

### Objective 3.03 Writing an Equation for a Line of Best Fit

Using the graphing calculator to find the line of best fit.

A trend line that shows the relationship between two sets of data most accurately is called the line of best fit. This line sums up the data points of a scatter plot.

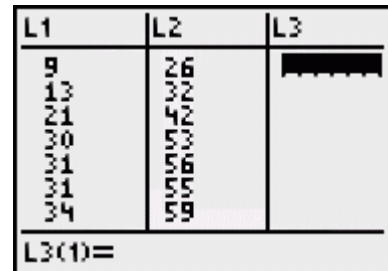
You are given the following table that represents data collected in an experiment, where the mass of a solid that formed in a beaker after leaving it for a specified time was measured.

Time	Mass
9	26
13	32
21	42
30	53
31	56
31	55
34	59

Find the equation of the line of best fit for the data.

Step 1: Press STAT then EDIT

Enter in first column in L1 and the second column in L2

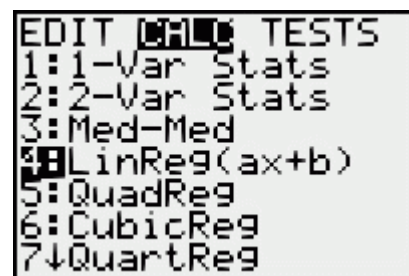


A calculator screen showing data entry. Column L1 contains the values 9, 13, 21, 30, 31, 31, and 34. Column L2 contains the values 26, 32, 42, 53, 56, 55, and 59. Column L3 is empty. The bottom of the screen shows 'L3(1)=

Step 2: Go back to STAT, go over to CALC, #4

This gives you the equation of the line of best fit.

The line of best fit is  $y=1.31x + 14.54$



A calculator screen showing the TESTS menu. The options are: 1: 1-Var Stats, 2: 2-Var Stats, 3: Med-Med, 4: LinReg(ax+b), 5: QuadReg, 6: CubicReg, 7: QuartReg. The '4' key is highlighted next to 'LinReg(ax+b)'. The top of the screen shows 'EDIT' and 'TESTS'.

By using the equation, you can substitute in any value for x (time) to get y (mass).

You try:

1. Find the line of best fit for the following data:

US Crime Rate  
(per 1000,000 inhabitants)

Year	Number of Crimes
1995	5275.9
1996	5086.6
1997	4930
1998	4619.3
1999	4266.8

2. Find the line of best fit for the given data.

x	1	2	3	4	5	6	7
y	54	52	45	40	33	27	18

Answers: 1.  $y = -248.55x + 501,190.07$  2.  $y = -6.07x + 62.71$