TI 83 to obtain numerical summary

Given a data set for a variable weight:

160 175 150 210 185 170

To obtain $\bar{x}$ and s for the data set,

Step 1 Enter values of weight in the list "L" by pressing "STAT" and selecting "1:Edit." If there are data previously store in L1, we can delete all unnecessary data by preesing "MEM (2nd key and +)" and selecting "4:ClrAllLists," then hit enter.

Step 2 Press "STAT" and select "CALC," then select "1-Var Stats." Scroll down to see numerical summary such as $\bar{x}$, s_x, min, max, $Mdian$, etc. Note the sample standard deviation s we learned in this course is denoted by s_x, so ignore $sigma_x$ value.

An example on regression

You are give a data set that contains two numerical variables x and y.

x	6	20	0	14	25
y	15	31	10	16	28

1. Eventually we will compute the regression line of y on x, but we need $\bar{x}$, $\bar{y}$, s_x, s_y, and r before that. So let's get these 5 statistics first using "2-VAR Stats."

Step 1 Enter values of x in "L1" by Pressing "STAT" and selecting "1:Edit." If there are data previously store in L1 or L2, we can delete all unnecessary data by preesing "MEM (2nd key and +)" and selecting "4:ClrAllLists," then hit enter.

Step 2 Enter values of y in "L2" by Pressing "STAT" and selecting "1:Edit."

Step 3 Once you enter values of x and y, Press "STAT" and select "CALC," then select "2-Var Stats." If L1 and L2 are the only lists that you stored data, then you can simply hit enter to obtain $\bar{x}$, $\bar{y}$, s_x, s_y, and r. If you like to be thorough, after selecting "2-VAR Stats", let TI 83 know that the first variable is stored in L1 and second variable is stored in L2 by pressing "L1 (2nd key and 1)" , then press ", (right above 7)" and "L2 (2nd key and 2)" then hit enter. If I input all the data collect, we have $\bar{x}$=13, $\bar{y} = 20$, $s_x = 10.1489$, $s_y = 9.0277$.

2. Now only statistic that is missing to obtain the regression line is r.

Step 1 To get r and r^2, we need a one-time adjustment in your TI 83. Once you do this step, you don't have to repeat this step next time you use. We go to "CATALOG (2nd key and 0)." Scroll down to "Diagnostic On" and select it and hit enter. If it is successful, you see "Done" on the screen.

Step 2 Press "STAT" and select "CALC." Scroll down to "8:LinReg (a+bx)" and hit enter. Now we tell TI 83 which lists are used to store the explanatory variable and response variable. Our explanatory variable x is stored in L1 and response variable is store in L2, so press "L1(2nd key and 1)," then "," and "L2(2nd key and 2)." Hit enter. You see "a=intercept=9.461," the slope "b=.8107" and "r=.9114."

So you can actually obtain intercept a and slope b without using formula at all. But still I want you to remember how to obtain intercept and slope using formula, i.e., using the values of $\bar{x}$, $\bar{y}$, s_x, s_y, and r.

$$b = r\frac{s_y}{s_x} = (.9114) \times \frac{9.0277}{10.1489} = .8107$$

and

$$a = \bar{y} - b\bar{x} = 20 - (.8107)13 = 9.461$$