

## Data analysis on the TI-82 or TI-83

The TI-82 and TI-83 calculators will do all the calculations you need on lists of data. To get information like means, medians, quartiles, etc., you need to first type the data set into the calculator and then ask it to spit out the statistics you want.

We will deal with the example list 5, 9, 13, 10, 17, 22, 26.

### A. Inputting the data set

1: Hit the [STAT] key (located on the second row). You will see

```
2nd [STAT] CALC TESTS
1: Edit...
2: SortA<
3: SortD<
4: ClrList
5: SetUpEditor
```

2: Press [ENTER] when Edit... is highlighted. You will see

```
L1 L2 L3 1
-----
L1(1) =
```

Use the arrow keys until you have the block under L1 highlighted.

3: Now type in each number in the list and hit [ENTER] after each one. If you make a mistake, use the arrows to highlight the incorrect entry and hit the [DEL] key (located to the left of the arrows). You will see something like this (if you needed to see the number 5 just use the up arrows and you'll get to it):

```
L1 L2 L3 1
9
13
10
17
22
26
L1(8) =
```

NOTE: If you want to have two lists stored at once, you can type one into L1 and one into L2.

4: When all the data has been entered, hit [2<sup>nd</sup>] [QUIT]. It is a good idea to double-check your numbers because if you leave one out or have a typo, the calculator will give you the wrong information.

### B. Getting the statistics

5: After entering the data, hit [STAT], then press the right-arrow once. You will see:

```
EDIT 2nd [STAT] TESTS
1: 1-Var Stats
2: 2-Var Stats
3: Med-Med
4: LinReg(ax+b)
5: QuadReg
6: CubicReg
7: QuartReg
```

6: When "1: 1-Var Stats" is highlighted, press [ENTER]. You will see "1-Var Stats" appear. Press [ENTER] again. You will see:

```
1-Var Stats
x=14.57142857
Σx=102
Σx²=1824
Sx=7.502380575
σx=6.945854732
↓n=7
```

This gives a lot of useful information, explained on the next page:

$\bar{x}$  is the average

$\sum x$  is the sum of the numbers in the list

$\sum x^2$  is the sum of the squares of the numbers in the list

$s_x$  is a different kind of "standard deviation" than the one we studied in class... ignore it

$s_x$  is the standard deviation

$n$  is the number of numbers in the list

$\min X$  is the smallest number in the list

$Q_1$  is the first quartile

Med is the median

$Q_3$  is the third quartile

$\max X$  is the largest number in the list

To see all the data, you have to use the up and down arrows to scroll through everything. After you hit the down arrow a few times the screen should look like this:

```
1-Var Stats
n=7
minX=5
Q1=9
Med=13
Q3=22
maxX=26
```

### C. Drawing pictures

7: The calculator will also draw a histogram and box plot for you. To do this, first type in the data and quit as in part A. Then hit [2<sup>nd</sup>] [STAT PLOT]. You will see:

```
STAT PLOTS
1:Plot1...Off
  L1 L2
2:Plot2...Off
  L1 L2
3:Plot3...Off
  L1 L2
4:PlotsOff
```

9: When "1:Plot1...Off" is highlighted, press [ENTER]. You will see:

```
Plot1 Plot2 Plot3
On
Type: [ ] [ ] [ ]
Xlist:L1
Ylist:L2
Mark: [ ] + .
```

10: First use the arrows to highlight "On" and hit [ENTER]. This turns the "Stat Plot" on. Then hit the down arrow and pick the type of graph you want. If you want a histogram, pick the third graph on the first row. If you want a boxplot, pick the middle graph on the second row (you have to use only the left and right arrows to move between the graphs). When you have the right graph selected, press [ENTER]. For instance if you want a histogram, after you're done your screen will look like this:

```
Plot1 Plot2 Plot3
On Off
Type: [ ] [ ] [ ]
Xlist:L1
Freq:1
```

NOTE: The line "Xlist:L1" indicates that I am doing a histogram for the list stored in L1. If you wanted to do a histogram for a list stored in L2, use the down arrow to highlight L1, hit the [2<sup>nd</sup>] key, and hit [L2] (this is the second function of the 2 key).

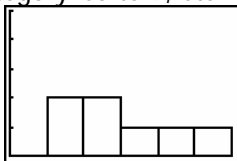
11: Now you need to set the viewing window correctly so that you can see your whole graph. To do this hit [WINDOW] (located on the top row) and set the values as follows:

- Xmin should be a little smaller than your smallest data value
- Xmax should be a little bigger than your biggest data value
- Ymin should be 0
- Ymax should be a little smaller than n

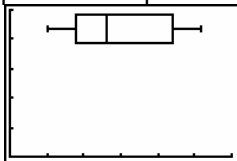
After I finished setting the data values my calculator looked like this (Xres = 1):

```
WINDOW
Xmin=0
Xmax=30
Xscl=5
Ymin=0
Ymax=5
Yscl=1
Xres=1
```

12: Then hit [GRAPH]: I made a histogram for this data. Notice that in my window settings in the previous step, I set the Xmin to 0 and the Xmax to 30. This means the bottom of the screen runs from 0 to 30. The Xscl is set to 5, so each "bar" in the histogram corresponds to 5 units... the first category is 0 to 4, then the next category is 5 to 9, etc.



13: To make a boxplot instead, go back to [2<sup>nd</sup>] [STAT PLOT], hit [ENTER] once, and then use the arrow keys to pick the boxplot. Hit [ENTER] and then hit [GRAPH]. You will see:



NOTE: If you want to make two boxplots at once, go back to step 8. Turn on a boxplot for one list, say L<sub>1</sub>, in Stat Plot # 1, and turn on a boxplot for the other list in Stat Plot # 2. Then both will be displayed when you hit [GRAPH].

#### **D. Clearing the Data Set and Putting the Calculator Back to Normal**

14: To easily get rid of your data set, hit [STAT] and then use the down arrow to go to #4:ClrList. Hit [ENTER]. You will see

ClrList

Before you hit [ENTER], hit [2<sup>nd</sup>] [L1] (this is the second function of the 1 key). Finally hit [ENTER]. You will see the word Done. Now the data in your list is gone. (If you typed stuff into L<sub>2</sub> you would need to clear it with the command ClrList L<sub>2</sub>):

```
ClrList L1 Done
█
```

15: To turn off the histogram or box plot, hit [2<sup>nd</sup>] [STAT PLOT], then [ENTER]. The word On will be flashing. Hit the right arrow to make Off flash, then hit [ENTER]. Finally hit [2<sup>nd</sup>] [QUIT]. The scatter plot is then off. (If you have multiple plots on, be sure to turn them all off).