Manipulating data in the TI83 or TI84 calculator:

Pull out your questionnaire with data we collected in class.

Part 1: Student HEIGHTs

1. Press the **STAT** button on your calculator and you should get a screen like this:

```
EDIT CALC TESTS
1:Edit…
2:SortA(
3:SortD(
4:ClrList
5:SetUpEditor
```

2. Press **ENTER** to enter the editing function. If your screen looks like this you are ready to go. Go on to step 6.

```
L1      L2      L3      1
------- ------- -------



L1(1)=
```

3. If your list L1 has data in the list as shown below, you will want to clear the data from the list first. (You could delete the data elements one at a time, but there is an easier way.)

```
L1      L2      L3      1
11.2    ------- -------
14.7
13.2
17.1
9.8

L1(6)=
```

4. Move your cursor up so that L1 (or whatever list that you wish to use) as shown below, then hit CLEAR.

```
L1      L2      L3      1
11.2    ------- -------
14.7
13.2
17.1
9.8
-------

L1 ={11.2,14.7,1…
```

5. Your screen should now look like this:

```
L1      L2      L3      1
██████ ------  ------




L1(1)=
```

6. You are ready to enter your data.   Hit **ENTER** after each data element entered.   Your cursor will drop to the next line automatically.   I have entered 5 heights of   65, 72, 60, 74, 71 below. You will have much more. You can see that the notation on the bottom tells me that I am ready to enter the 6th data element into list 1 (L1).   It also confirms that I have $6 - 1 = 5$ data elements.

```
L1      L2      L3      1
65     ------  ------
72
60
74
71
██████

L1(6)=
```

7.   Generally, when you have a long list of data, it will be much easier to work with if we sort it. Hit **STAT** again, and scroll down to the second option, **SortA(**   and hit **ENTER**.

```
EDIT CALC TESTS
1:Edit…
2:SortA(
3:SortD(
4:ClrList
5:SetUpEditor
```

8. **SortA(**   means to sort in ascending order, but you will need to tell it what to sort.   .   You will need to enter the list you wish sorted.   Here, we wish to sort list 1 so enter **2nd 1** (L1) and press **ENTER.**   After pressing enter, the TI will confirm with "Done".

```
SortA(L1)
            Done




```

9. Now go back to **EDIT** as you did in step 1 and your data should now look like this (except you should have many more entries):

```
L1        L2       L3       1
60       ------   ------
65
71
72
74
------

L1(1)=60
```

Please answer a few questions with the data you sorted:

Q1: How many data values are less than or equal to 63? _____

Q2: How many data values are more than 73? _____

Q3: How many data values are more than 68 but less than 72? _____

10.   Now Clear list 1 (see steps 3 – 5).

Part 2: PETS OWNED by Students

You are now ready to enter data on the number of pets owned by students from question E on the questionnaire. Since we have a dependant and an independent variable, we have to use 2 lists (usually L1 and L2).

1. Just as in step 6 above, you are now ready to enter data, but now you will have 2 columns, one for the number of pets (L1), and one for the frequency (L2). **Some sample data is shown below**, **but your data should reflect our class results.**

```
L1      L2      L3      2
 0       4      ------
 1       6
 2       5
 3       3
 4       3
 5       1
------  ------
L2(7) =
```

2. We are going to plot a histogram for this data. A histogram is what you may have called a bar chart in earlier courses, except that the dependant variable (the height of the bars) is always the frequency. Hit **2nd Y=** **(Stat Plot)**. You will get a screen like the one shown below:

```
STAT PLOTS
1:Plot1…Off
   ∠ L1    L2    ▫
2:Plot2…Off
   ∠ L1    L2    ▫
3:Plot3…Off
   ∠ L1    L2    ▫
4↓PlotsOff
```

3. We will usually use the first plot. Since stat plot 1 is already highlighted, just press **ENTER** to enter plot 1 so that we can set its parameters.

```
Plot1  Plot2  Plot3
On  Off
Type: ▦  ∠  dla
      ꜛᴴᴴ⋯ ꜛᴴᴴ ∠
Xlist:L1
Ylist:L2
Mark:  ▫  +  ·
```

4. Turn on the plot by highlighting **ON** and pressing **ENTER,** then highlight the histogram chart (with the bars) and press enter, then enter the appropriate lists into **Xlist** and **Ylist**. The independent variable (the variable we are studying) will always be shown as the Xlist and the frequency will always be shown as the Ylist.

```
Plot1  Plot2  Plot3
On  Off
Type: ∠  ∠  ꜜᴴ
      ꜛᴴᴴ⋯ ꜛᴴᴴ ∠
Xlist:L1
Freq:L2
```

5. Now we need to set the window with meaningful ranges.   Since our Xlist variable in L1 ranges from 0 to 5, we will set **Xmin** to 0 and **Xmax** to 7.   **Xmax** is 7 since the scale is 1 (the bars will be one unit wide) and it is preferable to have an empty space on the right to show that the histogram is complete.

Our Ylist variable in L2 (**in my sample data**) ranges from 1 to 6.   For a frequency chart, it is usually best to start with a 0 as a minimum (set **Ymin** to 0).   For the **Ymax**, in order to leave a little gap at the top of the chart so that the highest bar is not touching the border of the screen, set Ymax at 7 for my sample data. **Your Ymax will probably be different and depends on the highest frequency of your data.**

```
WINDOW
 Xmin=0
 Xmax=7
 Xscl=1
 Ymin=0
 Ymax=7
 Yscl=1
 Xres=1
```

Note that the fact that the Xmin and Xmax settings are the same as the Ymin and Ymax (for my sample data) is just a coincidence! This is not usually the case.

6. Press Graph and your screen should show you a histogram similar (but not identical because you will be using different data) look like:
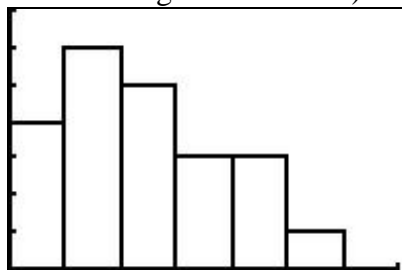
Notice that you can "read" the histogram, by knowing the y-scale = 1.

>   **Please answer a few questions from your histogram:**
>
>   Q1:   What is the greatest frequency? _____
>
>   Q2:   What is the least frequency? _____
>
>   Q3:   Knowing that the independent variable (X) shows the number of pets owned, starting
>   with 0, how many students have 2 pets? _____
>
>   Q4:   Knowing that the independent variable (X) shows the number of pets owned, starting
>   with 0, how many students have 3 or more pets? _____