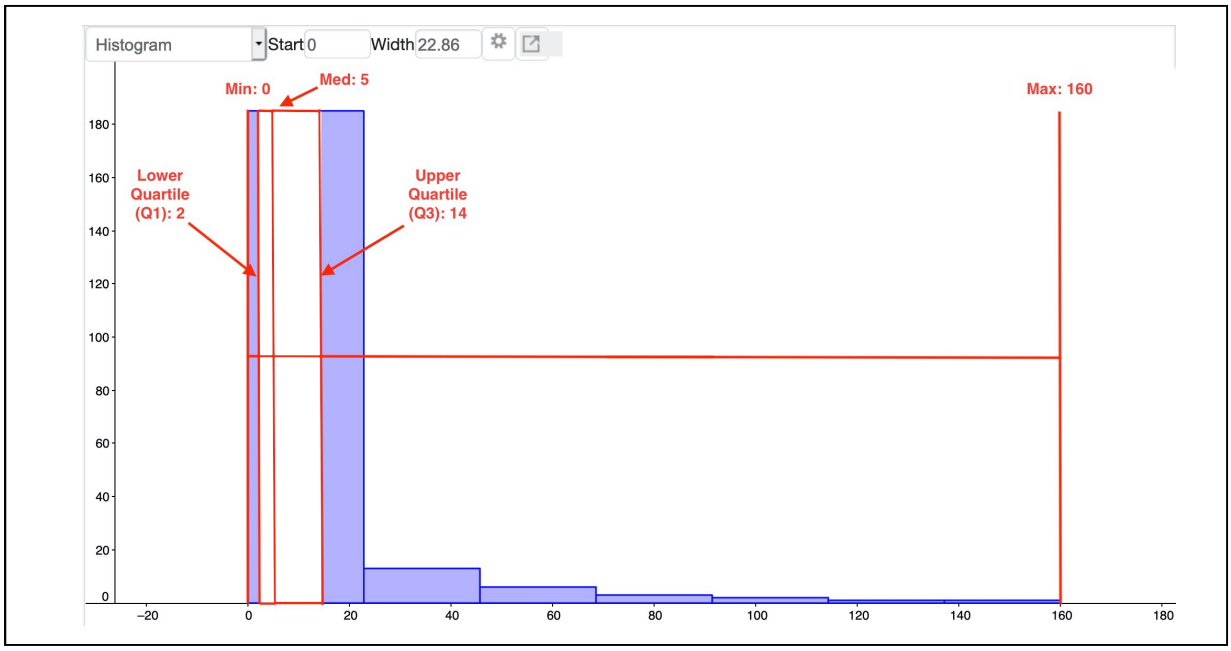
Math 18
Test #1
Fukumoto

1. Social website hours per week for California 12th grades (both male and female): https://www.geogebra.org/classic/cukyv2g8

   a. Using the data, fill in the following table using EXACTLY 7 CLASSES:

Miles per gallon	Frequency	Relative Frequency	Cumulative Relative Frequency

   b. Graph the **frequency histogram** and overlay a **box-plot** on it. **Scale the x-axis**. Label all the important point on the box-plot.



c. Which number represents the 88^{th} percentile?

d. What number represents the 40^{th} percentile?

e. Using the correct symbols, what are the mean and standard deviation of the histogram?

f. What number represents the 97^{th} percentile?

g. Calculate a "normal" range (one standard deviation) for the number of hours on a social website. Make sure you show me which numbers you use to make your calculation.

h. How many standard deviations away is 53 from the mean? Would 53 be a "normal" value? Why or why not?

i. How many standard deviations away is 12 from the mean? Would 12 be a "normal" value? Why or why not?

2. For the next problems, use the data provided in the table of the reaction time (in milliseconds) of a sample of 30 females to an auditory stimulus.

Reaction time	Frequency
304.5	5
332.5	4
360.5	3
388.5	5
416.5	6
444.5	4
472.5	1
500.5	2

a. The table shows a sample of women. Calculate the mean and standard deviation of the age of the reaction time. Use the correct symbol when you label your result.

b. What are the two reaction times that are one standard deviation away from the mean?

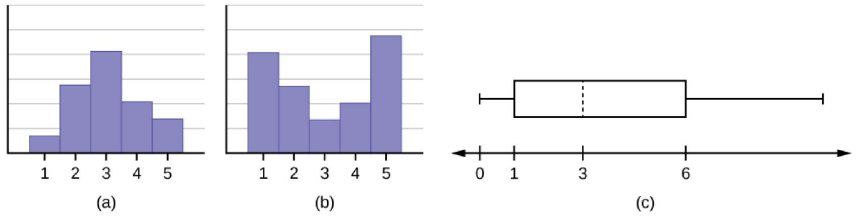
c. According to the table, how many women lie in-between the two reaction times that you found from above in part b? What percent of women lie between those values?

d. Construct a histogram of the data of super lotto winners. Give the graph scale:

Histogram

e. On the graph, label the mean on the histogram, and in one or two sentences, tell me what the mean means visually.

4. For the following pictures, answer the questions:



   a. Are the medians (50th percentile) for graphs b and c the same?

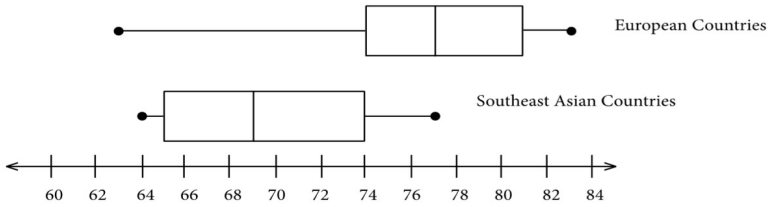
   b. Are the means for graphs a and b the same?

   c. Which one has a larger standard deviation, a or b?

   d. Out of all three graphs, which one has the largest maximum?

   e. Which graph has the larger 3rd quartile range, a or c?

5. For the box plots below, assume the European and Asian countries have the same amount of data. The data is about the life expectancy in different countries.



a. Which range has more data, European countries from 63 to 74, or Asian Countries from 64 to 74?

b. Is there more data in the first quartile of the European countries, or the first quartile of Asian Countries?