STAT 200
Exercise 2

1. **The following is some data from U.S. News and World Report on the top ranked Universities in the U.S. in 2001.** We are looking at the Acceptance rate for the top 115 universities. The Acceptance rate is based on the percentage of applicants who were admitted. I have constructed the Stem and Leaf Plot for the data and you (and I gave you the median value).

a. Calculate the:

Mean = Median = Mode =

Maximum = Minimum = Range =

Acceptance Rate for 115 Top Universities	
1	1 1 4 5 6 7 8 9
2	1 3 6 7 7 8 9
3	2 2 2 3 3 4 4 5 5 5 7 8 9
4	1 2 2 5 8 8 9 9 9
5	2 2 3 4 5 5 6 9 9
6	0 1 1 2 2 2 3 3 3 3 4 4 4 5 6 6 7 7 8 9 9 9 9
7	0 1 1 1 2 3 3 3 4 4 4 4 5 6 7 7 8 8 8 9 9 9
8	0 0 0 1 1 2 3 3 4 4 4 4 4 4 4 5 7 8 9 9 9
9	0 1 3 4
Stem = 10's place Leaf = one's digit	

Sum X = 6,841	n = 115
Sum X^2 = 463,499	Median = 64

Variance =

Standard Deviation =

b. What is the *position* of the median value for this data?

c. Does the mode make sense as a measure of Central Tendency for this data?

d. Based on what you know about the different criteria used by different universities to judge students for admittance, why do you think this distribution is the way it is? Think about the spread of the data and the measures of spread for the data, such as the range and standard deviation. Does the spread seem large? *Hint: Harvard has the lowest acceptance rate at 11%. The University of Delaware has an acceptance rate of 63%.*

2. **Answer the following questions about variability of data sets:**

   a. What is the primary disadvantage of using the range to compare the variability of data sets?

   b. Describe the sample standard deviation using words rather than a formula.

   c. Can the variance of a data set ever be negative? Explain.

   d. Can the variance ever be smaller than the standard deviation? Explain.

3. **The following is a small data set of 11 observations.** I want you to calculate some statistics by hand to cement the class material. You can use the regular formula for the variance or the computational formula - I'm just interested in the correct result.

Data
18
10
15
13
17
15
12
15
18
16
11

Calculate:

a. **Mean**

b. **Median**

c. **Mode**

d. **Range**

e. **Variance**

f. **Std. Deviation**

g. **z-score for a data value of 17**