

Calculating Standard Deviation

Below are 2 sets of data (6 points each) where the Mean (\bar{x}) = 5.

Set 1: 2, 4, 5, 6, 6, 7

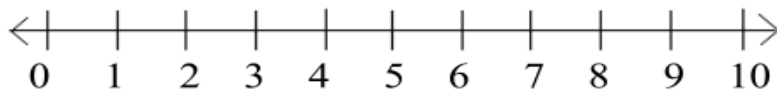
Set 2: 3, 4, 4, 5, 5, 9

(1) Make a Dot plot of each set of data on the same scaled axis below:

Set 2:

.....

Set 1:



Question – which data set has more variation (greater spread)?

We need a way to measure how spread out a data set is when we are using the Mean as a measure of Center. A calculation called **Standard Deviation** gives us one such value.

How it works for Data Set 1:

Data	Deviation	Sq. Deviation
x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
2		
4		
5		
6		
6		
7		
Sum =		

Sum of squared Deviations = _____

Variance = s_x^2 = _____

Standard Deviation = s_x = _____

s_x represents the _____

Now you repeat this for Data Set 2:

Data	Deviation	Sq. Deviation
x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
Sum =		

Sum of squared Deviations = _____

Variance = $s_x^2 =$ _____

Standard Deviation = $s_x =$ _____

Based on the standard deviations, which data set is more spread out?

Question – What kinds of values can the Standard Deviation be? What is the lowest possible value? What is the highest possible value? When would these happen?

Question – Is Standard Deviation a RESISTANT measure?