1A) Below is a reminder of the basic components of a box and whisker plot, which is known as a box plot.

25%
Q1
Lower Quartile

50% 75%
Median Q3

Minimum Value

Upper Quartile

Maximum Value
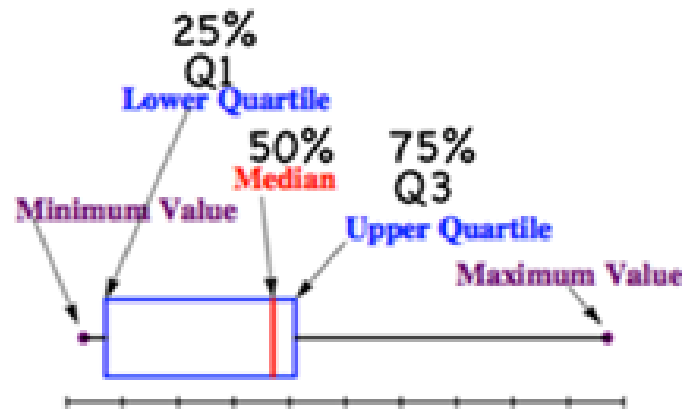
-Each whisker and each of the smaller boxes account for 25% sections of the data.

The list below contains the speeds that people were driving on the onramp to the highway. Find the values needed to make a box and whisker plot to represent the data.
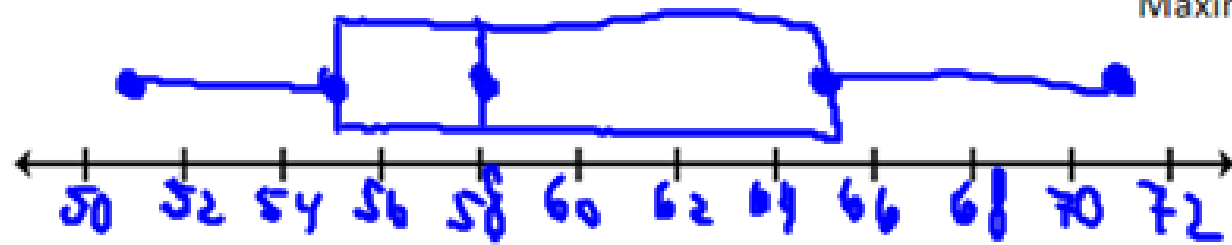
Q1 Q3

51 53 55 56 56 58 60 62 65 67 71

Minimum: 51

Median: 58

Maximum: 71

Q1: 55

Q3: 65

IQR: 10

65 - 55 = 10

50 52 54 56 58 60 62 64 66 68 70 72
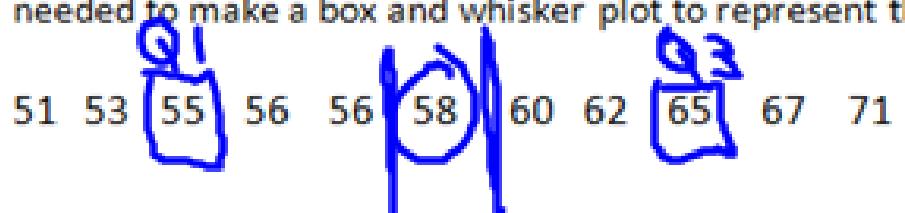
1B) What are some statements that you can say about the data? Since this is a boxplot, use percentages and the context of the data to make summarizing statements.

