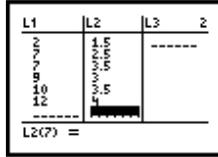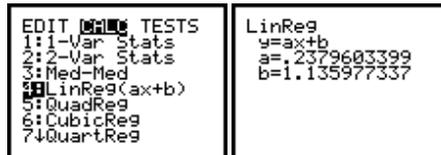## Linear Regression on TI-83

The linear regression option finds the equation of a linear equation of the form y = ax + b or y = a + bx that best fits a set of data.

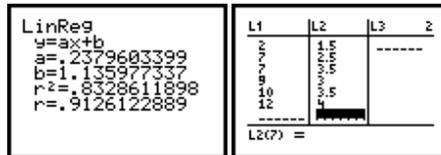First, enter the data . Press **STAT** **ENTER**.

Press **STAT** and use ▶ to select CALC. Press **4** This yields an equation of the form y = ax + b.

The linear regression option can also be obtained by pressing **8**. This yields an equation of the form y = a + bx.

The resulting equations are equivalent, y = 0.24x + 1.14 and y = 1.14 + 0.24x. The TI-83 calculates the correlation coefficient, r. In this case, r is about 0.91. The value of r lies between -1 and 1, inclusive. It is a measure of how well the regression equation fits the data. A value of -1 or 1 indicates a perfect fit. It also calculates the value of the coefficient of determination, r^2.

The TI-83 stores the regression equation. The equation can be graphed and is transfered to **Y =** without typing the equation as follows. Press **Y =** **VARS** **5** and use ▶ to select EQ.
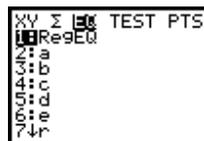
Press **1**. The equation is now entered in **Y =**. Press **GRAPH**. The data points can also be viewed. Access STAT PLOTS by pressing **2nd** **Y =**. To turn the plots on press **5**.

Note: The resulting linear equation is an exact fit if two nonvertical data points are entered.

The TI-83 calculates the correlation coefficient r and the value of r^2, the coefficient of determination.

Scatter Plot

While viewing a data set from the data editor, press `ZOOM` to access the zoom menu. Press `9` to access **9:ZoomStat**. The window is automatically adjusted to the data.
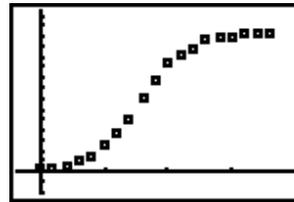

Note If the plot shows the graph of an unwanted function, go to the equation editor (**Y=**) and deselect the unwanted function by placing the cursor over the highlighted = for that function, then press `ENTER`. Press the thumb pad down arrow and notice that the = is no longer highlighted. Press `GRAPH` to view the new graph without the unwanted function.

List Editor

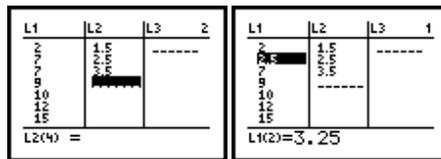Data for statistical calculations is entered in lists on the TI-83. Press `STAT`.

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

Press `1` or `ENTER` to view the contents of any of the six lists.

```
L1      L2      L3       2
2       1.5     ------
7       2.5
7       3.5
9       ------
10
12
15
L2(4) =
```
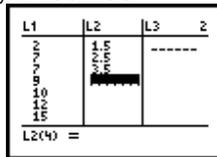
(Any are all of the six lists L1 through L6 can be cleared of their data using the clear lists option.) Use the cursor keys to view the contents of lists L4, L5, and L6 or additional entries in a list.

Any entry can be changed. For example, to change the 2.5 entry in L1 to 3.25, highlight the 2.5, type in the correction, 3.25, and press `ENTER`.

```
L1      L2      L3       2      L1      L2      L3       1
2       1.5     ------         2       1.5     ------
7       2.5                    3.25    2.5
7       3.5                    7       3.5
9                              9       ------
10                             10
12                             12
15                             15
L2(4) =                        L1(2)=3.25
```

The entry is changed and the cursor highlights the next entry.

Any entry can be deleted. Highlight the entry and press `DEL`. All list elements below the deleted one move up one place.

An entry can be inserted. Highlight the entry below which an entry is to be inserted. Press `2nd` `DEL`. The value is inserted above the highlighted element and will have an initial value of 0. All list elements below the inserted one will be moved down one.