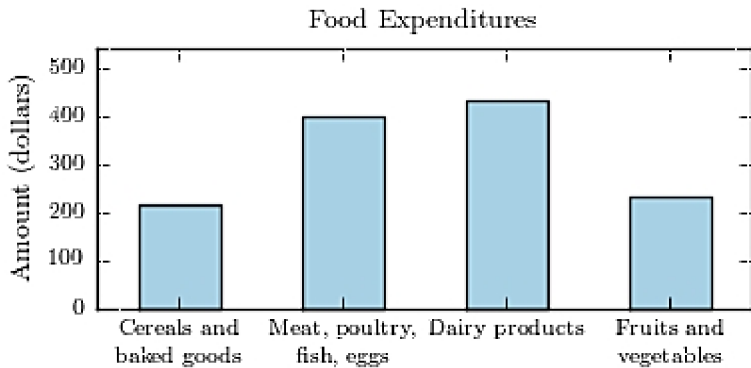
A) Fruits and vegetables
C) Dairy products

B) Cereals and baked goods
D) Meat poultry, fish, eggs

2) The following pie chart presents the percentages of fish caught in each of four ratings categories.
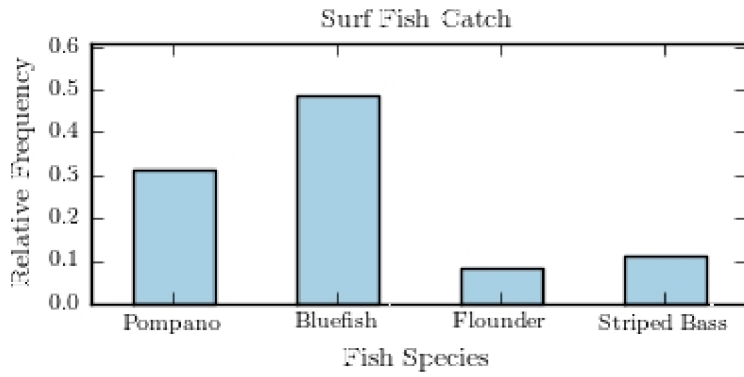
2) _____

Match this pie chart with its corresponding bar graph.

Surf Fish Catch

A)

Surf Fish Catch

B)

Surf Fish Catch

Relative Frequency (y-axis: 0.0 to 0.6)

Fish Species (x-axis): Pompano (~0.31), Bluefish (~0.48), Flounder (~0.08), Striped Bass (~0.11)

C)

Surf Fish Catch

Relative Frequency (y-axis: 0.0 to 0.6)

Fish Species (x-axis): Pompano (~0.35), Bluefish (~0.50), Flounder (~0.08), Striped Bass (~0.05)

D)

Surf Fish Catch

Relative Frequency (y-axis: 0.0 to 0.6)

Fish Species (x-axis): Pompano (~0.34), Bluefish (~0.50), Flounder (~0.09), Striped Bass (~0.06)

3) The following pie chart presents the percentages of fish caught in each of four ratings categories.
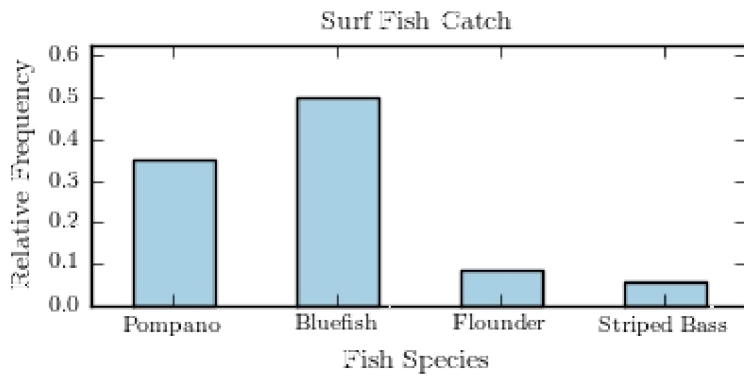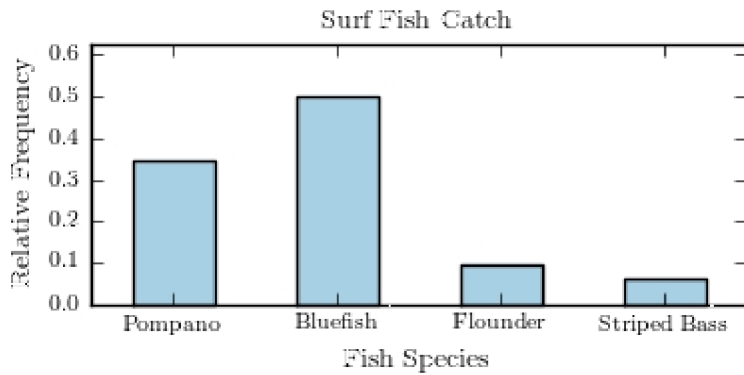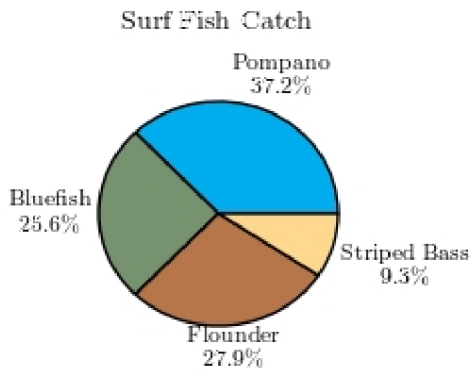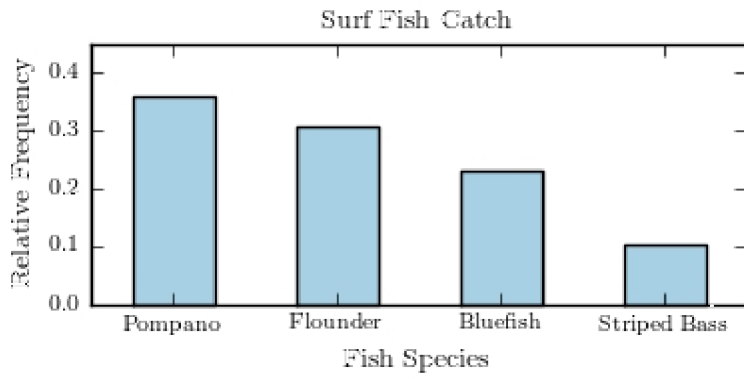
3) _____

Match this pie chart with its corresponding Parato chart.
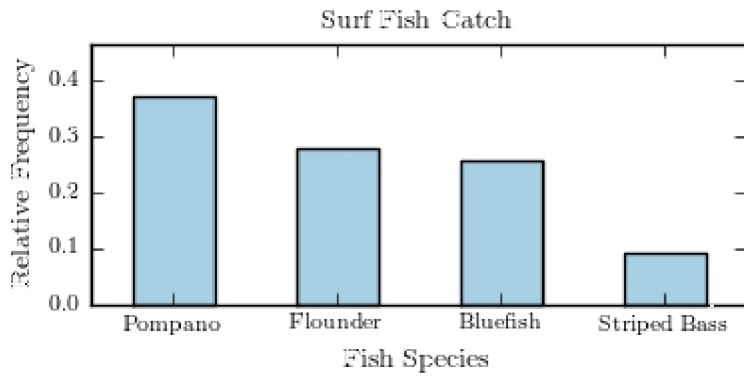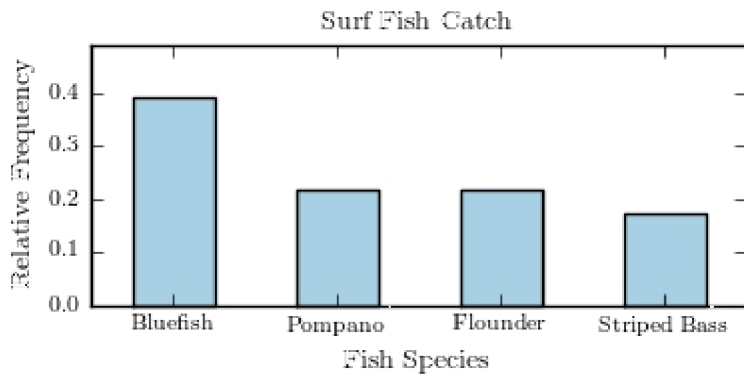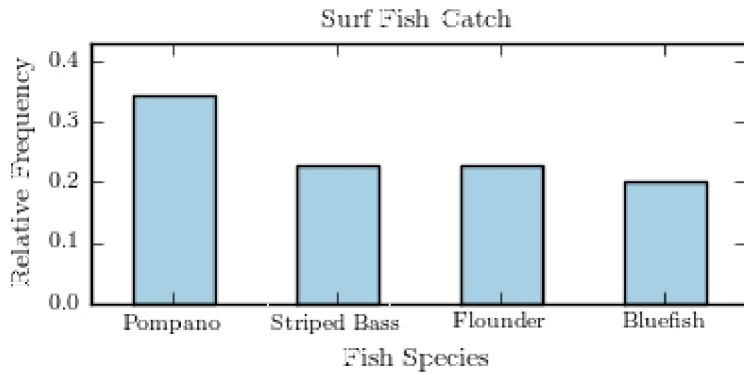
Surf Fish Catch

Pompano 37.2%
Bluefish 25.6%
Striped Bass 9.3%
Flounder 27.9%

A)

Surf Fish Catch

B)

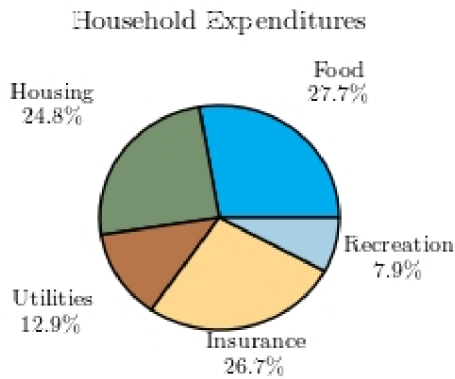Surf Fish Catch

C)

Surf Fish Catch

D)

Surf Fish Catch

4) Following is a pie chart that presents the percentages spent by a certain household on its five largest annual expenditures. What percentage of the money spent was spent on food, housing, and utilities?   4) _____

Household Expenditures

Housing 24.8%
Food 27.7%
Recreation 7.9%
Insurance 26.7%
Utilities 12.9%

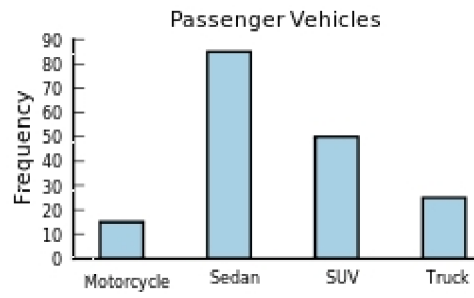A) 47%   B) 65.4%   C) 60.4%   D) 52.5%

5) The following frequency distribution presents the frequency of passenger vehicles that pass through a certain intersection from 8:00 AM to 9:00 AM on a particular day.   5) _____
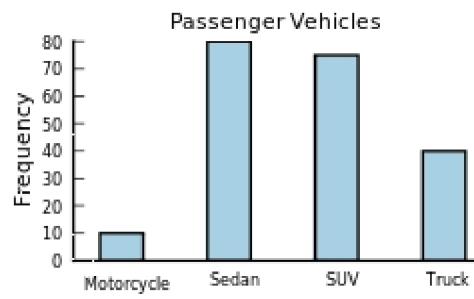
Vehicle Type	Frequency
Motorcycle	15
Sedan	85
SUV	50
Truck	25

Construct a frequency bar graph for the data.

