Practice Problems: Standard Deviations and Variance Answers

1. What is measured by each of the following:
Sum of Squares (*SS*) = *the sum of squared deviation scores*
Variance = *the mean squared deviation*
Standard Deviation = *the square root of the variance. It provides a measure of the standard distance from the mean.*

2. Calculate the standard deviation for the following population of scores:

8	5	3	7	5	6	4	7	2	6	5	3
6	4	5	7	8	6	5	6				

$\sigma = 1.59$

3. Calculate the mean, *SS*, variance, and standard deviation for the following sample:

6	8	4	3	5	7	4	3

The sample mean is 5, the SS is 24, the variance is 3.43, and the standard deviation is 1.85.

4. For the following data:

1	4	3	6	2	7	18	3	7	2	4	3

Compute the mean, standard deviation, median, and semi-quartile range. Then explain which measures of central tendency and variability provide a better description of the sample.

The mean is 5, and the standard deviation is 4.53. The median is 3.5. Most of the scores are clustered around 3 or 4 so the median provides a better description, while the outlier (18) distorts the mean and standard deviation.

5. What happens to a variance or standard deviation when a constant is added? What if the variance and standard deviation is multiplied by a constant.

Variability stays the same when a constant is added but multiplying by a constant changes the variability.

6. Calculate the standard deviation for the following three sample data sets:

a.	13	21	27	31	35	24	28	32	17	20 *sd = 7.05*
b.	100	115	112	113	95	87	90	104	107	98 *sd = 9.76*
c.	55	54	59	55	52	51	57	49	61	57 *sd = 3.68*

These answers may vary due to rounding error.