# Ch2 Homework

1. The age of 30 Bay Area residents with recent diagnosis of diabetes are listed below
21,22,23,30,35,33,37,39,40,40,41,42,43,44,45,46,47,49,50,50,50,50,55,55,55,58,59,59,59,59
a) Construct a frequency and relative frequency table starting with the lower class limit of
20 and a class width of 10. The first class is 20-29, the second class is 30-39, and so on.
b) Draw a histogram and describe the shape of distribution.

2. The number of vehicles of 23 Bay Area families are
1,1,1,2,2,2,2,2,3,3,3,3,3,3,3,4,4,4,4,4,5,5,5
a) Construct a frequency and relative frequency table. Each digit is its own class. This
means that the first class is 1, the second class is 2, and so on.
b) Draw a histogram and describe the shape of distribution.

3. The phone bills of a group of Bay Area family. Use the histogram to answer the following questions. Assume the number on the x-axis represents the midpoint of each class.
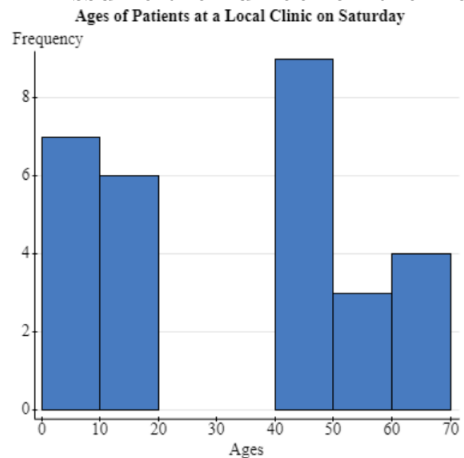

Histogram of Phone Bills
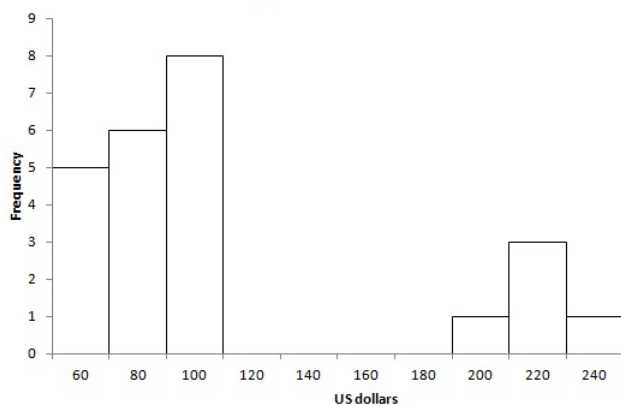
a) How many family are in the group?
b) What is the mean amount of phone bills?

