How to Calculate Standard Deviation Manually

1. Determine average of test results.
2. Calculate difference between average and individual test results
3. Calculate the square of individual results from Step 2, and determine the sum of those values.
4. Calculate the square root of: the sum from Step 3 divided by the number of tests minus 1.

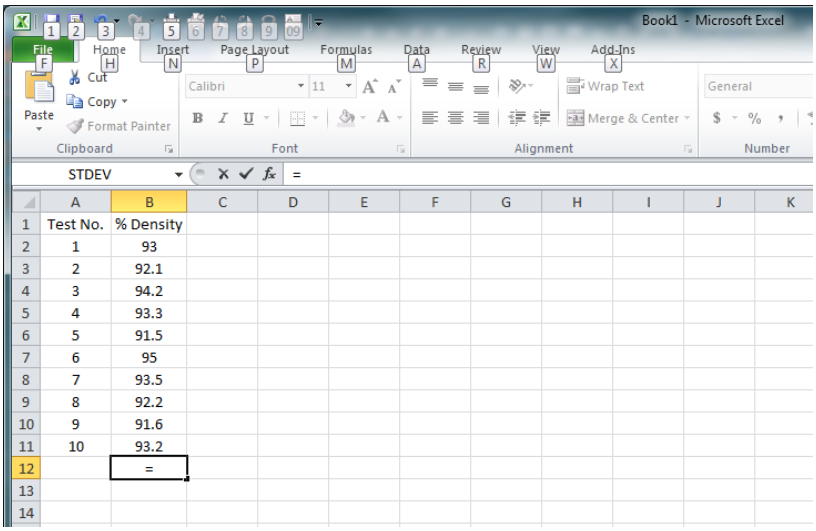
Example of 10 test results for % Density.

Step 1	Step 2	Step 3
93.0	0.0	0.00
92.1	-0.9	0.81
94.2	1.2	1.44
93.3	0.3	0.09
91.5	-1.5	2.25
95.0	2.0	4.00
93.5	0.5	0.25
92.2	-0.8	0.64
91.6	-1.4	1.96
93.2	0.2	0.04
Average = 93.0		Sum = 11.48

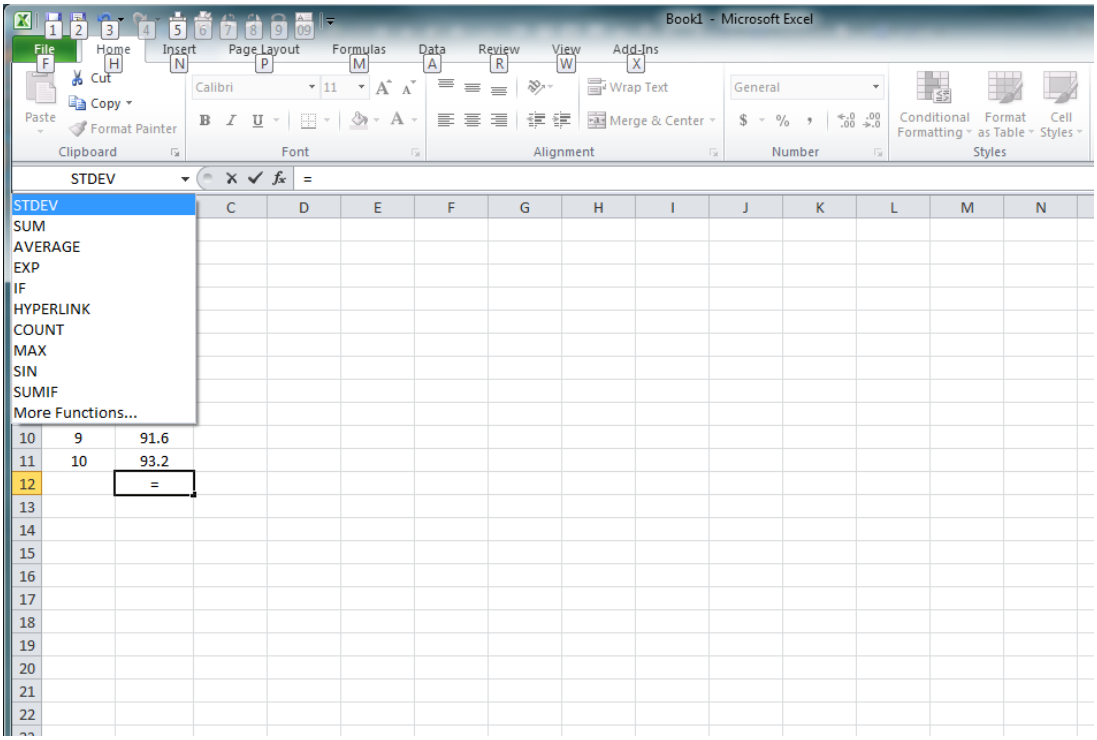
Step 4 $\sqrt{\frac{11.48}{9}}$ = 1.13, The standard deviation for these 10 sample results is 1.13.

