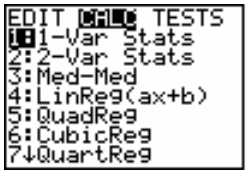
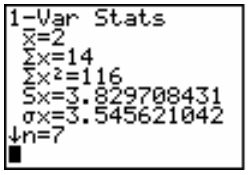
5 Descriptive statistics

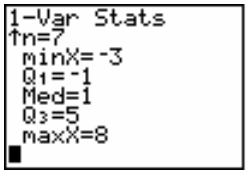
5.1 Statistical variables

To calculate the mean, median, standard deviation, ... of one-variable data you use the command **1:1-Var Stats** of the **STAT<CALC>** menu.

After executing **STAT<CALC> 1:1Var Stats 2nd[L1]** (with **L1={8,-3,5,0,1,4,-1}**) the calculated values appear automatically on the screen. These values are stored into statistical variables (**VARS 5:Statistics...**).







5.2 Histogram

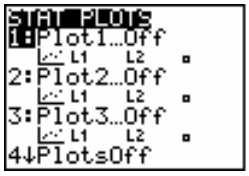
We will construct a histogram of the following data, the shoe size of 30 adult men, which we first put into list **L2**.

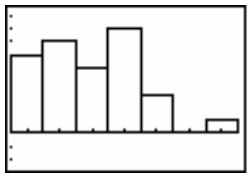
42	39	42	41	40	44	43	41	40	40
42	40	39	38	43	40	39	44	42	40
41	46	40	41	42	42	38	39	44	41

Start the construction with the command **2nd[STAT PLOT] 1:Plot1**.

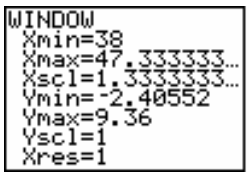
Put the cursor on **On** and press **ENTER**. Select as **Type** the histogram icon () and define Xlist as **2nd[L2]**. The value of **Freq** is standard equal to **1**, which means that we work with the raw data.

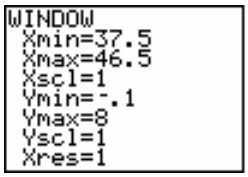
Plot the histogram with **ZOOM 9:ZoomStat**.





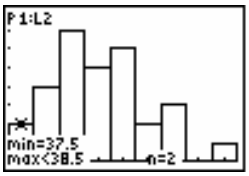
Take a look at the chosen window settings by pressing **WINDOW**. Set up the window as mentioned below and press **GRAPH**:

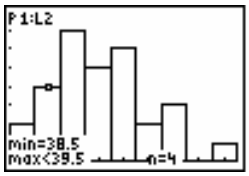


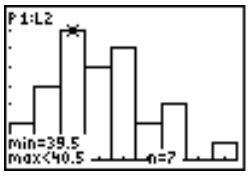


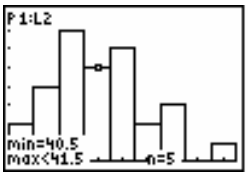
With these window settings the size of each class is 1 and shoe sizes are the middles of the classes.

With the **TRACE** function you can now determine the frequency of each shoe size. To turn off **TRACE** press **CLEAR** or **GRAPH**.

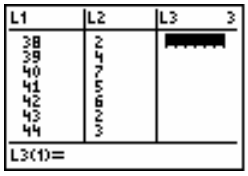


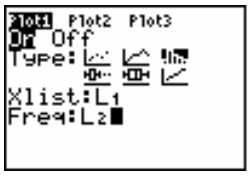






With these frequencies you can construct the following frequency table. To calculate the values of the statistical values and to plot the histogram based on the frequencies of the different data is done as follows.





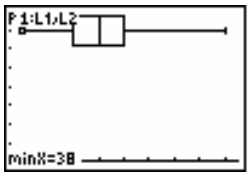
5.3 Box plots

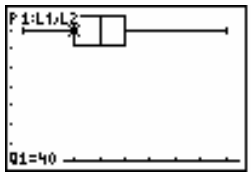
For the plotting of a box plot it is the same procedure as for the histogram.

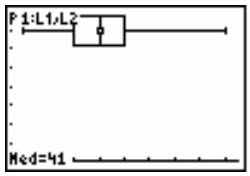
You can choose between a standard box plot () and

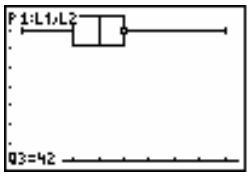
a modified box plot ().

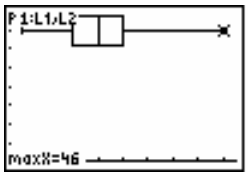
Using the **TRACE** function on a box plot produces the following five values: **minX**, **Q1**, **Med**, **Q3**, **maxX**.











5.4 Frequency table

The following program generates a frequency table of raw data in list **L1**. The different values of the data end up in **L2** and their frequency in **L3**. (How to program – See TI-83 Plus Guide – www.education.ti.com/guides)

```
PROGRAM:FREQTAB
SortA(L1)
ClrList L2,L3
1→I:1→J:1→T
While I ≤ dim(L1):L1(I)→L2(J)
  While L1(I)=L1(min({I+1,dim(L1)})) and I < dim(L1)
    I+1→I
    T+1→T
  End
T→L3(J)
J+1→J
1→T
I+1→I
End
```