

Standard Deviation

Definition:

The variance and the closely-related standard deviation are measures of how spread out a distribution is around the mean. In other words, they are measures of variability.

Ref: <http://www.davidmlane.com/hyperstat/A16252.html>

For each value x , subtract the overall avg (\bar{x}) from x , then multiply that result by itself (otherwise known as determining the square of that value). Sum up all those squared values. Then divide that result by (n) . Got it? Then, there's one more step... find the square root of that last number. That's the standard deviation of your set of data.

Ref: <http://www.robertniles.com/stats/stdev.shtml>

A simple example

Suppose we wished to find the standard deviation of the set of the numbers 8 and 12

Step 1:

Find the arithmetic mean (or average) of 8 and 12

$$(8+12)/2=10$$

Step 2:

Find the deviation of each no. from the mean

$$(8-10)=-2$$

$$12-10=2$$

Step 3:

Square each of the deviations

$$(-2)^2=4$$

Step 4:

Sum the obtained squares

$$4+4=8$$

Step 5:

Divide the sum by the no. of values which here is two (giving the average)

$$8/2=4$$

Step 6:

Take the non-negative square root of the quotient (bringing back the squared units back to regular units)

$$\sqrt{4}=2$$

So the standard deviation is 2

Ref: http://en.wikipedia.org/wiki/Standard_deviation