A)

Passenger Vehicles

B)

Passenger Vehicles

C)

Passenger Vehicles

D)

Passenger Vehicles
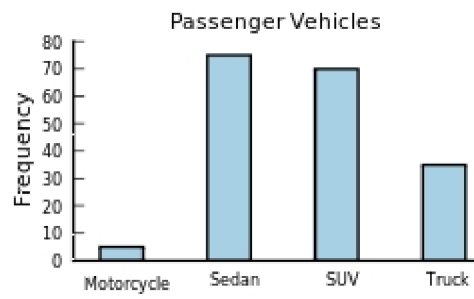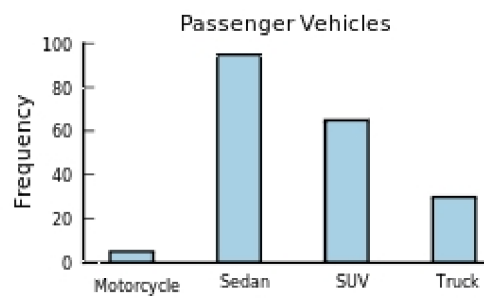
6) The following frequency distribution presents the frequency of passenger vehicles that pass through a certain intersection from 8:00 AM to 9:00 AM on a particular day.

Vehicle Type	Frequency
Motorcycle	7
Sedan	79
SUV	78
Truck	45

What is the relative frequency of the SUV category?
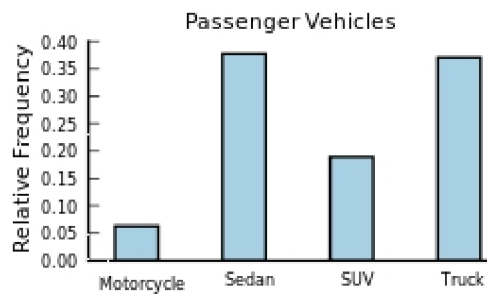
A) 78%   B) 0.373   C) 0.987   D) 78

7) The following frequency distribution presents the frequency of passenger vehicles that pass through a certain intersection from 8:00 AM to 9:00 AM on a particular day.

Vehicle Type	Frequency
Motorcycle	13
Sedan	78
SUV	88
Truck	35

Construct a relative frequency distribution for the data.

A)

Vehicle Type	Relative Frequency
Motorcycle	0.061%
Sedan	0.364%
SUV	0.411%
Truck	0.164%

B)

Vehicle Type	Relative Frequency
Motorcycle	0.061
Sedan	0.364
SUV	0.411
Truck	0.164

C)

Vehicle Type	Relative Frequency
Motorcycle	0.13
Sedan	0.78
SUV	0.88
Truck	0.35

6

D)

Vehicle Type	Relative Frequency
Motorcycle	0.148
Sedan	0.886
SUV	1
Truck	0.398

8) The following frequency distribution presents the frequency of passenger vehicles that pass through a certain intersection from 8:00 AM to 9:00 AM on a particular day.
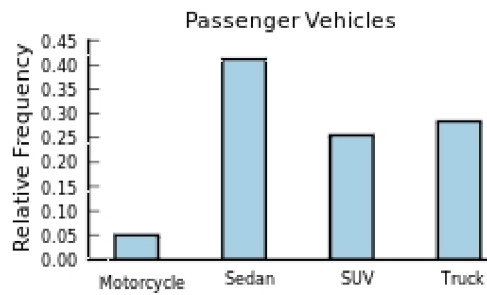
Vehicle Type	Frequency
Motorcycle	7
Sedan	58
SUV	36
Truck	40

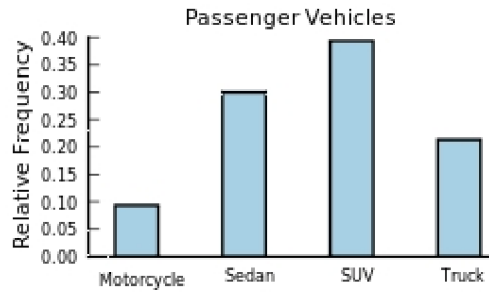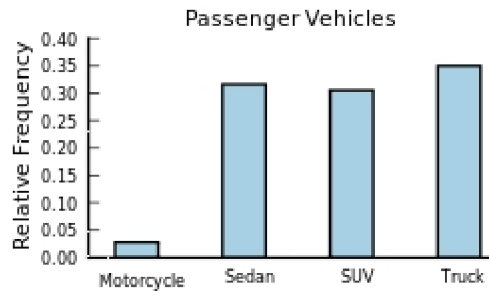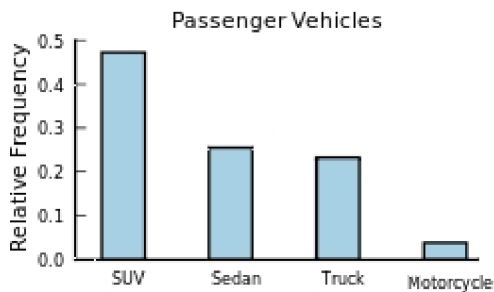Construct a relative frequency bar graph for the data.

A)

B)

C)

D)

9) The following frequency distribution presents the frequency of passenger vehicles that pass through a certain intersection from 8:00 AM to 9:00 AM on a particular day.
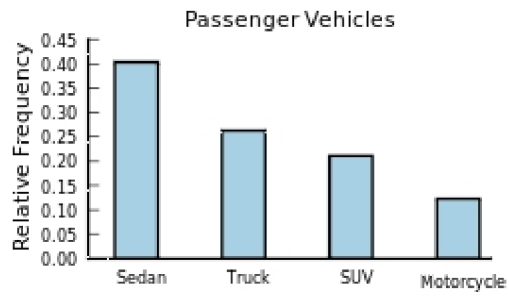
9) _____

Vehicle Type	Frequency
Motorcycle	5
Sedan	33
SUV	61
Truck	30

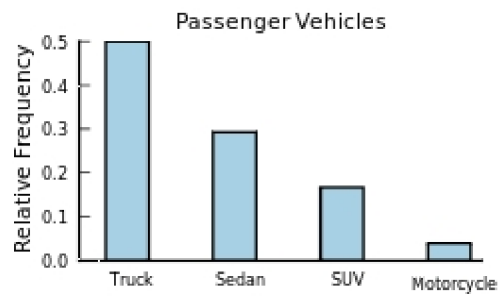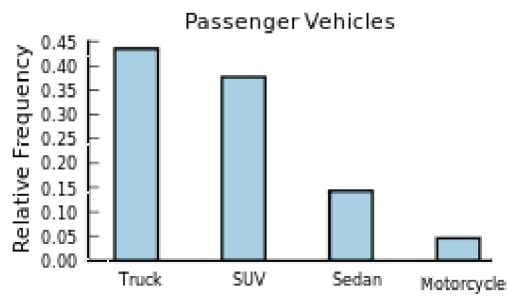Construct a relative frequency Parato chart for the data.
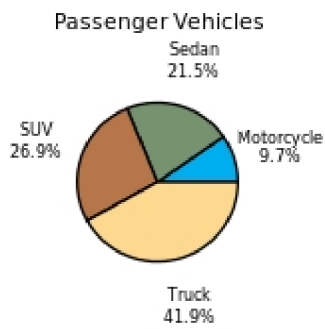
A)

8

B)

C)

D)

10) The following frequency distribution presents the frequency of passenger vehicles that pass through a certain intersection from 8:00 AM to 9:00 AM on a particular day.
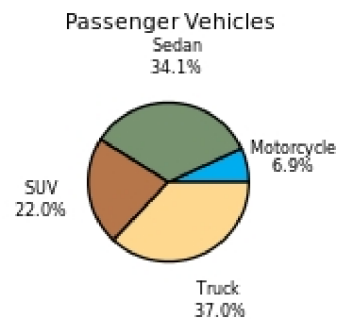
Vehicle Type	Frequency
Motorcycle	6
Sedan	26
SUV	30
Truck	21

Construct a pie chart for the data.

A)

Passenger Vehicles
Sedan 21.5%
SUV 26.9%
Motorcycle 9.7%
Truck 41.9%

B)

Passenger Vehicles
Sedan 34.1%
SUV 22.0%
Motorcycle 6.9%
Truck 37.0%

C)

Passenger Vehicles
Sedan 34.6%
SUV 16.7%
Motorcycle 7.7%
Truck 41.0%

D)

Passenger Vehicles
Sedan 31.3%
SUV 36.1%
Motorcycle 7.2%
Truck 25.3%
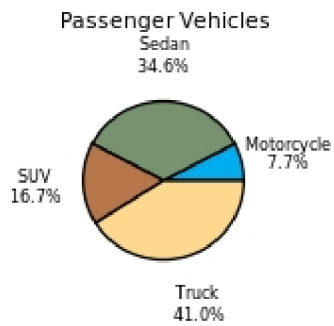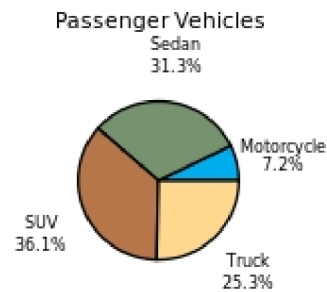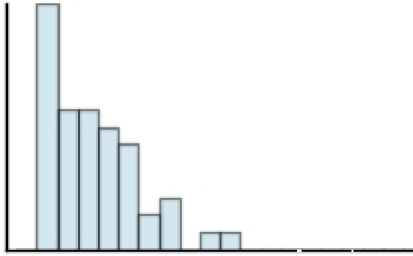
11) Classify the histogram as skewed to the left, skewed to the right, or approximately symmetric.
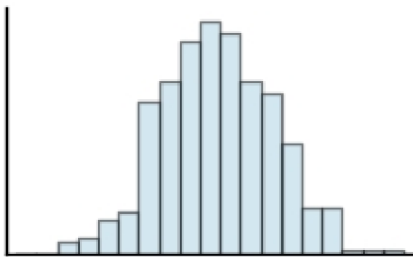

   A) approximately symmetric
   B) skewed to the left
   C) skewed to the right

12) Classify the histogram as unimodal or bimodal.

