

Calculator Procedures

TI – 84 Plus CE

Finding Mean, Median, and Standard Deviation (and Variance)

Finding Mean, Median, and Standard Deviation (all at once) with your TI – 84

Introduction:

To find the mean, \bar{x} , of a certain set of data, you are adding up all of the data in the set and then dividing by n , the number of terms in the set. The symbol for adding up a group of numbers looks like this: $\sum_{i=1}^n x_i$.

To find the median, the middle of the data, you must put the data in order and then count off until you determine the exact central point. If there are an odd number of data points (for instance, 9 data points), you can easily find the median. If there are an even number of data points however, you would find the two points in the middle, add them up and divide by 2 to find the number halfway between them. Your TI-84 can tell you the median without you're needing to enter the data in any particular order. Furthermore, it can tell you the median of the left half of the data and the median of the right half of the data, dividing your data in quarters.

Standard Deviation is the square root of a type of measure of spread called variance. To find the variance, you must first find the mean, \bar{x} , of the data set. Then, find the absolute deviation (how far each data point is) from the mean. The list of deviations forms an entirely new set of data. Square each deviation and then find the average of those squares. Finally, take the square root of that to find standard deviation. The TI-84 can do this all in one step.

Example Data: 1, 10, 15, 10

Step 1: Enter the data into your calculator.

1. Press [stat]
2. Make sure "1: Edit..." is highlighted and press [enter]
3. Use your arrow keys to highlight the name of the list you wish to change. Press [clear] if there is data in the list already. DO NOT PRESS [del] as this will delete the list entirely.
4. Type the data (order does not matter), using the [enter] key or the arrows to scroll from one data entry to another

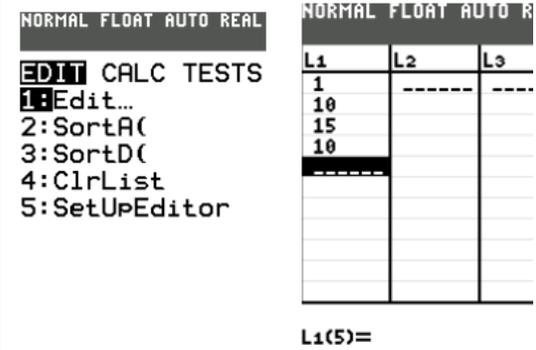
Step 2: Calculate the Single Variable Statistics.

1. Press [stat]
2. Use the right arrow key to access the "CALC" menu
3. Select "1: 1 – Var Stats" and press [enter]

Press [stat]



Highlight "1: Edit" then press [enter]



Press [stat] again



Scroll right to access "CALC" menu



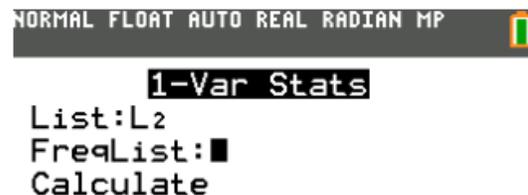
Step 3: Ensure the correct data list is selected.

1. In the 1-Var Stats Menu, you need to make sure you indicate the correct list (sometimes you may be using more than one). In the example at the right L_2 is listed instead of L_1 , so we must change that because our data are in L_1 . (See the third image on the previous page, the name of the list where we entered the data was L_1)
2. To change the list, use the arrow keys to highlight the name of the list, then press [2nd] and then press [stat] (you should notice that above the [stat] button it says "list"). This will show you all of the lists in your calculator.
3. Highlight the name of the list you are using and press [enter]. This will take you back to the "1-Vars Stats" menu, but the List will be changed to the one you need.

Step 4: Calculate and Interpret the Results (Identify the mean, \bar{x} , median (Med) and standard deviation σ)

1. Use your arrow keys to scroll down and select the word "Calculate" then press [enter]
2. Your results will now appear.
 - The first thing you should see is $\bar{x} = 9$, this is the MEAN
 - Next is the SUM of all of the data points in the list, $\sum x$
 - Third is the SUM of the SQUARES of the data points $\sum x^2$
 - Fourth is S_x , the SAMPLE standard deviation, it is found by using "n - 1" in the standard deviation formula instead of "n"
 - Fifth is $\sigma_x = 5.049752469$. This is the POPULATION STANDARD DEVIATION and this is what is generally meant when a question asks for Standard Deviation (Note: variance is the square of standard deviation, so just square this number to find the variance, $\sigma^2 = 25.5$)
 - Sixth is $\min X = 1$, the minimum data entry (useful when making box-and-whisker plots)
 - Seventh, $Q_1 = 5.5$ is the Lower Quartile boundary, it is the median of the lower half of the data
 - Eighth, scroll down to find the MEDIAN, $Med = 10$
 - Ninth, $Q_3 = 12.5$ is the Upper Quartile boundary, it is the median of the upper half of the data
 - Tenth is $\max X = 15$ is the maximum data entry

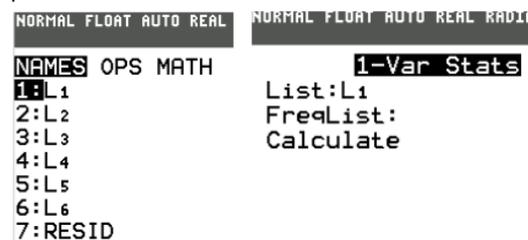
Choose your data list.



To change lists, press [2nd] then [stat]



Highlight the list you are using and press enter.



Results:

