**11.6 Analyzing Data**  
Objective: To calculate measures of central tendency

To draw and interpret box-and-whisker plots

**Measures of Central Tendency**: “middle” of the data set  
  
**Mean**: the average of a set of data   
  
**Median**: when listed in order the middle number (if there is an even amount of data values then you take the mean of the “two middle” numbers to find the median)  
  
**Mode**: the most frequently occurring value(s)

**\***These are the three most common measures of central tendancy

**Outlier:** value that is substantially different from the rest of the data in the set

**\***an outlier greatly influences the mean

**Range:** the difference between the greatest and least values

Find the mean, median, mode and outlier of the following data. How would the mean median and mode be affected if the outlier were removed?

98, 99, 100, 95, 90, 90, 84, 88, 88, 90, 51

51, 84, 88, 88, 90, 90, 90, 95, 98, 99, 100

With Outlier Without Outlier

Mean: 973/11=88.45 Mean: 922/10=92.2  
Median: 90 Median: 90  
Mode: 90 Mode: 90  
Outlier: 51 Outlier: ignored

Range: 49

**Quartiles:** what is created when you use the median to split the data into two parts, then split the two parts into two again using the median of each

**Interquartile Range:** difference between the 1st and 3rd quartile

**Box-and-whisker plot:** a way to display data using quartiles, minimums and maximums

Example: 51, 84, 88, 88, 90, 90, 90, 95, 98, 99, 100

Use the data above to create a box-and-whisker plot.

51, 84, 88, 88, 90, 90, 90, 95, 98, 99, 100

Minimum------[Q1 Median Q3]----------Maximum

Q1=88

Q2=median=90

Q3=98

The interquartile range is 98-88=10

Example: 51, 84, 88, 88, 90, 90, 90, 95, 98, 99, 100

1. What value is at the 72nd percentile?

11\*73%=11\*.73=8.03

8 values fall at or below 95; therefore the value at the 72nd percentile is 95 & below

1. What value is at the 36th percentile?

11\*36%=11\*.36=3.96

4 values fall at or below 88; therefore the value at the 36th percentile is 88 & below

**HMWK: page 715 #1-9, 13-17 (odd)**