Finding the Line of Best Fit With a TI-83+ Calculator

The table below was taken from Example 1 on page 66 of your textbook. It shows the number of bicycles produced worldwide for various years between 1965 and 1990. <u>For this example, we will let $x = 0$ represent 1965.</u>

Year	1965	1970	1975	1980	1985	1990
Number of bicycles (in millions)	21	36	43	62	79	95

Step 1: Enter the data in your calculator.

Press STAT, then press 1: Edit … or just hit ENTER. If you happen to have data in L1 or L2, you need to clear it.
To clear the data in L1, highlight L1 with the cursor and press CLEAR. DO NOT PRESS DEL.
If you accidentally press DEL, or if for some reason L1 is missing, press STAT, then 5: SetUpEditor

Enter the *x*-values in L1 and the *y*-values in L2, be sure to press ENTER or ▼ after each value.
You should see this screen.

Step 2: Find the Linear Regression Equation

Press STAT, then ▶, in order to highlight CALC , then select 4: LinReg(ax+b).
You should see this screen.

You do not actually have to put L1, L2 after the LinReg(ax+b) **_IF_** your *x*-values are in L1 and *y*-values are in L2.
However, if your *x*-values and *y*-values are not in L1 and L2 respectively, then you MUST enter the list number after LinReg(ax+b). Once you press ENTER, you should see this screen.

If you do not see the last two lines, then turn your Diagnostics On.
Press 2nd 0 (Catalog) x⁻¹ (D) ▼ ▼ ▼ ▼ ▼ ▼ ▼ (DiagnosticOn), and then press ENTER ENTER

Since you chose LinReg(ax+b), then the <u>*a* in the list is the slope of your line</u> and the <u>*b* is the *y*-intercept</u>.
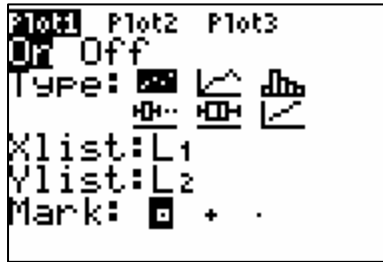
Therefore, the line of best fit is $y = 2.96x + 19$.

Step 3: Graphing your data AND the line of best fit

First, graph the data.
Press [2nd] [Y=] (STAT PLOT). Select 1:Plot1…
You should see this screen.

✓ Highlight ON, and press [ENTER].
✓ Select the scatter plot type: ⸪
✓ Be sure the Xlist: is L1 (or whatever list your *x*-values are in),
✓ Be sure the Ylist: is L2 (or whatever list your *y*-values are in)
✓ The Mark: is a personal preference … each point in your data will be represented by whichever mark you select.

To see the graph, examine your data and create an appropriate viewing window, or press [ZOOM] 9:ZoomStat.

Second, enter the equation of the line.
(In this example, it would be very easy to just enter the equation, but your calculator has stored the regression equation you found, and you can have the calculator enter it for you).

Press [Y=] . From this screen, press [VARS]. Then select 5:Statistics…
Then press [▶] [▶] (EQ) and select 1:RegEQ

If you press [GRAPH] you should see the screen below (assuming you haven't changed the window from before).