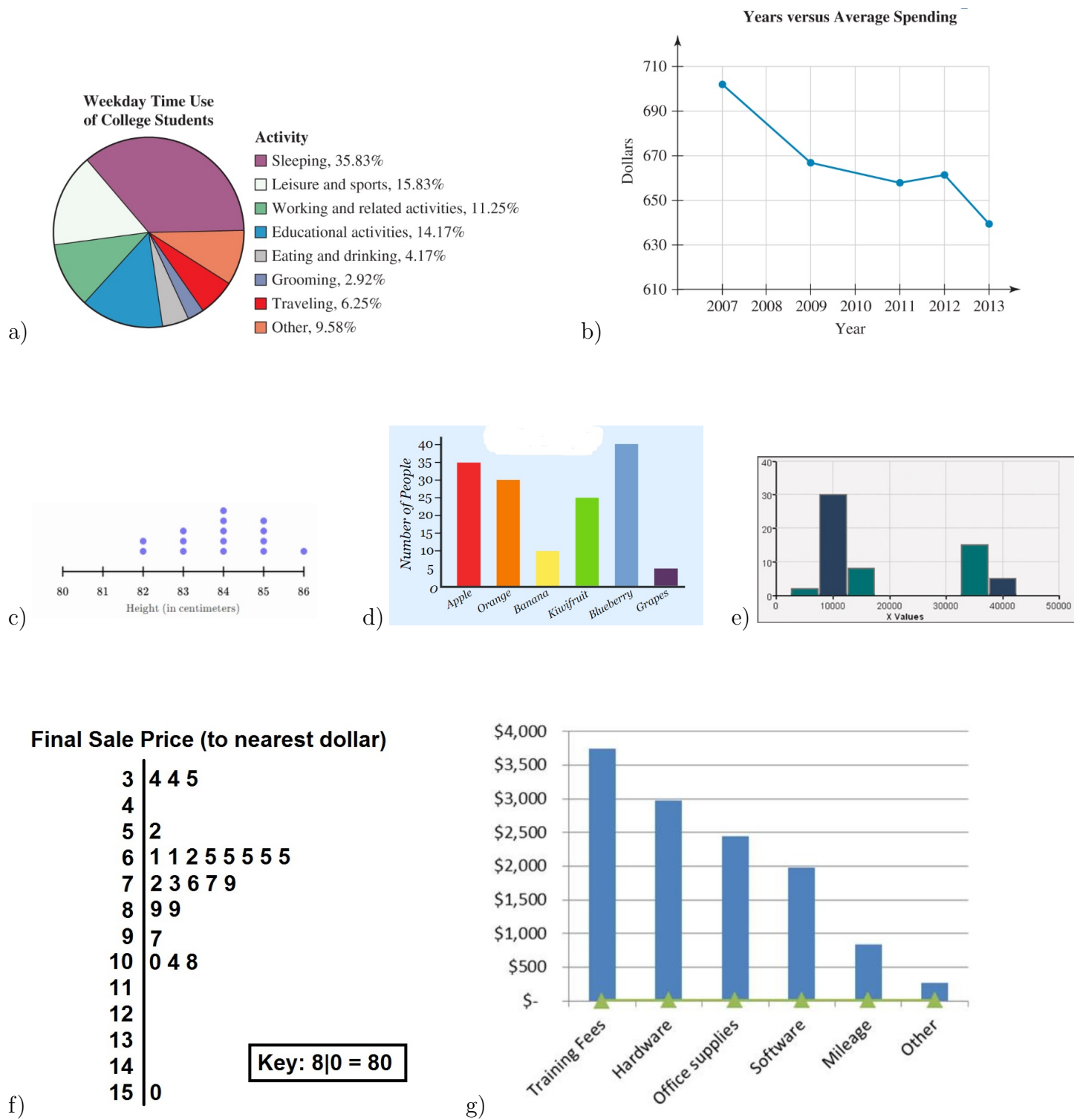hint: $\bar{x} = \dfrac{\sum(\text{midpoint})(\text{frequency})}{\text{total frequency}}$

4. Assume the number on the x-axis represents the lower class limit of each class.

Ages of Patients at a Local Clinic on Saturday

a) How many patients are there at the clinic?
b) What is the mean age of the patients?

hint: $\bar{x} = \dfrac{\sum(\text{midpoint})(\text{frequency})}{\text{total frequency}}$

5. Identify the following graphs and charts. Histogram, bar graph, pareto chart, circle/pie graph, time-series graph, stem-and-leaf display, or dot plot?

Weekday Time Use of College Students

Activity
- Sleeping, 35.83%
- Leisure and sports, 15.83%
- Working and related activities, 11.25%
- Educational activities, 14.17%
- Eating and drinking, 4.17%
- Grooming, 2.92%
- Traveling, 6.25%
- Other, 9.58%

a)

Years versus Average Spending

b)

c)

d)

e)

Final Sale Price (to nearest dollar)

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

Key: 8|0 = 80

f)

g)

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6. Consider a data set with $\bar{x} = 100$ and $s = 20$. Is data value $x = 150$ within two standard deviations from the mean?

7. Consider a data set with $Q_1 = 15$ and $Q3 = 20$. Is 40 an outlier?

8. Twenty hikers report the time in hours it took each one to complete Half-dome hike:
8,9,9,10,10,10,10,10,11,11,11,11,11,12,12,12,13,14,14,20
Find the mean, standard deviation, median, mode, and range of the sample data.

9. Which histogram has the highest standard deviation? And which histogram has the lowest standard deviation?
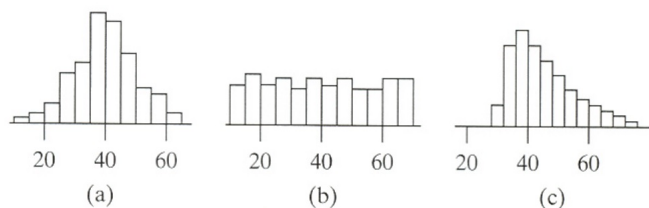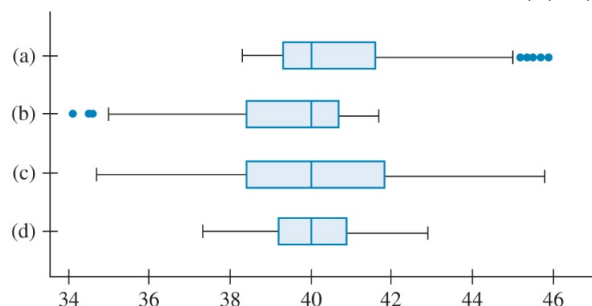

