

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, and median. Explain which measure of central tendency provides 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.