   A) unimodal   B) bimodal

13) One hundred students are shown an eight-digit number on a piece of cardboard for three seconds and are asked to then recite the number from memory. The process is repeated until the student accurately recites the entire number from memory. The following histogram presents the number of trials it took each student to memorize the number.
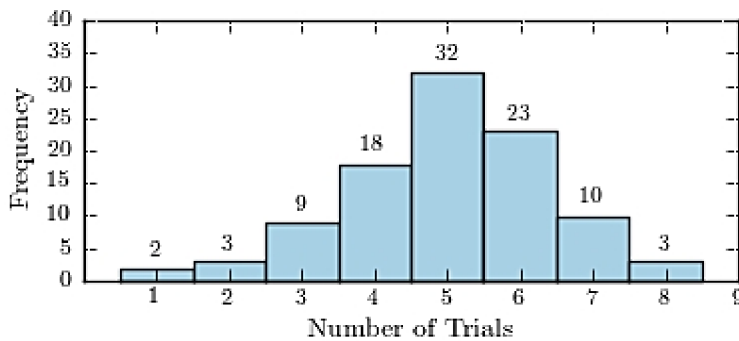
How many students memorized the number in three trials or less?
   A) 14   B) 5   C) 16   D) 86

14) The following frequency distribution presents the weights in pounds (lb) of a sample of visitors to a health clinic.

Weight (lb)	Frequency
130-137	3
138-145	2
146-153	8
154-161	3
162-169	5
170-177	9
178-185	5
186-193	2

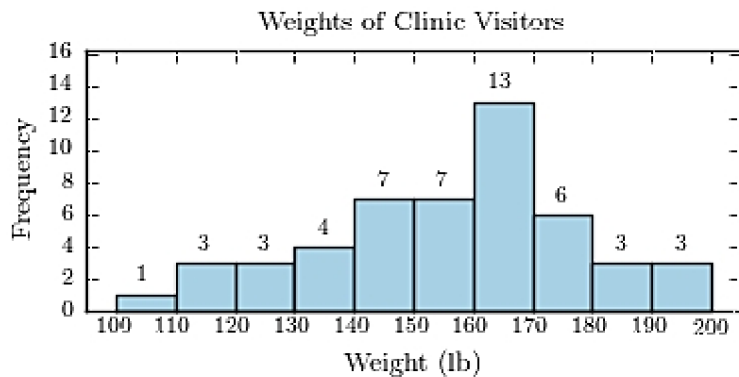What is the class width?
  A) 7   B) 8   C) 64   D) 9

15) The following frequency distribution presents the weights in pounds (lb) of a sample of visitors to a health clinic.
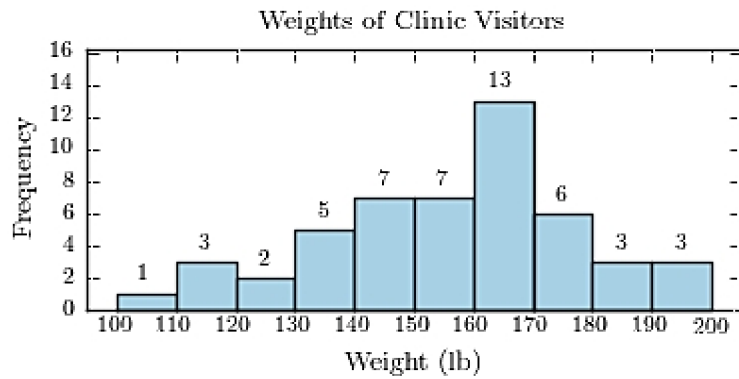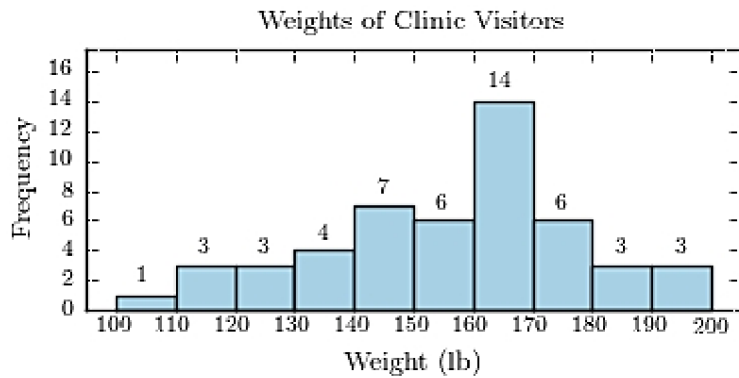
Weights of Clinic Visitors

Weight (lb)	Frequency
100−109	1
110−119	3
120−129	3
130−139	4
140−149	7
150−159	7
160−169	13
170−179	6
180−189	3
190−199	3

Construct a frequency histogram.
  A)

Weights of Clinic Visitors

B)

Weights of Clinic Visitors

C)

Weights of Clinic Visitors

D)

Weights of Clinic Visitors
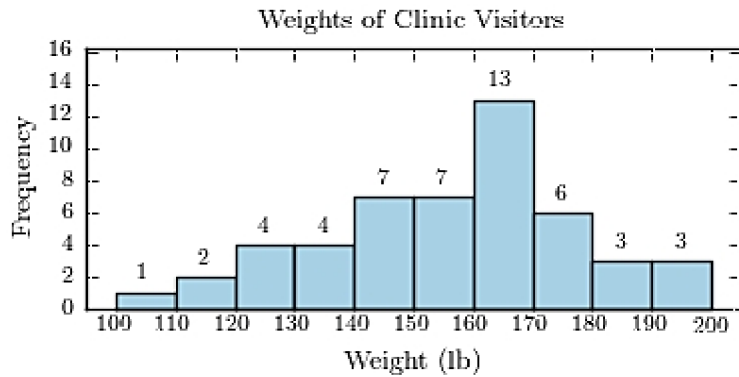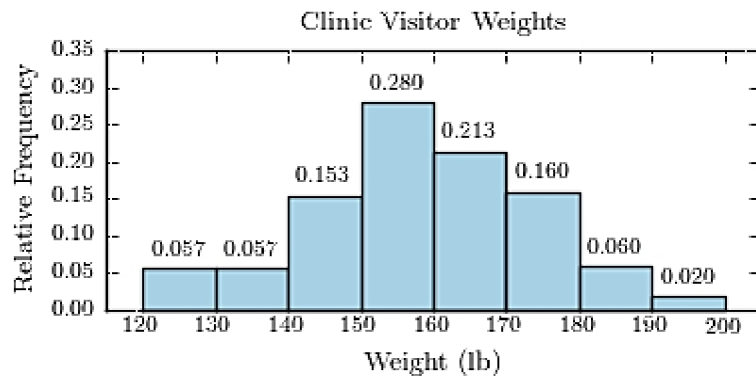
16) The following frequency distribution presents the weights in pounds (lb) of a sample of visitors to a health clinic.

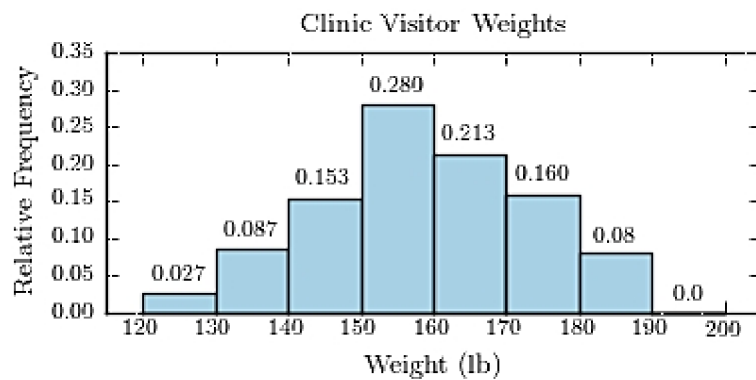| Clinic Visitor Weights	
Weight (lb)	Frequency
120-129	4
130-139	13
140-149	23
150-159	42
160-169	32
170-179	24
180-189	9
190-199	3

Construct a relative frequency histogram.

A)

B)

C)

Clinic Visitor Weights

D)

Clinic Visitor Weights
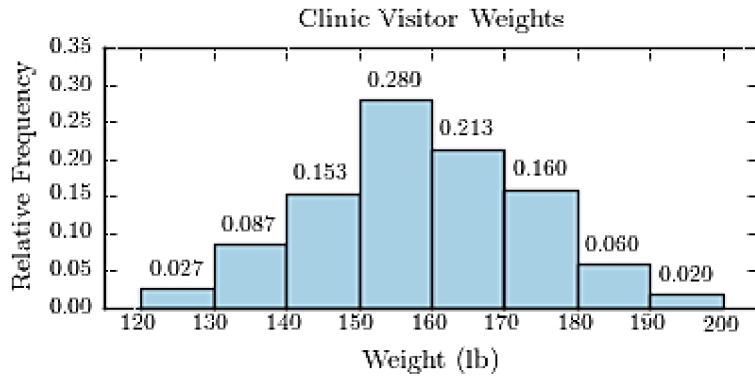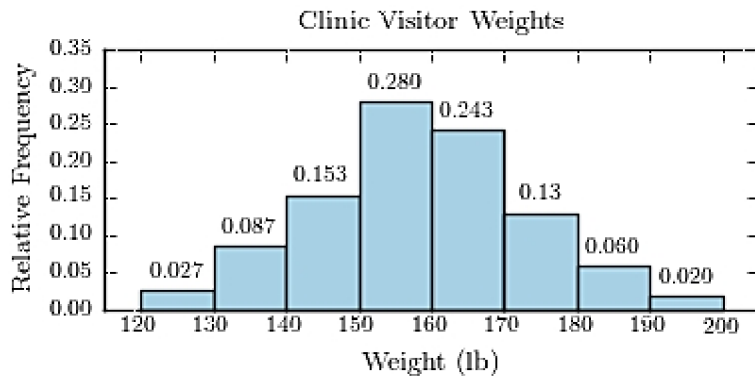

17) The following table presents the purchase totals (in dollars) of a random sample of gasoline purchases at a convenience store.

Construct a frequency distribution using a class width of 10, and using 0 as the lower class limit for the first class.