Determine Standard Deviation Using an Excel Spreadsheet

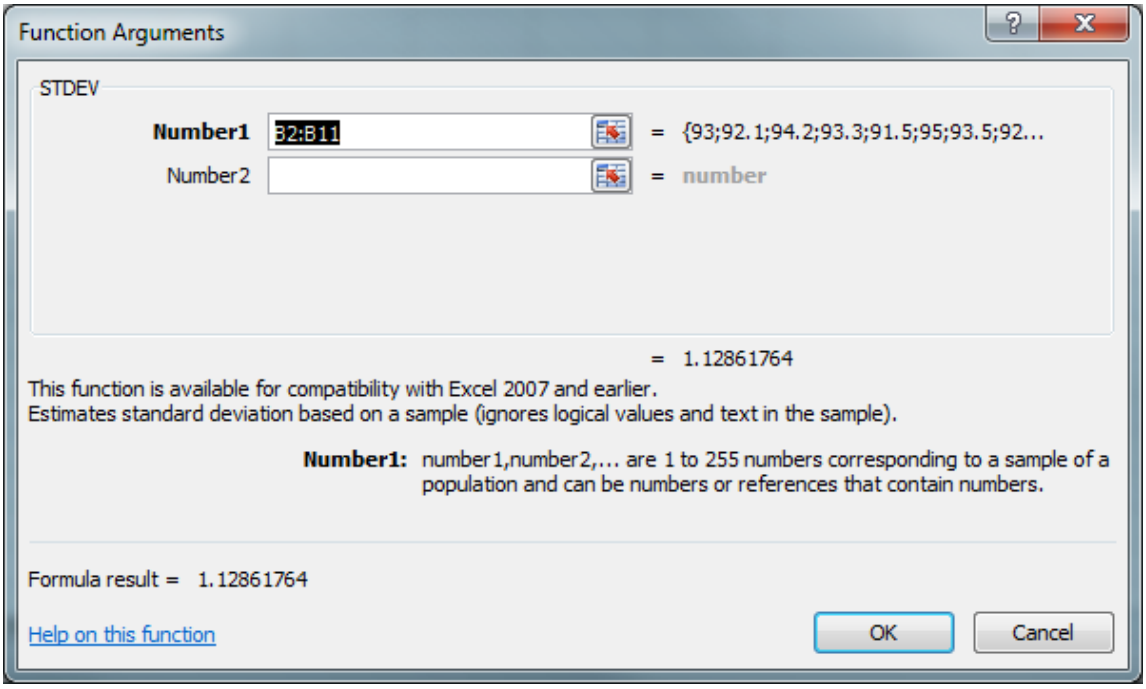
Step 1. Enter test Data. In the next cell below the test data, type the equals sign as shown below.



Step 2. Click on the drop down function box right above columns A & B, and select STDEV.

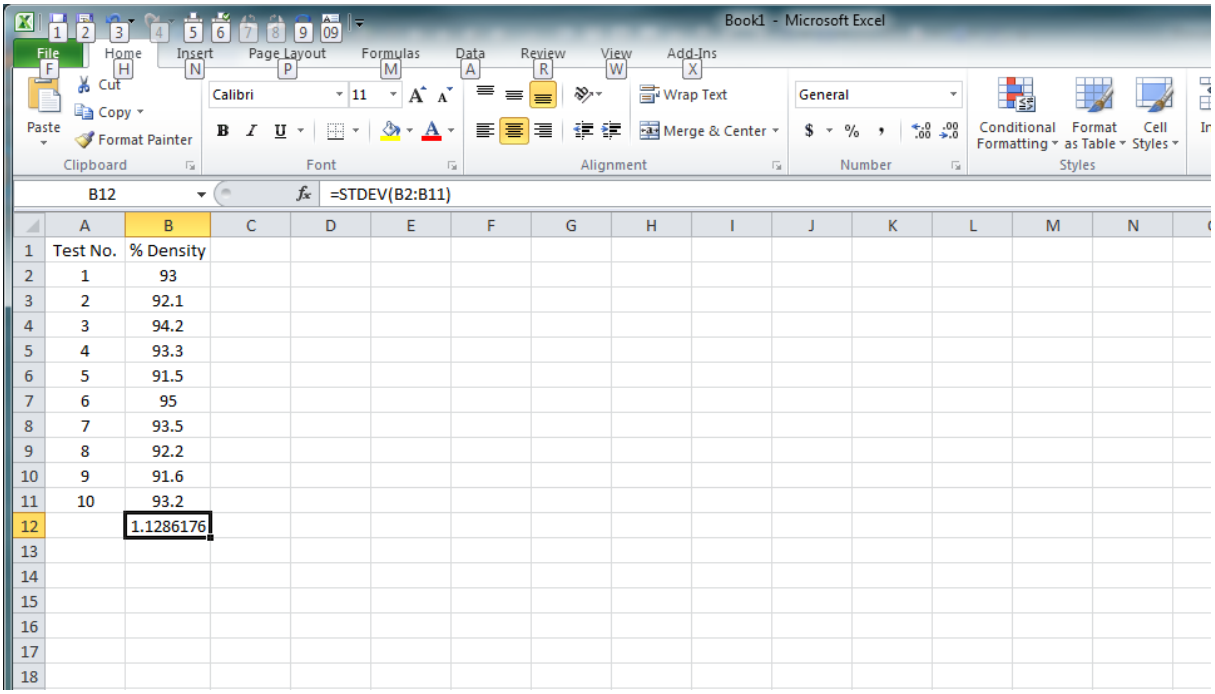


Step 3. Excel will give you the range of cells it "thinks" you want to use to calculate the standard deviation. Be sure the correct range of cells is shown; if not, correct the cell locations.



In this case, cells B2 through B11 are the correct values, so click on OK.

Step 4. Excel calculates the standard deviation for you; the answer is 1.13.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Test No.	% Density												
2	1	93												
3	2	92.1												
4	3	94.2												
5	4	93.3												
6	5	91.5												
7	6	95												
8	7	93.5												
9	8	92.2												
10	9	91.6												
11	10	93.2												
12		1.1286176												
13														
14														
15														
16														
17														
18														