Section 3.1

A group of 24 students was asked "If you could have one superpower, what would it be?" The students responses are here.

Mind read	Fly	Fly	Other
Telekinesis	Fly	Other	Teleport
Other	Other	Telekinesis	Fly
Teleport	Teleport	Invisible	Other
Other	Invisible	Fly	Other
Mind read	Other	Fly	Other

(a) Construct a frequency table.

(b) Construct a relative frequency table.

(c) Construct a frequency bar graph.

(d) Construct a relative frequency bar graph.

(e) What proportion of students chose flying?

(f) What proportions of the students did **NOT** choose invisibility?

(g) What proportion of the students chose telekinesis **OR** mind reading?

Section 3.2

Several people were asked their gender and whether or not they worked. The answers as summarized below:

Table 31 Gender versus Working

Student	Gender	Working?
1. Charysse	Female	Yes
2. Peggy	Female	Yes
3. Arthur	Male	Yes
4. Jorge	Male	No
5. Marco	Male	Yes
6. Jenna	Female	No
7. Karin	Female	Yes
8. Brandon	Male	Yes
9. Marisha	Female	No
10. Holly	Female	Yes

Source: *J. Lehmann*

Use it to answer the following questions:

1. Create a two way table that represents gender vs working
2. What proportion of students are Female **AND** Work?
3. What proportion of students are Female **OR** work?
4. Create a multibar graph.
5. What proportion of Male students work?
6. What proportion of students work?
7. What proportion of students are male?

Section 3.3

The following data is the top 50 finishers of the women's New York City Marathon.

161	163	179	179	180	146	149
176	149	150	177	177	179	148
177	177	160	158	177	172	160
166	167	170	171	150	172	173
173	174	175	175	161	164	176
152	155	155	176	177	161	176
178	180	145	178	148	148	149
181						

Use it to answer the following questions:

1. Create a stem and leaf plot to represent the data.
2. What is the frequency of the observation 148? In context of the problem, what does this mean?
3. Which observation has the greatest frequency?
4. What type of data is this?
5. What is the 87th percentile? What does it represent in this situation?
6. How many observations are below 160?
7. What percentile is the value 164?

Section 3.4

The following data is the top 24 hits of smartphone prices on Amazon.

95.99	79.99	119.99	79.99	139.99
84.95	139.99	164.00	79.45	249.00
89.99	95.99	175.99	64.98	147.00
70.99	48.43	49.99	175.99	82.95
299.99	68.74	98.89	134.12	137.95
179.72	176.00	39.99	136.00	299.99

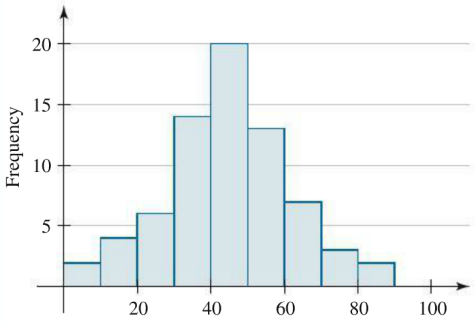
Use it to answer the following questions:

1. Create a histogram with a class width of 25 and a lower class bound of 25.
2. Describe the shape of the distribution.
3. Are there any outliers? If so, why is there an outlier?
4. What proportion of smartphones have prices between $95 and $114?
5. Calculate the mean, median, mode, range and standard deviation for this data set.

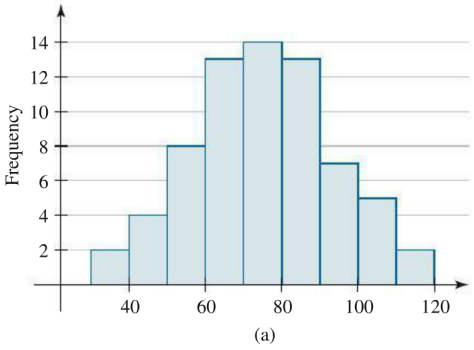
Section 4.1

Use the above to answer these questions.

