

Regression on the TI-84 (finding the line of best fit to the data)

Enter the data into the lists of your calculator by pressing

[STAT]**[ENTER]** to get the list screen. Enter the data (x-values in L1, y-values in L2)

```

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

L1	L2	L3	1
████████	-----	-----	
L1(1) =			

Press **[2nd]****[Y=]** to get the STAT PLOT screen.

```

2ND [Y=]
1:Plot1...Off
  [ ] L1 L2 [ ]
2:Plot2...Off
  [ ] L1 L2 [ ]
3:Plot3...Off
  [ ] L1 L2 [ ]
4↓PlotsOff
    
```

Press **[ENTER]** and set up as shown.

```

2ND [Y=]
Plot1 Plot2 Plot3
[ ] Off
Type: [ ] [ ] [ ]
      [ ] [ ] [ ]
Xlist:L1
Ylist:L2
Mark: [ ] + .
    
```

Press **[WINDOW]** and set up appropriately or choose Zoom:Stat.

```

2ND [ZOOM] MEMORY
3↑Zoom Out
4:ZDecimal
5:ZSquare
6:ZStandard
7:ZTrig
8:ZInteger
9↓ZoomStat
    
```

Press **[STAT]****[▶]** to get this screen.

```

EDIT [STAT] [▶] TESTS
1:1-Var Stats
2:2-Var Stats
3:Med-Med
4:LinReg(ax+b)
5:QuadReg
6:CubicReg
7↓QuartReg
    
```

If the data looks linear, select 4:LinReg(ax + b) as shown.

```

EDIT [STAT] [▶] TESTS
1:1-Var Stats
2:2-Var Stats
3:Med-Med
4:LinReg(ax+b)
5:QuadReg
6:CubicReg
7↓QuartReg
    
```

Press **[ENTER]****[2nd]****[L1]****[,]****[2nd]****[L2]****[,]****[VAR]****[▶]****[ENTER]****[ENTER]** to get this screen. This will calculate the best fitting line for your data whose x-values are in L1 and y-values are in L2. Your regression equation will appear in Y1.

```

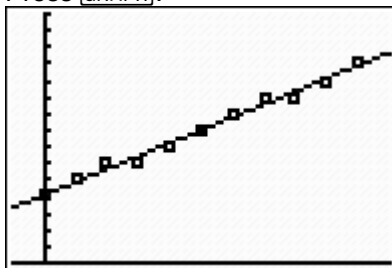
LinReg(ax+b) L1,
L2, Y1
    
```

Press **[ENTER]**. *** (see note below if no r and r²)

```

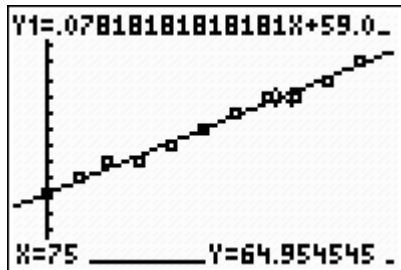
LinReg
y=ax+b
a=.0781818182
b=59.09090909
r2=.9887700535
r=.9943691736
    
```

Press **[GRAPH]**.



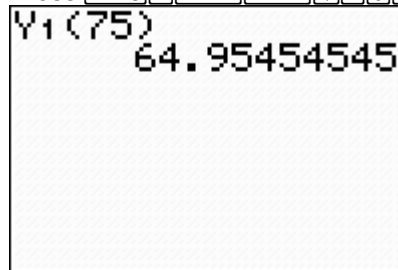
You can evaluate the function as shown. For example, evaluate for $x = 75$ by performing one of the following:

Press $\text{2nd}[\text{TRACE}][\text{ENTER}][7][5][\text{ENTER}]$.



On the home screen,

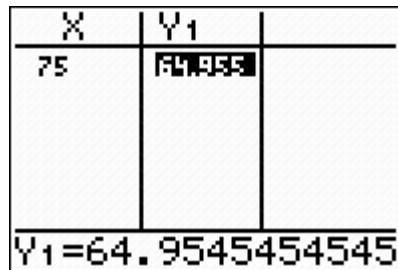
Press $\text{VAR}[\text{VAR}][\text{ENTER}][\text{ENTER}][7][5][\text{ENTER}]$.



Press $\text{2nd}[\text{WINDOW}]$ to get to the Table Setup Screen and select the following.



Press $\text{2nd}[\text{GRAPH}][7][5][\text{ENTER}]$.



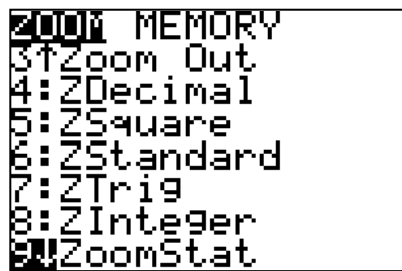
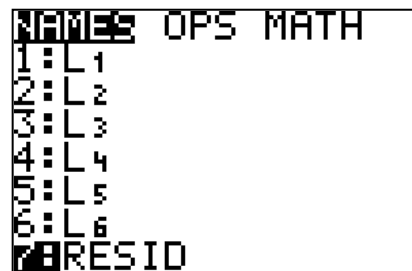
*** If you did not get r and r^2 , you will need to turn your diagnostics on as follows.

Press $\text{2nd}[\text{0}]$ to get the Catalog, scroll down until you see Diagnostics On. Press $\text{ENTER}[\text{ENTER}]$ to get the message "Done".



Recalculate the LinReg and this time you will see r and r^2 . If you really want to understand what they are, take AP Stats!

Residuals are calculated as the difference between the actual y -value from the data and the predicted y -value (from the regression equation). Plotting these will help you determine (along with r and r^2) whether or not the model is appropriate. **Each time you calculate a new regression equation, your calculator automatically creates a new list of residual values.** Set up the residual plot as shown. Then choose Zoom:Stat.



Modify accordingly for other models.