Interpreting Box and Whisker Plots

2A) The box plots below shows the average miles per gallon of gas used in city driving for 2002 models of small cars and sports utility vehicles.
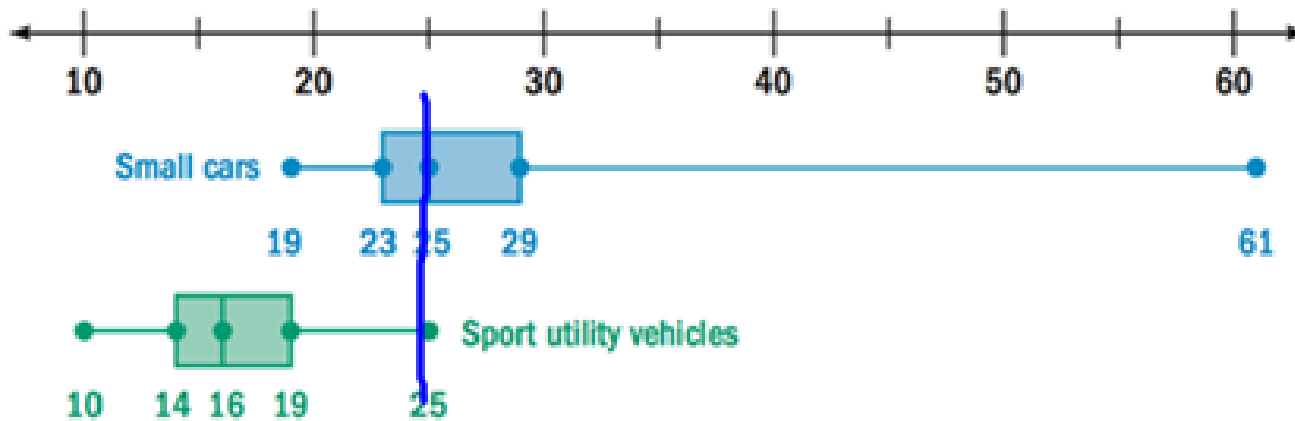
Circle the things you can tell from the box plots:

Mean
~~Median~~
MAD
~~IQR~~
~~Range~~

2B) What is the typical number of miles per gallon for small cars? SUV's? How can you tell?

Cars = 25 mpg   SUV = 16 mpg   We look at the median

2C) Write a statement to summarize the data shown in the box plot.

Comparing Measures of Spread (Variation)

3A) The table below shows the running time in minutes for two kinds of movies. Find the mean absolute deviation for each set of data.

Mean

$\dfrac{471}{5} = 94.2$

Running Time for Movies (min)									
Comedy					Drama				
90	95	88	100	98	115	120	150	135	144

Comedy

$|94.2 - 90| = 4.2$ $|94.2 - 98| = 3.8$

$|94.2 - 95| = 0.8$

$|94.2 - 88| = 6.2$ MAD $= \dfrac{20.8}{5}$

$|94.2 - 100| = 5.8$

$= \boxed{4.16}$

Drama

3B) What are some summarizing statements you can say about the data to compare the variation?

4) The line plots below represent 2 different baskebtall teams. The mean is denoted by the vertical line.

73, 73, 75, 75, 76, 76, 77, 78, 79, 79, 80, 80, 83

Players' Heights

Men (in inches)

Players' Heights

Boys (in inches)
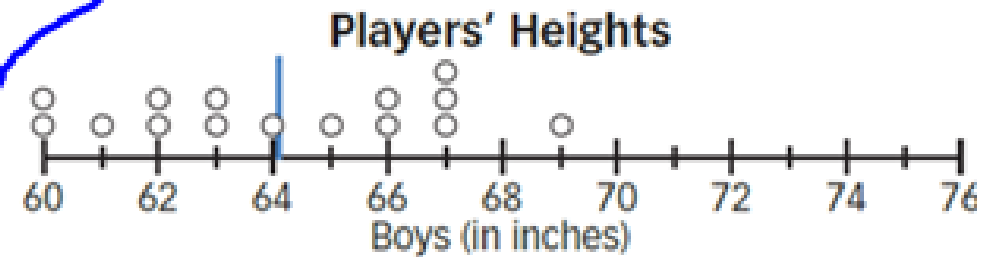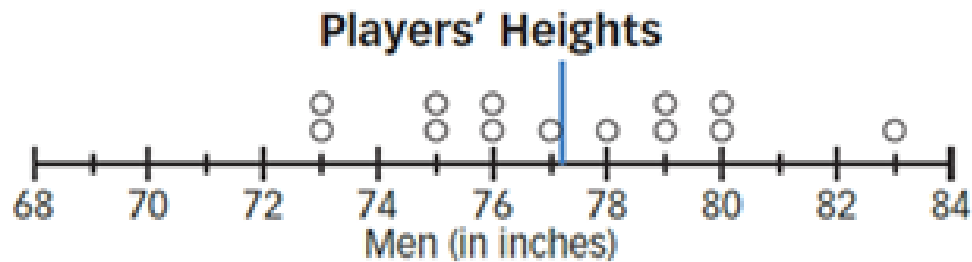
A) Just looking at the 2 line plots, can you predict which one will have a higher/lower MAD? Explain