76.59	48.55	93.66	60.17	39.10
93.28	65.43	34.12	80.41	77.16
80.07	93.46	39.19	43.84	44.70
68.74	89.98	6.97	52.86	68.93

17) _____

A)

Convenience Store Gas Purchases

Amount (dollars)	Frequency
0.00-9.99	1
10.00-19.99	0
20.00-29.99	0
30.00-39.99	3
40.00-49.99	3
50.00-59.99	1
60.00-69.99	4
70.00-79.99	2
80.00-89.99	3
90.00-99.99	3

B)

Convenience Store Gas Purchases

Amount (dollars)	Frequency
0.00-9.99	1
10.00-19.99	0
20.00-29.99	1
30.00-39.99	2
40.00-49.99	3
50.00-59.99	1
60.00-69.99	4
70.00-79.99	2
80.00-89.99	3
90.00-99.99	3

C)

Convenience Store Gas Purchases

Amount (dollars)	Frequency
0.00-9.99	1
10.00-19.99	0
20.00-29.99	0
30.00-39.99	3
40.00-49.99	3
50.00-59.99	1
60.00-69.99	4
70.00-79.99	2
80.00-89.99	4
90.00-99.99	2

D)

Convenience Store Gas Purchases

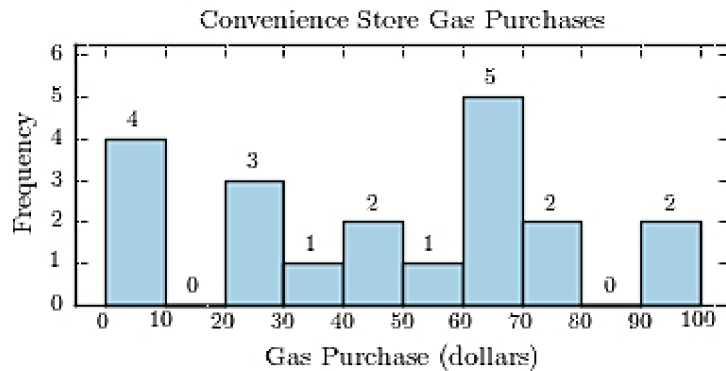| Amount (dollars)	Frequency
0.00-9.99	1
10.00-19.99	0
20.00-29.99	0
30.00-39.99	4
40.00-49.99	2
50.00-59.99	1
60.00-69.99	4
70.00-79.99	2
80.00-89.99	3
90.00-99.99	3

18) The following table presents the purchase totals (in dollars) of a random sample of gasoline purchases at a convenience store.
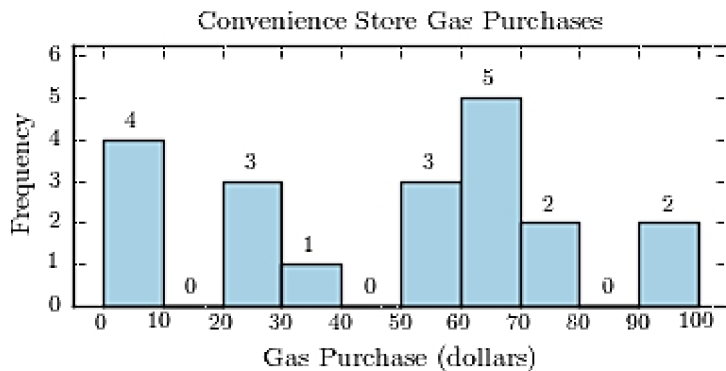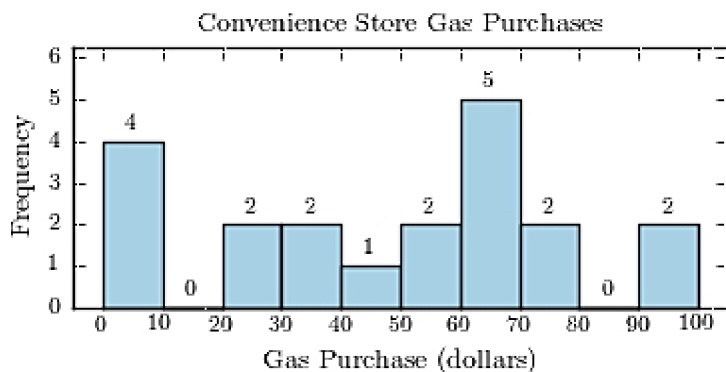
18) _____

Construct a relative frequency distribution using a class width of 10, and using 0 as the lower class limit for the first class.

44.52	72.67	51.20	59.41	64.86
98.05	80.24	56.18	51.93	46.17
88.08	46.49	24.48	50.26	36.77
27.61	6.56	22.75	36.65	74.55

A)

Convenience Store Gas Purchases

Amount (dollars)	Relative Frequency
0.00-9.99	0.035
10.00-19.99	0.015
20.00-29.99	0.150
30.00-39.99	0.100
40.00-49.99	0.150
50.00-59.99	0.250
60.00-69.99	0.050
70.00-79.99	0.100
80.00-89.99	0.100
90.00-99.99	0.050

B)

Convenience Store Gas Purchases

Amount (dollars)	Relative Frequency
0.00-9.99	0.050
10.00-19.99	0.000
20.00-29.99	0.150
30.00-39.99	0.100
40.00-49.99	0.150
50.00-59.99	0.250
60.00-69.99	0.040
70.00-79.99	0.110
80.00-89.99	0.100
90.00-99.99	0.050

C)

Convenience Store Gas Purchases

Amount (dollars)	Relative Frequency
0.00-9.99	0.050
10.00-19.99	0.000
20.00-29.99	0.150
30.00-39.99	0.100
40.00-49.99	0.150
50.00-59.99	0.250
60.00-69.99	0.050
70.00-79.99	0.100
80.00-89.99	0.100
90.00-99.99	0.050

D)

Convenience Store Gas Purchases

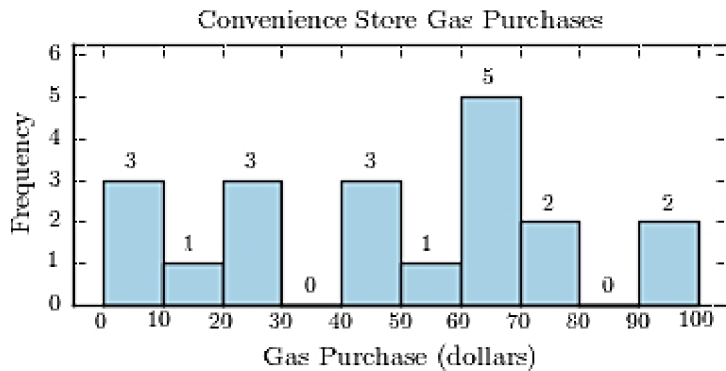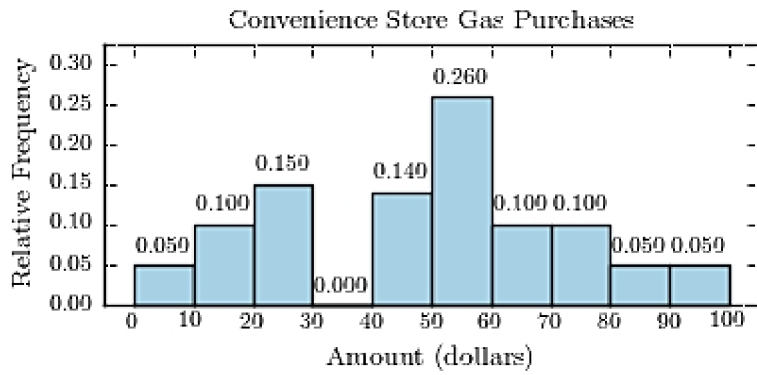| Amount (dollars)	Relative Frequency
0.00-9.99	0.050
10.00-19.99	0.000
20.00-29.99	0.150
30.00-39.99	0.100
40.00-49.99	0.150
50.00-59.99	0.240
60.00-69.99	0.060
70.00-79.99	0.100
80.00-89.99	0.100
90.00-99.99	0.050

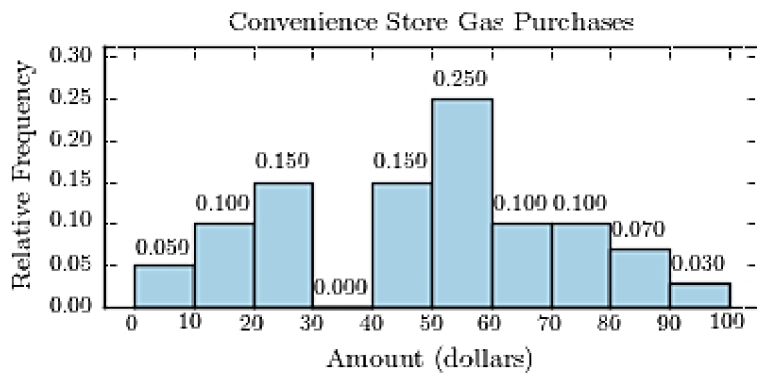19) The following table presents the purchase totals (in dollars) of a random sample of gasoline purchases at a convenience store.   19) _____

Construct a frequency histogram using a class width of 10, and using 0 as the lower class limit for the first class.

95	99	4	75	23
26	27	65	68	69
31	7	72	67	46
0	46	1	53	67

A)

Convenience Store Gas Purchases

18

B)

Convenience Store Gas Purchases

C)

Convenience Store Gas Purchases

D)

Convenience Store Gas Purchases

20) The following table presents the purchase totals (in dollars) of a random sample of gasoline purchases at a convenience store.

Construct a relative frequency histogram using a class width of 10, and using 0 as the lower class limit for the first class.

22.75	53.99	60.56	86.86	10.98
28.88	77.87	5.04	68.60	40.07
74.42	52.19	94.89	29.08	50.87
13.49	50.49	43.20	55.53	49.59

19

A)

Convenience Store Gas Purchases

B)

Convenience Store Gas Purchases

C)

Convenience Store Gas Purchases

D)

Convenience Store Gas Purchases
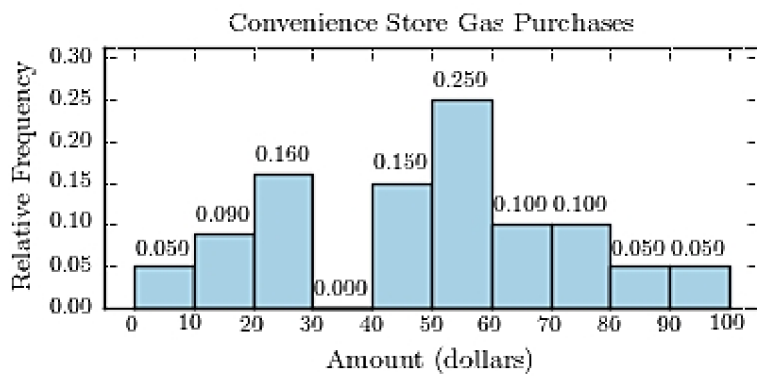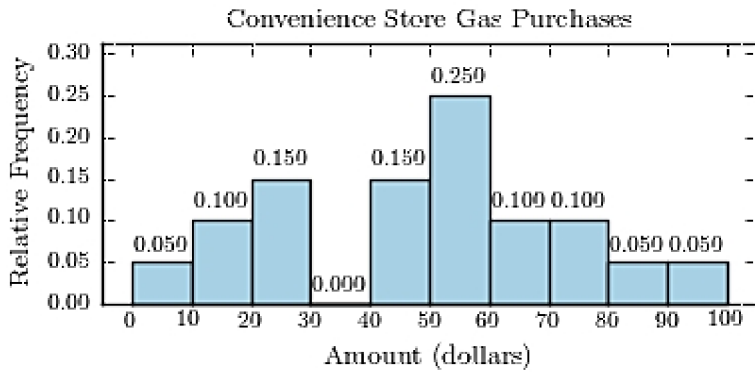
21) Thirty households were surveyed for the number of televisions in each home. Following are the results.

