

TI-83/84 How To Series

Topic: Determine One Variable Statistics

Sometimes you will need to find the mean, median, range etc of a set of data for a single variable, that is, data measuring one type of data. For example, time to finish a marathon, height of a person, number of times a hummingbird flaps its wings in a minute, etc. Doing these calculations by hand is time consuming and making a simple error in calculation could lead to incorrect answers. Thankfully the TI-83/84 calculator can do these for you.

Types of Simple Statistics for One Variable Data

Statistic	Symbol on TI-83/84	Definition
Mean	\bar{X}	The average for a set of data. Find by adding all of the data then dividing by the number of data in the data set.
Sum	$\sum X$	Sum of the data (used in finding the mean and the standard deviation)
Sum of Squares	$\sum X^2$	Sum of the Squares of the data (used in finding the standard deviation)
Sample Standard Deviation	S_x	Standard deviation of a sample size (n-1)
Population Standard Deviation	σ_x	Standard deviation of the entire population
Sample Size	n	Total number of data
Minimum X	minX	Smallest data entry
Quartile 1	Q1	The lower quartile is the value of the middle of the first set (first half of the data), where 25% of the values are smaller than Q_1 and 75% are larger.
Median	Med	The middle of the entire data set
Quartile 3	Q3	The upper quartile is the value of the middle of the second set (second half of the data), where 75% of the values are smaller than Q_3 and 25% are larger.
Maximum X	maxX	Largest data entry


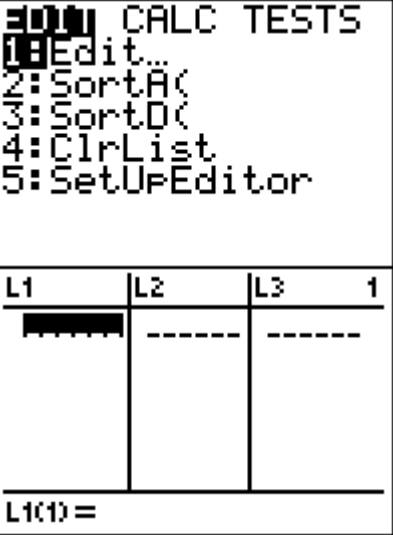
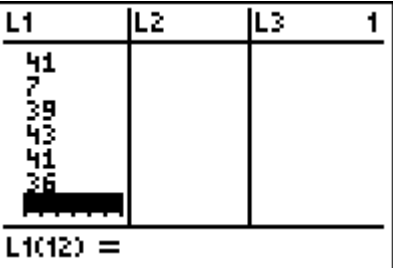
From these statistics you can also find the range of the data (maxX – minX).

Steps

Take the follow set of data: 6, 47, 49, 15, 43, 41, 7, 39, 43, 41, 36. Use this data to find

- Mean
- Median
- Q1
- Q3
- Range
- Standard Deviation

- Clear the memory of your calculator
- Input the data into L1 of your calculator.

 <p>Keystrokes get to your list screen</p>	
<p>Enter the data above into L1 of your calculator.</p> <p>BE CAREFUL. Many students make mistakes entering in data. Always double check the number of data points entered corresponds to the number of data points given.</p> <p>In our case, the number of data points given is 11 and the number entered is 11 as well. Look at the screen L1(12) indicates the calculator is waiting for the user to enter in data point 12, but since we do not have one we stop. Therefore, 11 data points have been entered.</p>	








3. At this point you have two options:

- i. You can sort the data. This is helpful if you need to find the mode of the data (the number occurring the most).

<p>STAT </p> <p>We are interested in sorting our data.</p> <p>Note: SortA will put the list in ascending order (smallest to largest) and SortD will put the list in descending order (largest to smallest).</p>	<pre> 2001 CALC TESTS 1:Edit... 2:SortA(3:SortD(4:ClrList 5:SetUpEditor </pre>																																					
<p>ENTER 2nd 1) ENTER</p> <p>We sorted L1 because that is where our data is stored.</p>	<pre> SortA(L1) Done Done </pre>																																					
<p>STAT ENTER</p> <p>Checking the data entry for L1 we can see the data has been sorted from smallest to largest. From this we can see 41 occurs the most frequently and therefore is the mode.</p>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 33%;">L1</th> <th style="width: 33%;">L2</th> <th style="width: 33%;">L3</th> <th style="width: 33%;">1</th> </tr> </thead> <tbody> <tr> <td>6</td> <td>-----</td> <td>-----</td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> <td></td> </tr> <tr> <td>15</td> <td></td> <td></td> <td></td> </tr> <tr> <td>36</td> <td></td> <td></td> <td></td> </tr> <tr> <td>39</td> <td></td> <td></td> <td></td> </tr> <tr> <td>41</td> <td></td> <td></td> <td></td> </tr> <tr> <td>41</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4" style="border-top: 1px solid black;">L1()=6</td> </tr> </tbody> </table>	L1	L2	L3	1	6	-----	-----		7				15				36				39				41				41				L1()=6				
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- ii. Or, you can go directly to finding the statistics. In this example we will keep the sorted data. This has no effect one way or the other on the calculations as the TI-83/84 takes the data as a whole and does not care if the data is sorted or not.

<p>STAT)</p> <p>We scroll over to the CALC mode to bring up our list of options. We are interested in 1-Var Stats.</p>	<pre> EDIT TESTS 1:1-Var Stats 2:2-Var Stats 3:Med-Med 4:LinReg(ax+b) 5:QuadReg 6:CubicReg 7:QuartReg </pre>	
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  <p>All of our statistics have been calculated for us. The ↓ next to n indicates there is more data. Just press your down arrow key on the calculator.</p>	<pre>1-Var Stats x̄=33.36363636 Σx=367 Σx²=14797 sₓ=15.97668756 σₓ=15.23317389 ↓n=11 █</pre>	
     <p>Now we have all of the data required by the question.</p>	<pre>1-Var Stats ↑n=11 minX=6 Q₁=15 Med=41 Q₃=43 maxX=49</pre>	

Therefore the solutions to the question are:

- a. Mean = $\bar{X} = 33.36$
- b. Median = Med = 41
- c. Quartile 1 = Q1 = 15
- d. Quartile 3 = Q3 = 43
- e. Range = maxX – minx = 49 – 6 = 43
- f. Standard Deviation = $\sigma_x = 15.23$