Measure of Spread

Now that we have analyzed the different measures of center let's look at a specific measure that tells us how spread out our data is. For a population this measure is called the **variance** and for a sample it is the **standard deviation**.

Let's look at the standard deviations for our text and song data. Put the data for number of words in your last text in L1 and the data for the length of a song in L2. Now let's do a 1-var stat for each list and write down the following information.

# of word in last text

Mean = median = mode =

S_x (standard deviation) =

# of minutes in a song

Mean = median = mode =

S_x (standard deviation) =

Large standard deviations (this is relative to the data) tell us that our data is very spread out.

Which of our two standard deviations shows a bigger spread?

Why might that data be more spread out than the other?

Practice
You are going to go through all the data and complete each frequency table. Find all the necessary measures and complete the SOCS for the set using those values. Use the helpful notes below to complete this task.

Shape – if the mean > median it is skewed right
If the mean < median it is skewed left
If the mean = median it is symmetric

Outliers – Look at the frequency table to see if any value stands out as being much larger or smaller than the average. This would be an outlier.

Center – list the mean, median and mode of the data set.

Spread – Look at all the previous information and the standard deviation to decide if the data is **Consistent**: roughly symmetrical, no major outliers, center values are close together, and standard deviation is small

Inconsistent: skewed, may have outliers, center values differ, and standard deviation is large

1) Number of letters in your name

letters	frequency
11 - 12	
13 - 14	
15 - 16	
17 - 18	
19 - 20	
21 - 22	
23 - 24	

Shape?

Outliers?

Center?

Spread?

2) Signature length

Length (cm)	frequency
1 – 5	
6 – 10	
11 – 15	
16 – 20	
21 – 25	
26 – 30	
31 - 35	
36 - 40	
41 - 45	
46 - 50	

Shape?

Outliers?

Center?

Spread?

Which has the larger standard deviation?

What does this tell you about the two data sets?

3) Size of foot

Length (cm)	Frequency
20 - 22	
23 - 25	
26 - 28	
29 - 31	
32 – 34	
35 – 37	
38 - 40	

Shape?

Outliers?

Center?

Spread?

4) Height

Height (cm)	Frequency
140 - 144	
145 – 149	
150 – 154	
155 – 159	
160 – 164	
165 – 169	
170 - 174	
175 – 179	
180 – 184	
185 – 189	
190 - 194	
195 - 199	

Shape?

Outliers?

Center?

Spread?

Which has the larger standard deviation?

What does this tell you about the two data sets?