1	0	0	2	1	2	4	2	1	1
0	0	0	0	1	5	0	2	0	0
0	0	2	1	0	0	5	5	3	0

Construct a frequency histogram.

A)

Household Televisions

B)

Household Televisions

C)

Household Televisions

D)

Household Televisions
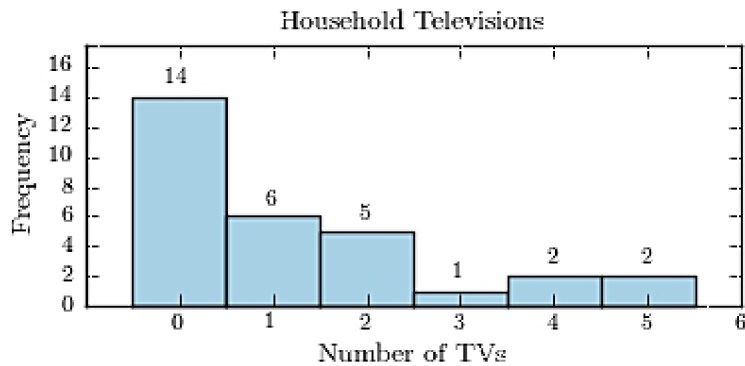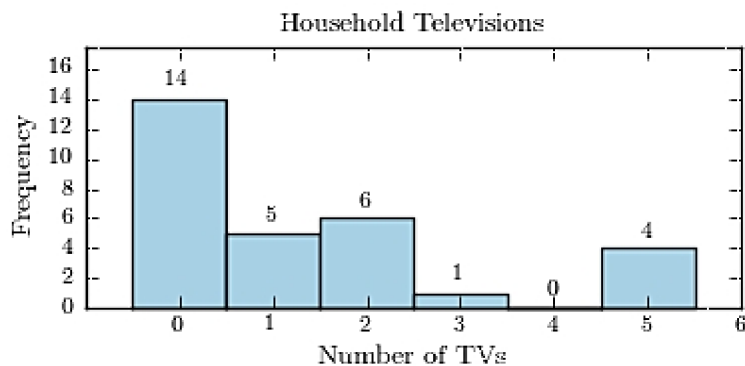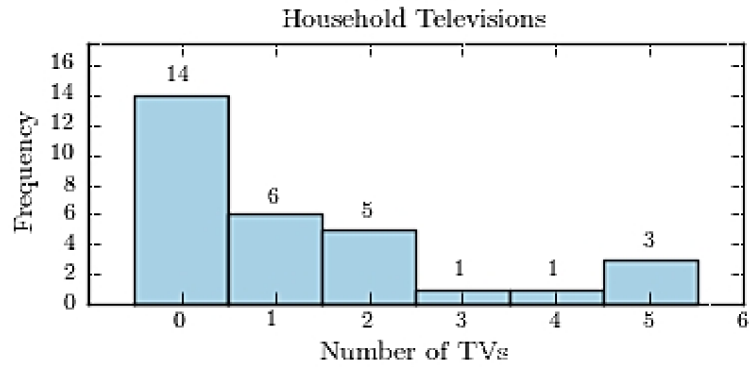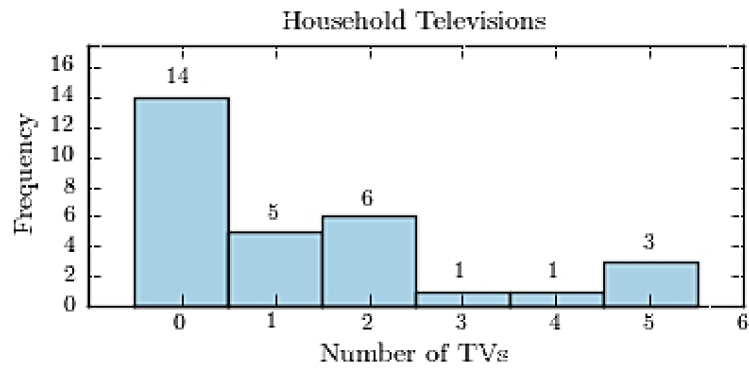
22) Thirty households were surveyed for the number of televisions in each home. Following are the results.

22) _____

4	0	4	3	0	0	4	1	0	4
0	1	1	0	1	1	5	2	5	1
3	0	3	0	1	0	3	2	3	0

Construct a relative frequency histogram.

A)

Household Televisions

B)

Household Televisions

C)

Household Televisions

D)

Household Televisions
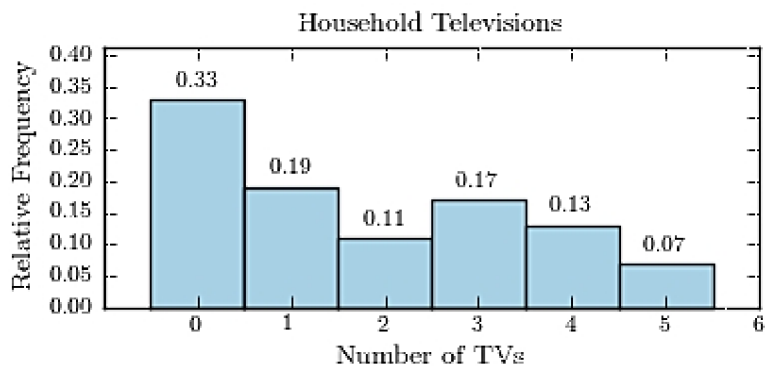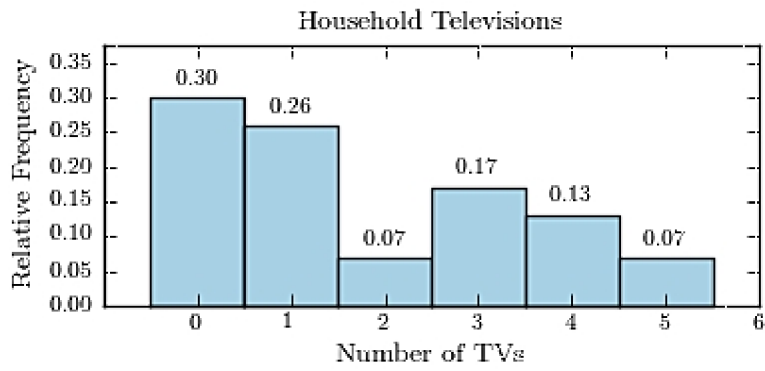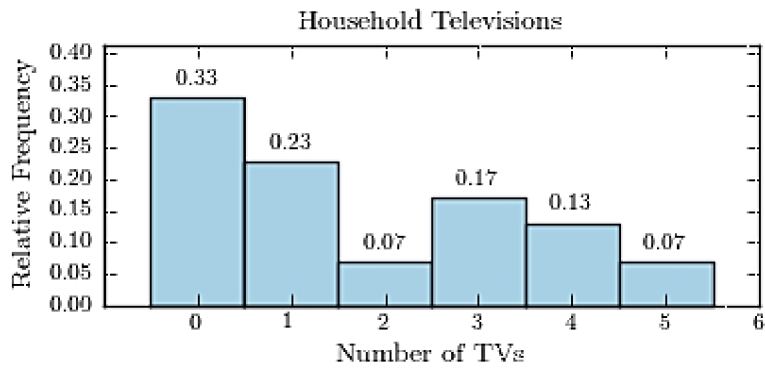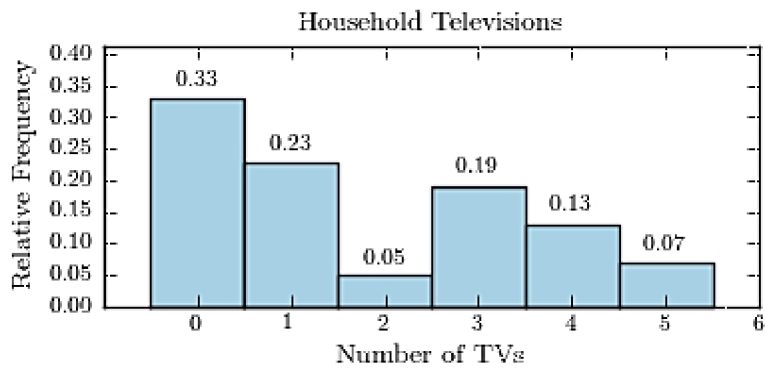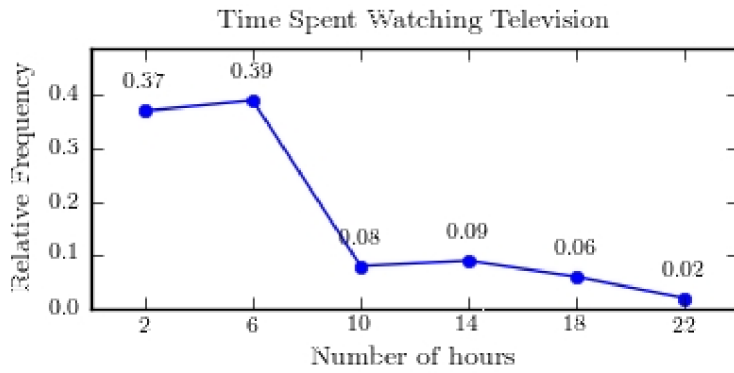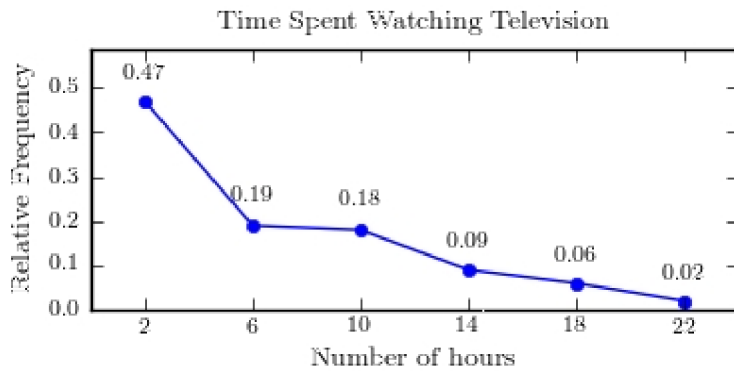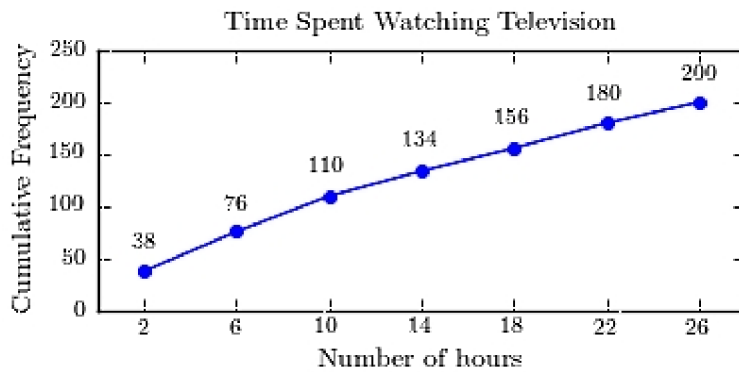
23) A sample of 200 high school students were asked how many hours per week they spend watching television.The following frequency distribution presents the results.
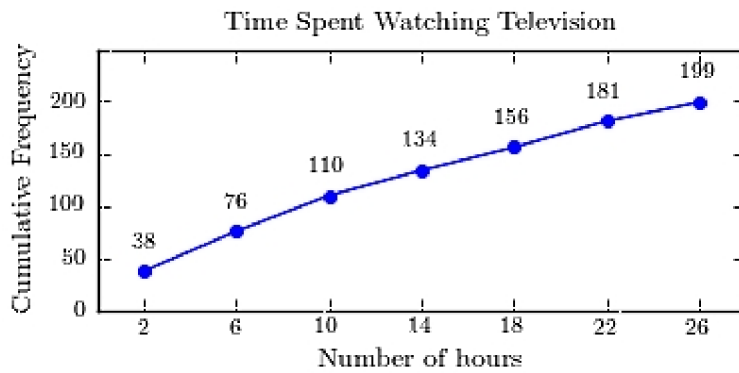
Time Spent Watching Television	
Number of hours	Frequency
0.0-3.9	54
4.0-7.9	32
8.0-11.9	32
12.0-15.9	27
15.0-19.9	20
20.0-23.9	18
24.0-27.9	17

