

Date\_\_\_\_\_

The standard deviation is used to tell how far on average any data point is from the mean. The smaller the standard deviation, the closer the scores are on average to the mean. When the standard deviation is large, the scores are more widely spread out on average from the mean.

**Practice Problem #1: Calculate the standard deviation of the following test data by hand. Use the chart below to record the steps.**

**Mean:** \_\_\_\_\_

***n*:** \_\_\_\_\_

Test Score (x)	Difference from the mean (x - $\bar{x}$ )	(Difference from the mean) <sup>2</sup> (x - $\bar{x}$ ) <sup>2</sup>
	Sum of (Difference from the mean) <sup>2</sup> $\sum (x - \bar{x})^2$	

Sum of (Difference from the Mean)<sup>2</sup> divided by degrees of freedom ( $n - 1$ ): \_\_\_\_\_ → **This is called variance.**

$$\frac{\sum (x - \bar{x})^2}{(n - 1)} =$$

**Standard deviation = square root of what you just calculated (variance).**

**Standard deviation** =  $\sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$  = \_\_\_\_\_.

**PRACTICE PROBLEM #2:**

**For the following sets of data, calculate the mean and standard deviation of the data. Describe the mean and standard deviation in words after calculating it.**

- a. The data set below gives the numbers of home runs for the 10 batters who hit the most home runs during the 2005 Major League Baseball regular season.

51, 48, 47, 46, 45, 43, 41, 40, 40, 39

- b. The data set below gives the waiting times (in minutes) of several people at a department of motor vehicles service center.

11, 7, 14, 2, 8, 20, 13, 3, 6, 10, 3, 8, 4, 8, 4, 7

- c. The data set below gives the calories in a 1-ounce serving of several breakfast cereals.

135, 130, 120, 110, 110, 100, 100, 120, 125

Compare the SD to the actual average deviation. Why do you think SD is so much larger?

Compare your results to a five number summary. What do you notice about the mean, median, and overall spread of the data?