Graphing Calculator Investigation

A Follow-Up of Lesson 2-5

TI-73

Lines of Regression

You can use a TI-73 graphing calculator to find a line that best fits a set of data. This line is called a **regression line** or **line of best fit**. You can also use the calculator to draw scatter plots and make predictions.

INCOME **The table shows the median income of U.S. families for the period 1970–1998.**

Year	1970	1980	1985	1990	1995	1998
Income ($)	9867	21,023	27,735	35,353	40,611	46,737

Source: U.S. Census Bureau

Find and graph a regression equation. Then predict the median income in 2010.

Step 1 *Find a regression equation.*

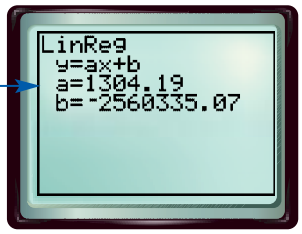
- Enter the years in L1 and the incomes in L2.

  KEYSTROKES: [LIST] 1970 [ENTER]

- Find the regression equation by selecting LinReg(ax+b) on the STAT CALC menu.

  KEYSTROKES: [2nd] [STAT] [▶] [▶] [▶] 5 [ENTER]

The regression equation is about $y = 1304.19x - 2{,}560335.07$.



The slope indicates that family incomes were increasing at a rate of about $1300 per year.

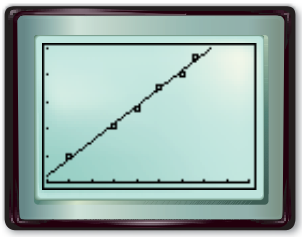
Step 2 *Graph the regression equation.*

- Use PLOT to graph a scatter plot.

  KEYSTROKES: [2nd] [PLOT] [ENTER] [ENTER]

- Select the scatter plot, L1 as the Xlist, and L2 as the Ylist.
- Copy the equation to the Y= list and graph.

  KEYSTROKES: [Y=] [2nd] [VARS] 3 [▶] [▶] 1 [ZOOM] 7



[1965, 2010] scl: 5 by [0, 50,000] scl: 10,000

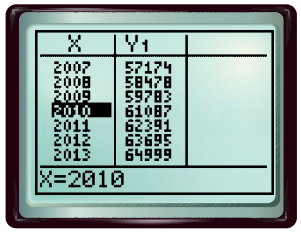
Notice that the regression line does not pass through any of the data points, but comes close to all of them. The line fits the data very well.

Step 3 *Predict using the regression equation.*

- Use a table to find y when $x = 2010$.

  KEYSTROKES: [2nd] [TBLSET] 2010 [2nd] [TABLE]

  According to the regression equation, the median family income in 2010 will be about $61,087.



www.algebra2.com/other_calculator_keystrokes