B) Suppose that the men's average height (mean) is 77.2 inches and the boy's average height is 64.1 inches. Find the mean absolute deviation of each set of data.

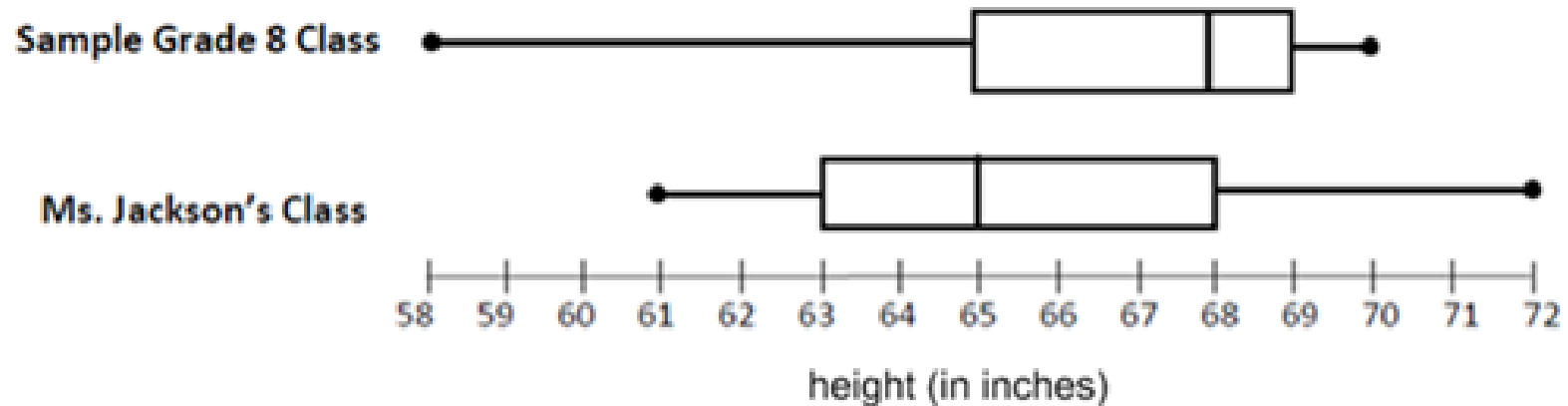Men's heights: Boys' heights:

$|77.2 - 73| = 4.2$

$|77.2 - 73| = 4.2$

$|77.2 - 75| = 2.2$

$|77.2 - 75| = 2.2$

C) Compare the medians and ranges of both teams' heights.

5) The box blot below represents heights (in inches) of a sample of 8th grader in Ms. Jackson's class and the heights of a sample of all 8th graders in the school.

A) **Compare the box plots above. Use statistics to support your statements.** (Hint: I do not want simple statements about the min, max, median, Q1, or Q3, IQR, or range) I want you to be able to use percentages and the context of the problem to compare the two sets of data.

B) Using the box plots above, is Ms. Jackson's class shorter, equally as tall, or taller than the 8th grade class? How can you tell?

6) The data below shows the number of hours 7 people watch television each week.
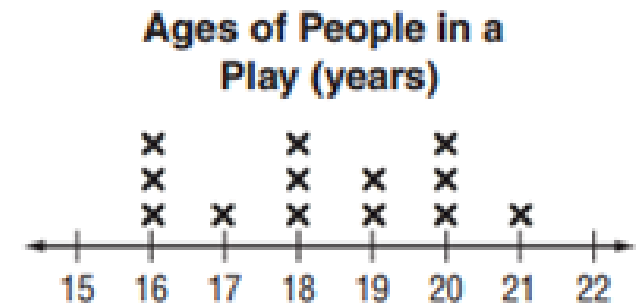
Sample 1

12   26   15   19   21   17   16

A) Find the mean and median of the data above. SHOW WORK.

