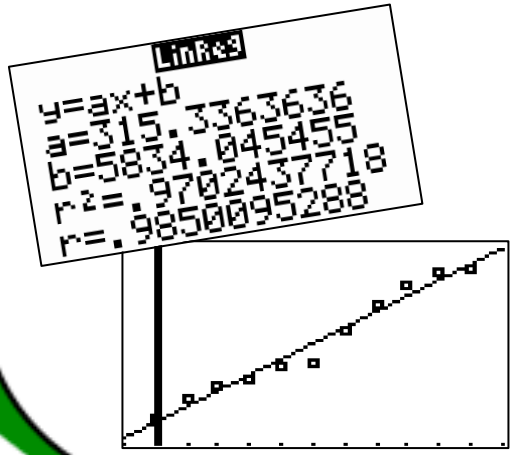
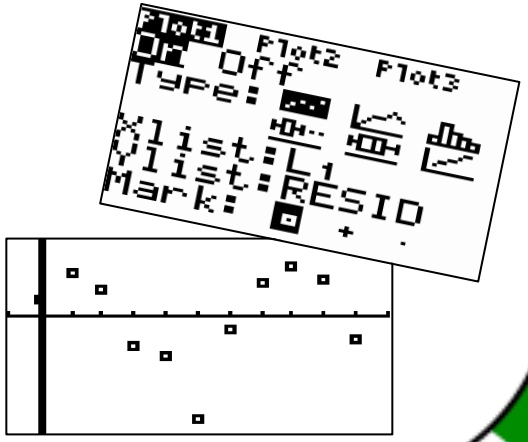
Linear Regression Foldable



Example to Demonstrate Linear Regression on a TI84 Calculator	How to Enter Data into Lists and Graph a Scatterplot
How to Calculate A Linear Regression	How to find the Correlation Coefficient and Graph a Residual Plot



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Instructions

Print or copy page 3 and 4 double sided.

Place the paper so the examples are face down.

Cut along the dotted lines to create flaps.

Flip and fold the flaps inwards.

Glue the foldable into notes or on a piece of construction paper.

Go through the foldable with your students.

How to Enter Data into Lists and Graph a Scatterplot

Example to Demonstrate Linear Regression on a TI84 Calculator

How to find the Correlation Coefficient and Graph a Residual Plot

How to Calculate a Linear Regression

Example

The data below displays the average tuition and fee and room and board for a public four-year college.

School Year	Cost
2003-2004	$5,900
2004-2005	$6,322
2005-2006	$6,566
2006-2007	$6,662
2007-2008	$6,943
2008-2009	$7,008
2009-2010	$7,672
2010-2011	$8,174
2011-2012	$8,557
2012-2013	$8,821
2013-2014	$8,893

The source is The College Board, Annual Survey of Colleges

Step 1: Identify the independent and dependent variables and determine how to represent them.

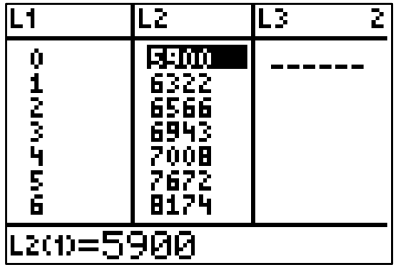
The independent variable, x, is time. The dependent variable, y, is cost. To simplify the values of x, define x as years since the 2003-2004 school year.

School Year	x	Cost y
2003-2004	0	$5,900
2004-2005	1	$6,322
2005-2006	2	$6,566
2006-2007	3	$6,662
2007-2008	4	$6,943
2008-2009	5	$7,008
2009-2010	6	$7,672
2010-2011	7	$8,174
2011-2012	8	$8,557
2012-2013	9	$8,821
2013-2014	10	$8,893

Step 2: Enter the data into lists one and two.

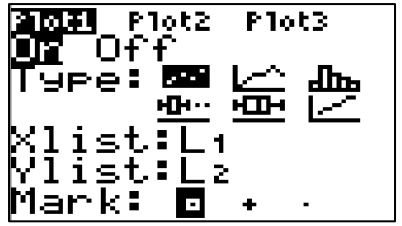
Select Stat and Edit

Enter the independent data into L1 and the dependent data into L2.

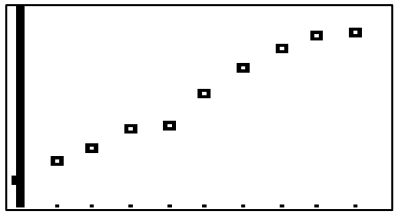


Step 3: Create and Graph a scatter plot of the data.

Go to STAT PLOT by pressing 2nd , Y= , enter

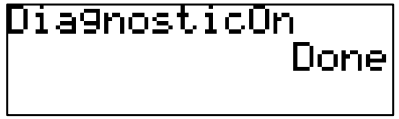


Select ON and press enter. Set the X list to L1, the Y List is to L2, and the mark of your choice is selected. To see the graph select ZOOM9



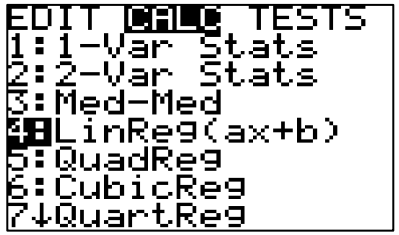
Step 4: Make sure the calculators Diagnostics are on.

2nd Catalog, Diagnostic on, enter Make sure you see the word done so you know the diagnostics are on.

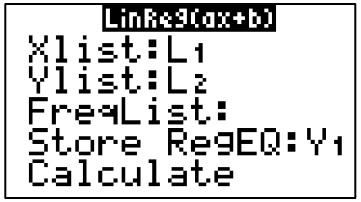


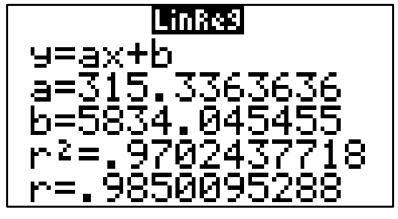
Step 5: Perform a Linear Regression and store it in y =

Press Stat, CALC, 4: LinReg(ax+b)



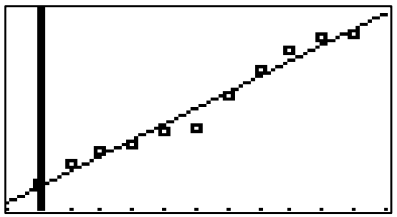
Go down to Store RegEQ and select Vars,YVars Function, Y1, enter, down to Calculate, enter





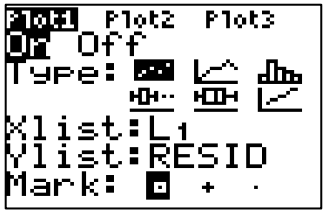
The line of best fit is a good fit because the correlation coefficient r is very close to 1.

Step 6: Graph the Linear Regression Equation from your Y1 by selecting GRAPH

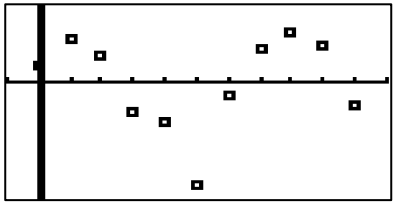


Step 7 Graph a Residual Plot

Go to Stat Plot by pressing 2nd, Y=, enter. Go down to L2 and replace L2 with RESID. To do this press 2nd Stat, RESID, enter



To see the residual plot press ZOOM9



The points are random about the x-axis which indicates a linear fit.