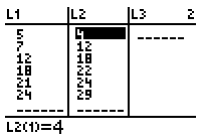
Regression III

(aka "Line of best fit", aka "Pearson correlation coefficient", aka "r")

Here is a data table showing how much of a chemical has been produced at different points in time.

[STAT] [1]

Time (s)	Mass (g)
5	4
7	12
12	18
18	22
21	24
24	29



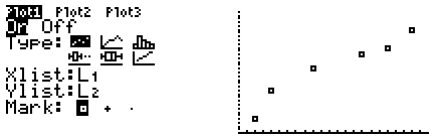
Have a look at the data....

You will need to turn on the "STAT PLOT", select the scatter graph (⁘) and appropriate lists, then use the "ZoomStat" feature to set the window.

[2nd][STAT PLOT] [1] [2nd][QUIT]

[GRAPH]

[ZOOM] [9]



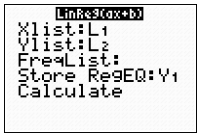
Now get it to perform the calculation

But this time we are going to place the line of best fit into one of the calculators Y functions.

[STAT] [▸] [4]

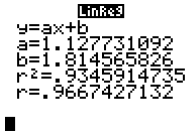
You enter Y_1 by:

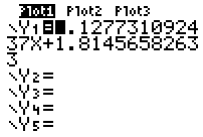
[VARS] [▸] [1] [1] [ENTER]

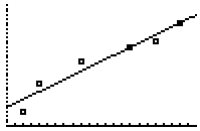


Look at the results

It looks just the same, but the line of best fit is stored in Y_1 and if we graph we can see both the line and the data.





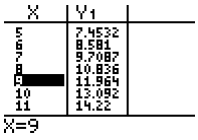


What is y when x=...?

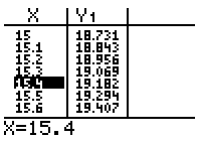
Use the table..... and adjust using TBLSET if necessary.

[2nd][GRAPH]

[2nd][TBLSET]



What mass would we expect when t=9?
Mass = 12.0g (3sf)



What mass would we expect when t=15.4?
Mass = 19.2g (3sf)

What is x when y=...?

Plot a horizontal line and find the intersection.

At what time would we have 23g of chemical?

t= 18.8s (3sf)

[Y=]

Enter the line and then draw the graph and find the intersection. (See earlier sheets for more details.)

[GRAPH]

[2nd][CALC] [5]