

Linear Models on the TI-83/TI-84 ~ Instructions and Troubleshooting

Before you start...

1. Be sure to clear any equations by hitting Y= and then clear.
2. Be sure all lists are clear. Hit 2nd and the + key (MEM) and select ClrAllLists. Then hit ENTER. It should say DONE when it has done so.
3. You must also turn your Diagnostics on. Hit 2nd and the 0 key to enter the Catalog. Go down to DiagnosticOn and hit ENTER twice. It should say DONE when it has done so.
4. If you have a TI-84 Plus you can also turn your Diagnostics on by hitting the MODE button, look for STAT DIAGNOSTICS and hit ON.

```

1:About
2:Mem Mgmt/Del...
3:Clear Entries
4:ClrAllLists
5:Archive
6:UnArchive
7:Reset...
    
```

```

CATALOG
Degree
DelVar
DependAsk
DependAuto
det(
DiagnosticOff
DiagnosticOn
    
```

```

tBACKt
MATHPRNT CLASSIC
2nd Un/d
ANSWERS: AUTO DEC FRAC
GOTOFORMAT GRAPH: [ ] YES
STATDIAGNOSTICS: OFF [ ]
STATWIZARDS: [ ] OFF
SET CLOCK DEF 24:15:12:30PM
    
```

To find a linear model and/or make a scatterplot...

1. Press STAT and Select EDIT
2. Enter your x-axis data in L1 and your y-axis data in L2 by using the arrow buttons or the enter button. Use the arrow button to move from L1 to L2.
3. If you don't have an L1 or L2, delete all the lists by going all the way to the top of the column and hitting DELETE. Then rename at least L1 and L2 by going all the way to the top of the column and hitting 2nd, the 1 key, and ENTER for L1 and 2nd and the 2 key for L2. Be sure to never hit DELETE to clear a column. Use ClrAllLists or go all the way to the top of the column and press CLEAR and then ENTER.

```

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

L1	L2	L3	1
----	----	----	----
L1(0)=			

----	----	----	1
----	----	----	----
Name=L1			

L1	L2	L3	2
----	----	----	----
L2 =			

If you want to see the data in a scatterplot follow the steps below. If not, skip to step #7

4. Press 2nd Y= and Select 1: Plot1
5. Make sure your screen looks the same.
6. Press WINDOW to enter an appropriate domain, range, and scale OR press ZOOM and select ZoomStat (#9). You will see your graph.

```

STAT PLOTS
1:Plot1...Off
   L1 L2
2:Plot2...Off
   L1 L2
3:Plot3...Off
   L1 L2
4:PlotsOff
    
```

```

Plot1 Plot2 Plot3
On Off Off ← turn Plot1 on
Type: [ ] [ ] [ ]
Xlist:L1
Ylist:L2
Mark: [ ] +
    
```

Finding the Linear Model

7. To find the linear model (or regression), hit STAT and select CALC (right arrow over)
8. Select #4 "LinReg" and press ENTER.
9. If you have a TI-84 Plus you may have a second screen pop up. If so, be sure your screen looks like the screen shot to the right. Then go down to the word CALCULATE and press ENTER (Continued on Back)

```

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

```

EDIT [ ] CALC TESTS
1:1-Var Stats
2:2-Var Stats
3:Med-Med
4:LinReg(ax+b)
5:QuadReg
    
```

```

LinReg(ax+b)
Xlist:L1
Ylist:L2
FreqList:
Store RegEQ:
Calculate
    
```

10. The screen should look something like the 1st picture at the right.

Your equation would be $y = 0.27x + 6.67$

Your correlation coefficient (r) is 0.99.

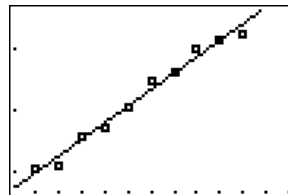
The closer r is to 1, the better the model

```

LinReg
y=ax+b
a=.2672727273
b=6.668909091
r2=.9812852389
r=.9905984246
    
```

Graphing the Equation and/or Predicting Y-values

1. To **graph** the equation, press $Y=$ and select a blank $Y=$ and type in the regression equation. Then press GRAPH.
2. OR select a blank $Y=$. Then press VARS 5 \Rightarrow 1. Then GRAPH. This will graph the exact equation. (see the 2nd picture at the right ~ RegEQ)
3. The graph on the screen will show the data points and the linear regression line (see example at right).



```

XY Σ [ ] TEST PTS
[ ] RegEQ
2:a
3:b
4:c
5:d
6:e
7:↓
    
```

4. To **predict** or **estimate** with the equation you can get a **rounded estimate** by just plugging your rounded equation from Step 10 in manually to the regular computation screen along with the value you are looking for. You can find an **exact estimated value** by entering your regression equation like Step 2 above and look at the table of values. If you use the table you can change the start value by hitting 2nd WINDOW.

```

TABLE SETUP
TblStart=15
ΔTbl=1
Indent: [ ] Ask
Depend: [ ] Ask
    
```

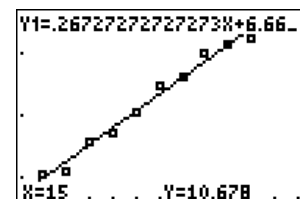
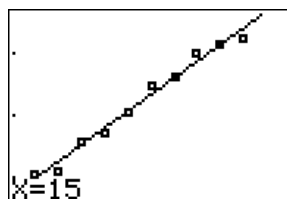
X	Y1
15	10.678
16	10.945
17	11.213
18	11.48
19	11.747
20	12.014
21	12.282

press + for ΔTbl

5. You could also find the exact estimate value by entering your regression equation like Step 2 above and use 2nd and the TRACE Button to access Calculate VALUE (Choice #1). Enter the x -value, press ENTER and it will plug the x into whichever equation you have entered in $Y1$. The value you enter MUST be within your domain otherwise it will give you an Error Message. In that case change your domain to make it big enough to include that x -value.

```

CALCULATE
1:value
2:zero
3:minimum
4:maximum
5:intersect
6:dy/dx
7:∫f(x)dx
    
```



```

ERR: INVALID
[ ] Quit
2:Goto
    
```