Construct a frequency polygon for the frequency distribution.
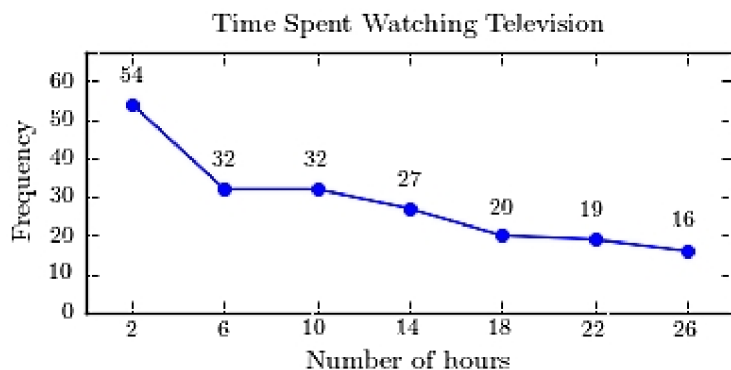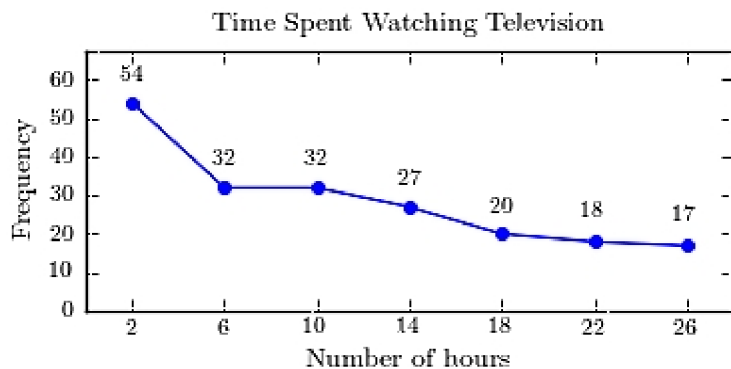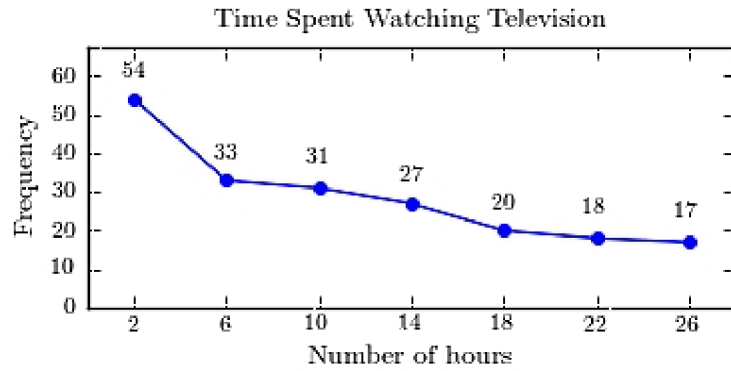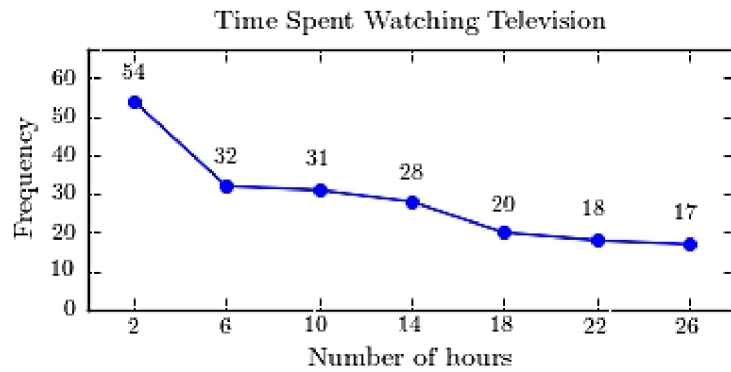
A)

B)

24

C)

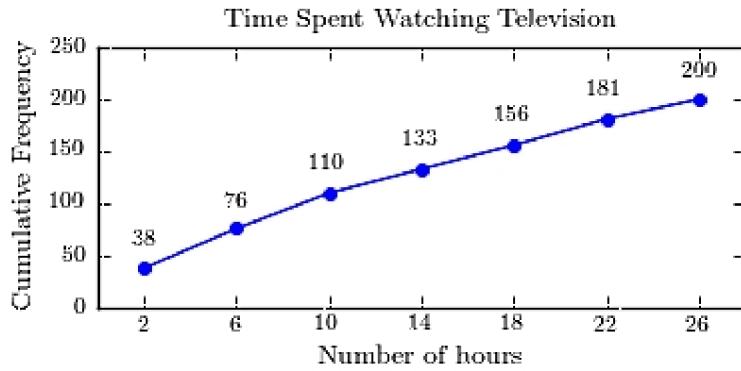### Time Spent Watching Television

D)

Time Spent Watching Television
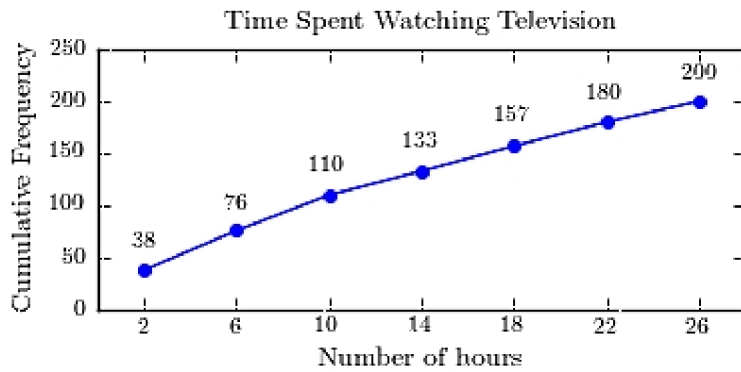

24) A sample of 200 high school students were asked how many hours per week they spend watching television. The following frequency distribution presents the results.

24) _____

Time Spent Watching Television

Number of hours	Frequency
0.0-3.9	74
4.0-7.9	57
8.0-11.9	35
12.0-15.9	18
16.0-19.9	12
20.0-23.9	4

Construct a relative frequency polygon for the frequency distribution.

A)

Time Spent Watching Television

B)

Time Spent Watching Television

C)

Time Spent Watching Television

D)

Time Spent Watching Television
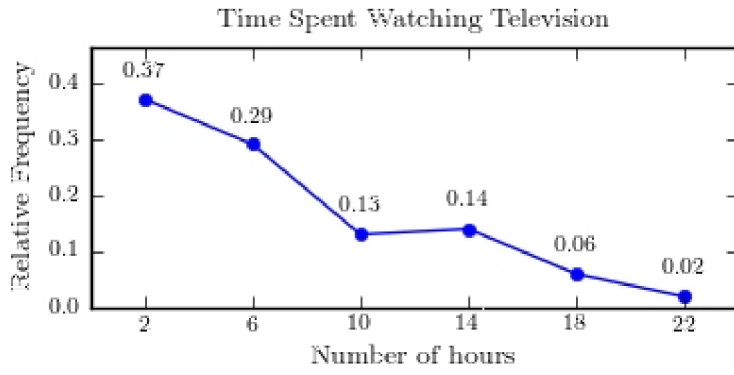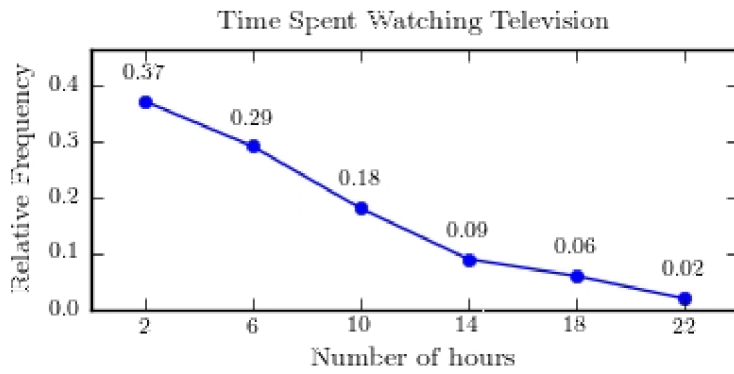
25) A sample of 200 high school students were asked how many hours per week they spend watching television. The following frequency distribution presents the results.

Time Spent Watching Television	
Number of hours	Frequency
0.0-3.9	38
4.0-7.9	38
8.0-11.9	34
12.0-15.9	23
16.0-19.9	24
20.0-23.9	23
24.0-27.9	20

Construct a frequency ogive for the frequency distribution.