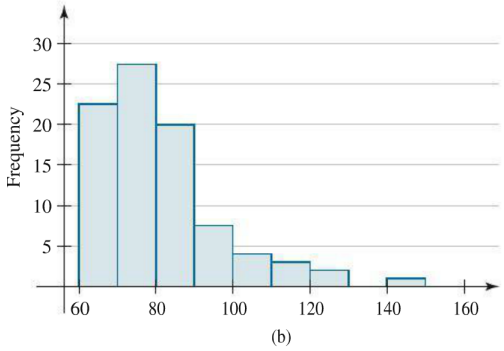
1. Describe the shape of each of the histograms
2. How is the mean related to the median in each of the histograms?
3. Which histograms would we use the mean and standard deviation to describe?
4. Which histograms would we use the median and range to describe?
5. Estimate the mean and median for each of these histograms.



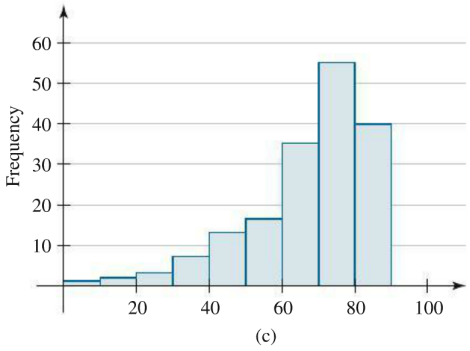
(d)



(a)

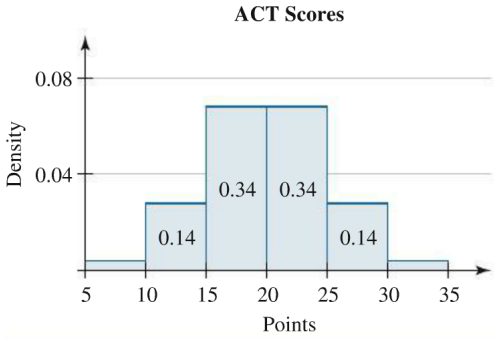


(b)



(c)

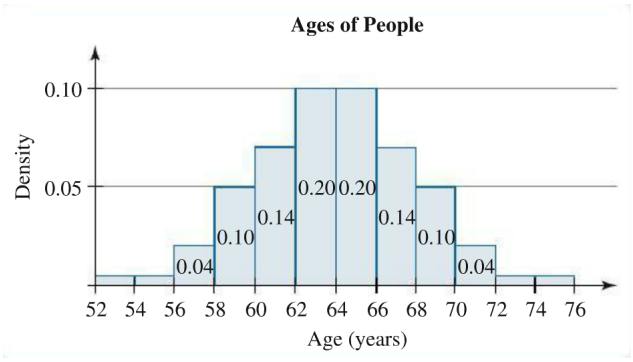
Section 4.2



Use this to answer the following questions:

1. Estimate the proportion of scores that are between 15 and 25 points.
2. Estimate the proportion of scores that are between 10 and 30 points.
3. Estimate the proportion of scores that are between 5 and 35 points.
4. Estimate s.
5. What rule did you use to estimate s?
6. What is another name for the things you calculated in Questions 1, 2 and 3?

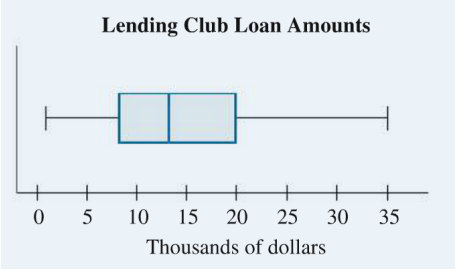
Section 4.2



1. Estimate M
2. Estimate $\overline{x}$
3. Estimate s
4. Estimate R
5. How did you find the answer to Question 3?
6. Using your estimate to s and $\overline{x}$ calculate 1, 2 and 3 standard deviations from the mean.

Section 4.3

Use the following boxplot to answer some questions.



1. Describe the shape of the boxplot.
2. Estimate the 25th percentile. In context of the problem, what does this mean?
3. Estimate the percentile of a \$20 thousand dollar loan. What does this mean in context of the problem.
4. What is the largest loan?
5. What is the IQR?
6. A student says that there are more loans for \$20-\$35 thousand dollars. What would you tell this student?
7. How much data is between the loan amounts \$0 and \$8.3 thousand dollars? How do you know?