B) Find the range and the MAD of the data above. SHOW WORK.

7) The graph shows the ages of people in a play.
A) Describe the shape of the distribution. Identify any clusters, gaps, peaks, or outliers.

Ages of People in a Play (years)

```
X           X           X
X           X     X     X
X     X     X     X     X     X
+--+--+--+--+--+--+--+--+--+
  15  16  17  18  19  20  21  22
```

B) Describe the center and spread of the distribution. Justify your response based on the shape of the distribution.

8) A zookeeper has tracked the weights of many chimpanzees over the years. The box plots below show the weights of two samples of chimpanzees. The box plots show a sample of 8-year-old chimpanzees and a sample of 10-year-old chimpanzees.

8-Year-Old Chimpanzees

75 85 95 105 115 125 135 145 155

Weight (lb)

10-Year-Old Chimpanzees

75 85 95 105 115 125 135 145 155

Weight (lb)
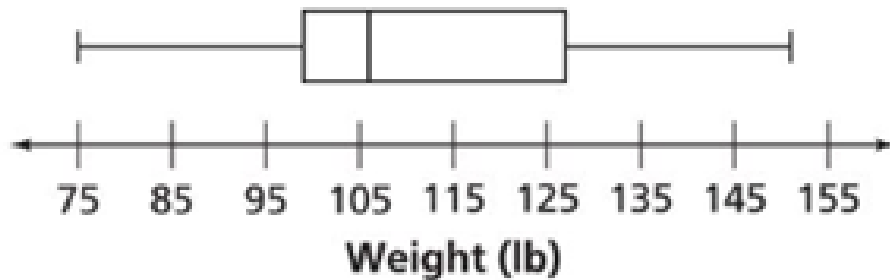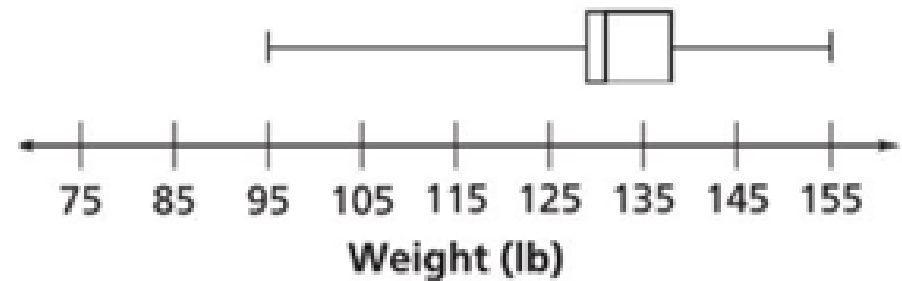
To zoo acquired some chimpanzees from a nearby zoo that was closing. They received a cage of 8-year-old chimpanzees and a cage of 10-year-old chimpanzees. The zoo forgot, however, to keep track of the cages. They weighed the chimpanzees in one cage and graphed the data.

Mystery Chimpanzees

75 85 95 105 115 125 135 145 155

Weight (lb)
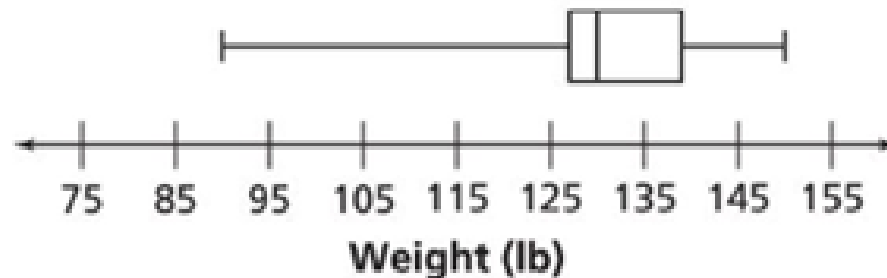
How old are the chimpanzees shown in the above distribution? Explain your reasoning.