**Standard Deviation for Samples**

Standard Deviation: The measure of how spread out your data are. It shows how much variation exists from the average (mean).

How to Calculate Standard Deviation:

Step 1: Compute the mean for the data set

Step 2: Compute the deviation by subtracting the mean from each data point

Step 3: Square each deviation

Step 4: Add up the squared deviations

Step 5: Divide the squared deviation total by one less than the number of data points

Step 6: Take the square root of the number

Example:

Find the standard deviation for the data set: 1, 3, 4, 6, 9, 19

Step 1: Find the mean.

(1+3+4+6+9+19)/6 = 42/6 = 7 Mean = 7

Step 2: Compute deviations.

 Data point-mean

 1-7 = -6

 3-7 = -4

 4-7 = -3

 6-7 = -1

 9-7 = 2

 19-7 = 12

Step 3: Square each deviation.

 (-6)² = 36

(-4)² = 16

(-3)² = 9

(-1)² = 1

(2)² = 4

(12)² = 144

Step 4: Add the squared deviations.

 36+16+9+1+4+144 = 210

Step 5: Divide the squared deviation total by one less than the number of data points

 One less = 5

 210/5 = 42

Step 6: Take the square root of the number.

 $\sqrt{42}=6.48$

**So the standard deviation for this data set is 6.48.**

**Now it is your turn to try.**

Find the standard deviation of each data set below.

1) 1, 2, 3, 4, 5

2) 4, 2, 5, 6, 8, 3

3) 73, 58, 67, 93, 33, 18, 147

4) 6, 12, 25, 40, 40, 48, 60, 75

**Normal Distribution**





**For data set #3 from above, create a normal curve graph.**

You need to graph the mean and then three standard deviations on your graph. Use your mean from #3 above and the standard deviation in order to graph the normal curve.

