Graphing Calculator Lab

Lines of Regression

You can use a Sharp 9900C graphing calculator to find a function that best fits a set of data. The graph of a linear function that models a set of data is called a regression line or line of best fit. You can also use the calculator to draw scatter plots and make predictions.

ACTIVITY

INCOME The table shows the median income of U.S. families for the period 1970–2002.

Year	1970	1980	1985	1990	1995	1998	2000	2002
Income($)	9867	21,023	27,735	35,353	40,611	46,737	50,732	51,680

Source: U.S. Census Bureau

Make a scatter plot of the data. Find a function and graph a regression line. Then use the function to predict the median income in 2015.

Step 1 Make a scatter plot.

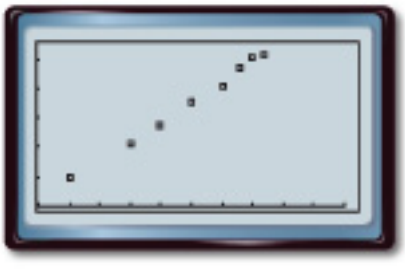
- Enter the years in L1 and the income in L2.

  KEYSTROKES: STAT ENTER 1970 ENTER 1980 ENTER …

- Set the viewing window to fit the data.

  KEYSTROKES: WINDOW 1965 ENTER 2015 ENTER 5 ENTER 0 ENTER 55000 ENTER 10000 ENTER

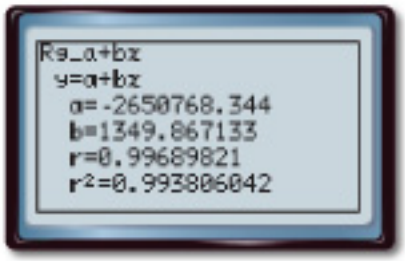
- Use STAT PLOT to graph a scatter plot.



Step 2 Find the equation of a regression line.

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

  KEYSTROKES: STAT ALPHA [D] 0 3 ENTER



The regression equation is about y = 1349.87x - 2,650,768.34. The slope indicates that family incomes were increasing at a rate of about $1350 per year.

The number r is called the linear correlation coefficient. The closer the value of r is to 1 or -1, the closer the data points are to the line. In this case, r is very close to 1 so the line fits the data well. If the values of r^2 and r are not displayed, use DiagnosticOn from the CATALOG menu.