A)

B)

27

C)

Time Spent Watching Television

D)

Time Spent Watching Television

26) A sample of 200 high school students were asked how many hours per week they spend watching television. The following frequency distribution presents the results.

26) _____

Time Spent Watching Television

Number of hours	Frequency
0.0-3.9	76
4.0-7.9	57
8.0-11.9	32
12.0-15.9	18
16.0-19.9	13
20.0-23.9	4

Construct a relative frequency ogive for the frequency distribution.

A)

Time Spent Watching Television

B)

Time Spent Watching Television

C)

Time Spent Watching Television

D)

Time Spent Watching Television

29
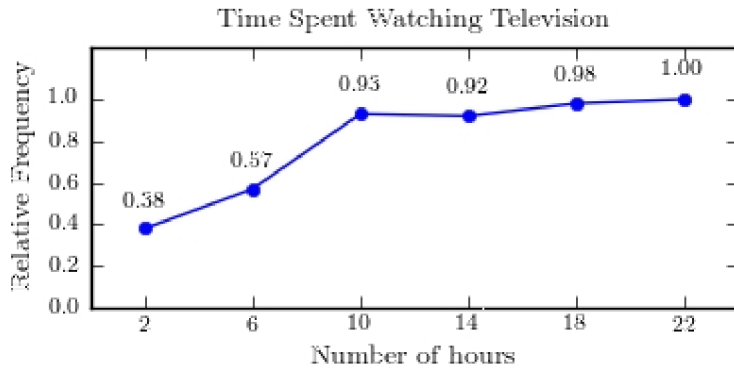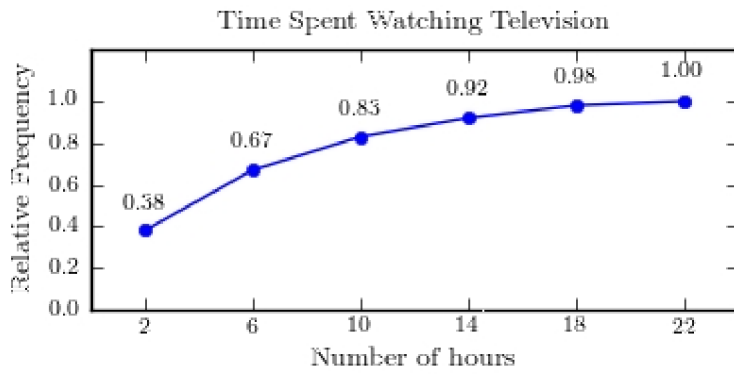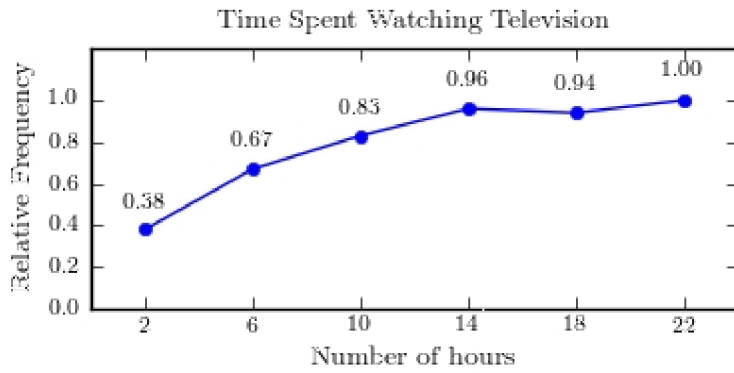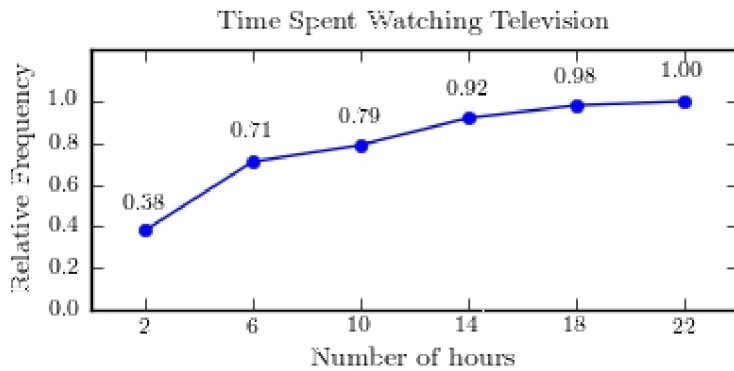
27) Construct a stem-and-leaf plot for the following data.

22	38	51	12	57	33	67	20	31	29
19	48	19	31	29	53	54	21	22	55

A)

1	299
2	012299
3	1138
4	8
5	13457
6	7

B)

1	29
2	0122999
3	1138
4	8
5	13457
6	7

C)

1	99
2	0122299
3	1138
4	8
5	13457
6	7

D)

1	299
2	02299
3	11138
4	8
5	13457
6	7

28) Construct a stem-and-leaf plot for the following data, in which the leaf represents the
tenths place.

8.9   6.7   4.3   9.9   9.3   10.6   9.5   7.8   3.0   5.3   8.1   10.6
6.1   9.2   10.4   9.7   9.8   10.6   6.8   3.0   7.6   9.3   3.9   6.2

A)

```
 3   009
 4
 5   337
 6   128
 7   68
 8   19
 9   2335789
10   4666
```

B)

```
 3   009
 4   33
 5
 6   278
 7   168
 8   19
 9   2335789
10   4666
```

C)

```
 3   09
 4   03
 5   2
 6   1278
 7   68
 8   19
 9   23356789
10   466
```

D)

```
 3   009
 4   3
 5   2
 6   1278
 7   68
 8   19
 9   2335789
10   4666
```

29) Construct a dotplot for the following data.

15   15   15   14   13   13   14   15   13   15
14   15   14   13   17   15   14   12   16   15

A)
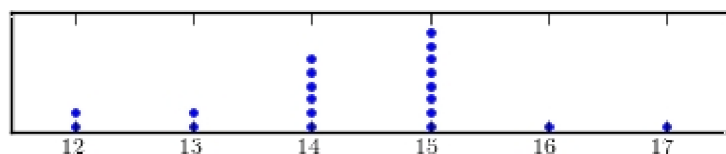
B)
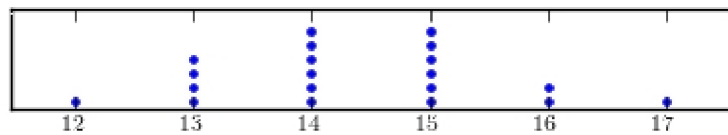
C)
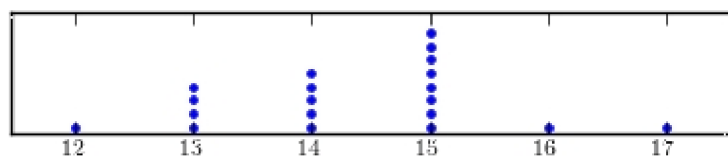
D)
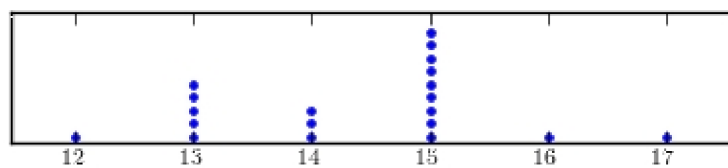
30) Construct a dotplot for the following data.   30) _____

```
3.99   4.02   3.97   3.94   3.94   3.92   3.91   3.91   3.92   4.04
3.98   3.94   3.96   3.97   3.94   3.99   3.93   3.90   3.97   3.99
```

A)
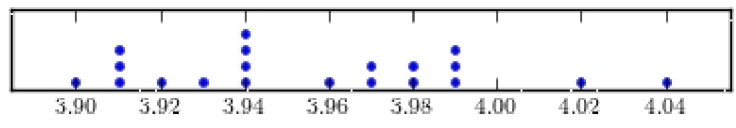
B)
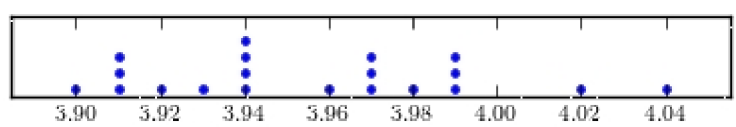
C)
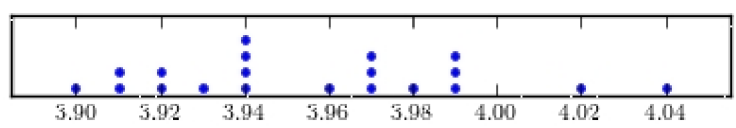
D)
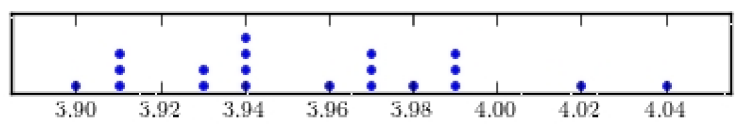
31) Following are the numbers of Dean's List students in a random sample of 20 university   31) _____
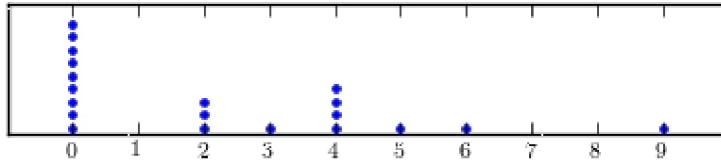courses. Construct a dotplot for these data.
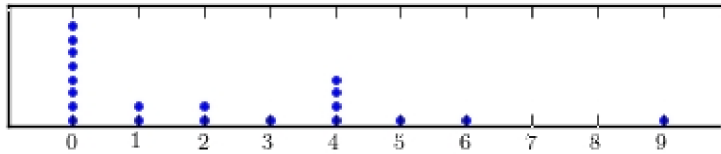
```
9   2   0   0   4
2   0   0   4   0
4   2   0   0   5
6   1   2   0   4
```
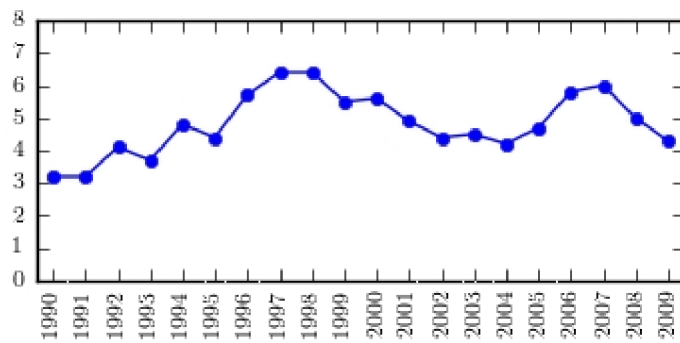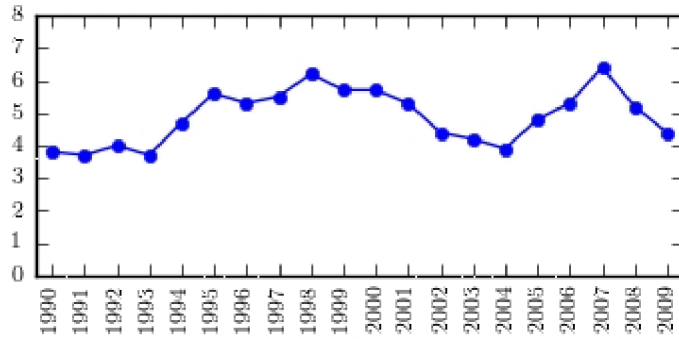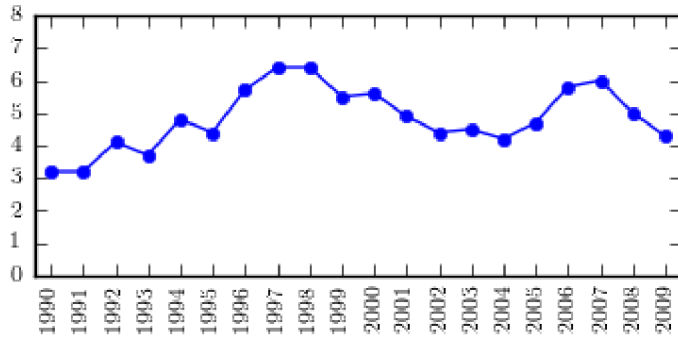
A)
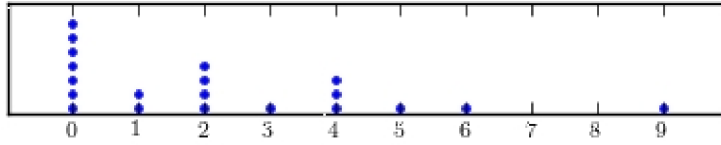
B)

