

## Using the TI-85 to Find the Estimated Simple Linear Regression Equation

Consider the example on page 737 in the Berenson and Levine text. In this example, regression techniques are used to examine the relationship between the size (square footage) of a store and its annual sales. A sample of 14 stores is selected. The data used in this example is provided below:

Store	Sq Ft(X)	Annual Sales (Y)	Store	Sq Ft(X)	Annual Sales (Y)
1	1726	3681	8	1102	2694
2	1642	3895	9	3151	5468
3	2816	6653	10	1516	2898
4	5555	9543	11	5161	10674
5	1292	3418	12	4567	7585
6	2208	5563	13	5841	11760
7	1313	3660	14	3008	4085

First, you will need to enter the data from the Edit sub-menu. Press the STAT key and the F2 (EDIT) key. You should see the following screen:

```
xlist Name=xStat
ylist Name=yStat

CALC EDIT DRAW FCST
xStat yStat
```

This screen allows you to name the data sets that you are about to enter. If you anticipate using the data sets on several occasions, you should give them special names using the alphabet feature of the TI-85. Otherwise, you should just use the generic names provided, xStat and yStat. To use these generic names, press ENTER two times and you should proceed to the next screen. Press F5 (CLRxy) to clear all values of x and y. Before you begin entering your data, you should see the following screen:

```
x=xStat      y=yStat
x1=
y1=1

CALC EDIT DRAW FCST
INSI DELI SORTX SORTY CLRxy
```

Enter your data, with the square footage as the x-values and the annual sales as the y-values. After entering the last x-value and the last y-value, you should see the following screen:

```
x=xStat      y=yStat
↑x13=5841
y13=11760
x14=3008
y14=4085

CALC EDIT DRAW FCST
INSI DELI SORTX SORTY CLRxy
```

Press 2<sup>nd</sup> F1 (CALC). Press Enter twice. Press F2 (LINR) for the simple linear regression analysis. You should see the following screen:

```
LinR
a=901.246570114
b=1.68613497038
corr=.953824158747
n=14
-----
CALC  EDIT  DRAW  FCST
1-VAR  LINR  LNR   EXPR  PWR
```

This screen indicates that the y-intercept is given by  $a = b_0 = 901.247$  and the slope is given by  $b = b_1 = 1.686$ . Thus, the estimated simple linear regression equation is given by:  $\hat{Y} = 901.247 + 1.686 X$ . Note that the coefficient of correlation is  $r = 0.954$ .