10. Consider the boxplot below
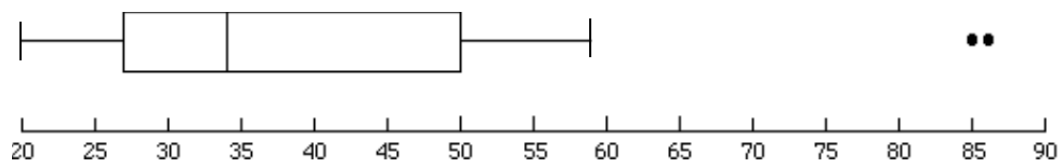
a) Identify Q_1, Median, Q_3, minimum data value, and maximum data value.
b) Identify all outliers.
c) Compare the mean to the median.

11. Consider the boxplot of data sets (a), (b), (c), and (d) below. (4pts each)

Which data set has the smallest mean and which has highest mean? Explain.

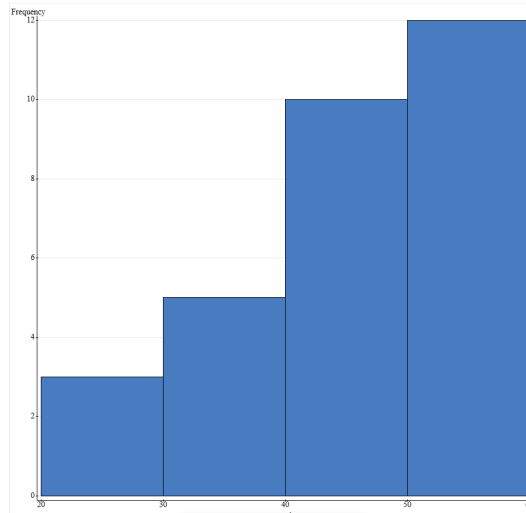12. The age of 30 employees in a small Bay Area company are listed below
19,33,45,56,73,39,44,55,62,39,45,33,45,40,30,35,45,55,51,42,44,56,60,66,67,58,44,45,70,60
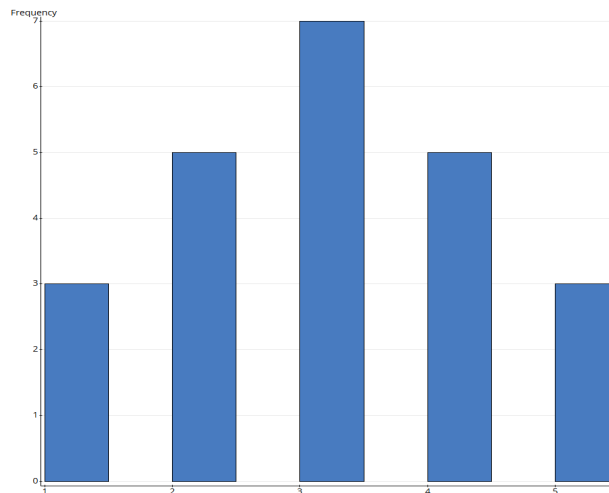a) Find the IQR, left fence, right fence, and all outliers.
b) Sketch a boxplot.

1.

var1	Frequency	Relative Frequency
[20 to 30)	3	0.1
[30 to 40)	5	0.16666667
[40 to 50)	10	0.33333333
[50 to 60)	12	0.4

right-skew distribution

2.

var2	Frequency	Relative Frequency
1	3	0.13043478
2	5	0.2173913
3	7	0.30434783
4	5	0.2173913
5	3	0.13043478

normal distribution

3.

1. 5+6+8+1+3+1=24
2. (5*60+6*80+8*100+1*200+3*20+1*240)/24=111.6667

4.

1. 7+6+9+3+4=29
2. (7*4.5+6*14.5+9*44.5+3*54.5+4*64.5)/29=32.4310

5.

a:pie graph b:time-series graph c:dot plot d:Histogram e:bar graph
f: stem-and leaf plot g:pareto graph

6.

range: 100-2(20)=60
100+2(20)=140
150>140
not inside

7.

IQR=20-15=5
right fence=20+1.5(5)=27.5
40>27.5
It's outliner

8.

Summary statistics:

Column	Mean	Std. dev.	Median	Mode	Range
var3	11.4	2.5628931	11	Multiple modes	12

9.

Highest: B
lowest: A

10.

a. Q1:27 Median:34 Q3:50 Min:20 Max:59
b. 85, 86
c. right-skew, mean > median

11.

Smallest:B Highest:A
A lot outliner in left and Q1 lean most to the left, on the contrary, a is the same

12.

a. IQR=58-40=18 left fence=40-1.5*18=13 right fence=58+1.5*18=85w no outliner
b.