C)

D)
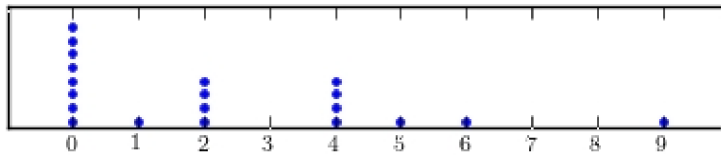
32) The following table presents the rate of population growth of a suburb of Atlanta, Georgia for each of the years 1990 through 2009. Construct a time-series plot of the growth rate.

Year	Percent Growth	Year	Percent Growth
1990	3.1	2000	5.5
1991	3.3	2001	5.2
1992	4.3	2002	4.4
1993	3.5	2003	4.2
1994	4.4	2004	4.1
1995	5.7	2005	4.7
1996	5.2	2006	5.9
1997	6.4	2007	6.2
1998	5.6	2008	5.2
1999	5.8	2009	4.6

34

A)
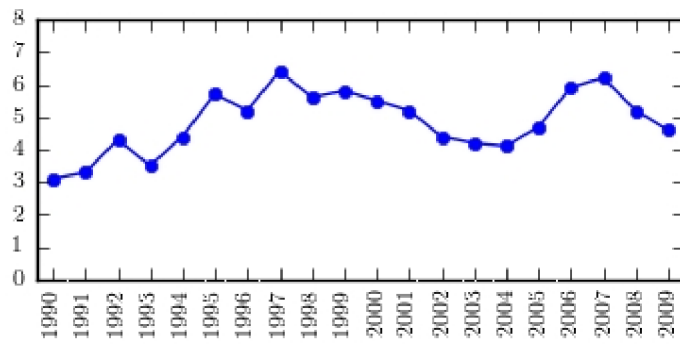
B)
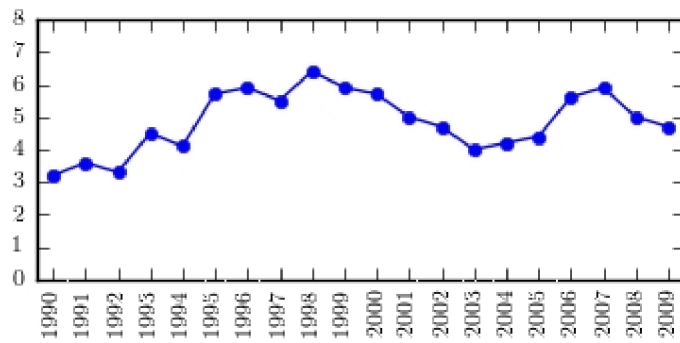
C)

D)

33) The following time-series plot presents the population growth (in percent) of a suburb of Atlanta, Georgia for each of the years 1990 through 2009. Estimate the rate of growth in 2009.

33) _____

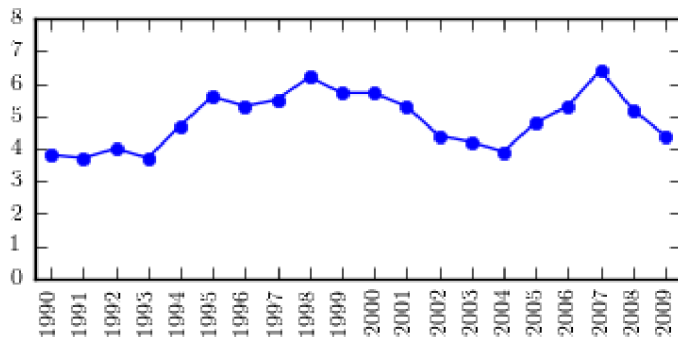   A) 4.9%   B) 4.7%   C) 4.2%   D) 4.8%

34) The following time-series plot presents the population growth (in percent) of a suburb of Atlanta, Georgia for each of the years 1990 through 2009. Estimate the amount by which the rate of growth changed from 1998 to 2001.

34) _____

   A) about -0.9 percentage points   B) about -1.8 percentage points
   C) about -0.2 percentage points   D) about 0.2 percentage points

35) Which of the following presents the most honest graphical representation of the ratio "3 to 2"?
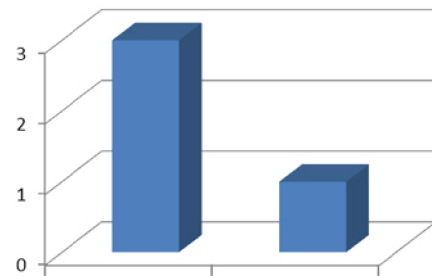
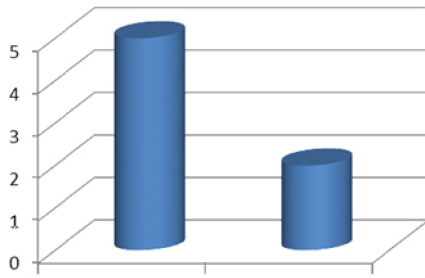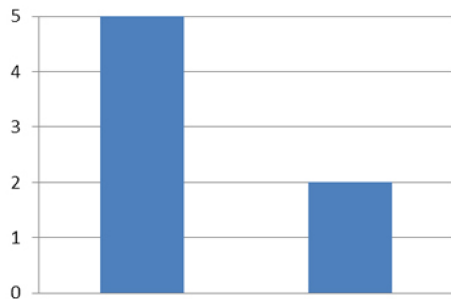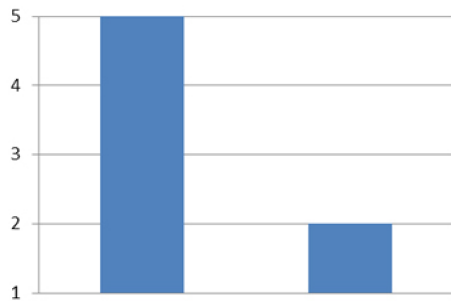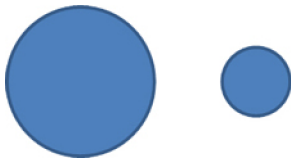35) _____

A)
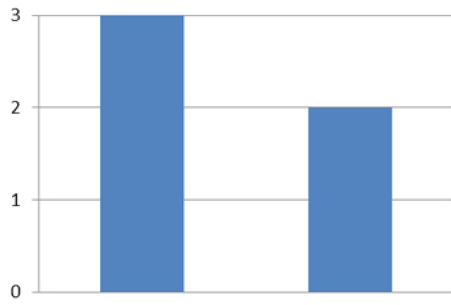
B)
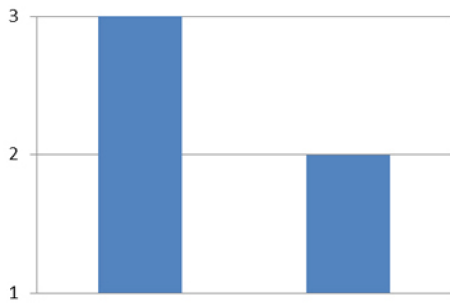
C)

D)

36) Which of the following presents the most honest graphical representation of the ratio "5 to 2"?
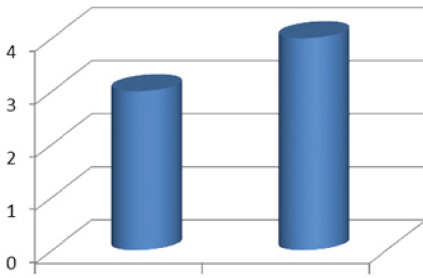
36) _____

A)

B)

C)

D)

37) Which of the following presents the most honest graphical representation of the ratio "3 to 4"?

A)

B)

C)

D)

1) C
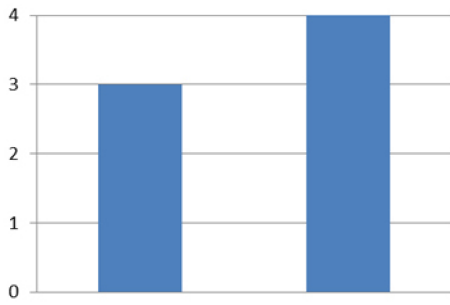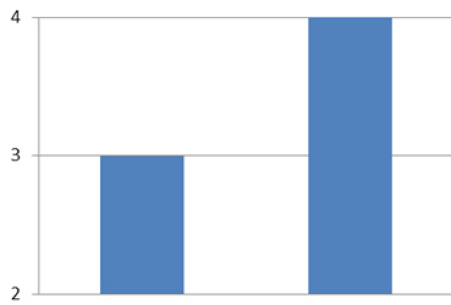2) C
3) B
4) B
5) A
6) B
7) B
8) B
9) A
10) D
11) C
12) A
13) A
14) B
15) A
16) C
17) A
18) C
19) A
20) D
21) C
22) C
23) B
24) B
25) D
26) B
27) A
28) D
29) C
30) B
31) D
32) A
33) C
34) A
35) A
36) B
37) C