

Name _____

Date _____ Period: _____

CALCULATING STANDARD DEVIATION**Measures of Central Tendency:**

Mean: Mean is the most common measure of central tendency. It is simply the sum of the numbers divided by the number of numbers in a set of data. This is also known as average.

Median: Median is the number present in the middle when the numbers in a set of data are arranged in ascending or descending order. If the number of numbers in a data set is even, then the median is the mean of the two middle numbers.

Mode: Mode is the value that occurs most frequently in a set of data.

Measures of Spread: (Range, Variance, Standard Deviation) :

Range: Difference between highest and lowest score (data value)

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. (**Variance** is before taking the square root-see below)

The **standard deviation** is calculated to find the **average distance 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.

Test Scores: 22, 99, 102, 33, 57, 75, 100, 81, 62, 29

n : _____ Median: _____ Mean: _____ Mode: _____ Range: _____

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

Sum of (Difference from the Mean)² divided by $n - 1$ (sample) or n (population) : _____ → This is called **variance**.

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

Final Step:

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

$$\text{Standard deviation} = \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}} = \underline{\hspace{2cm}}.$$

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 prices (in dollars) of cordless phones at an electronics store.

35, 50, 60, 60, 75, 65, 80

- b. 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

- c. 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, 13, 3, 6, 10, 3, 8, 4, 8, 4, 7

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

135, 115, 120, 110, 110, 100, 105, 110, 125