5.6 Perform Linear Regression

QUESTION **How can you model data with the best-fitting line?**

The line that most closely follows a trend in data is the *best-fitting line*. The process of finding the best-fitting line to model a set of data is called *linear regression*. This process can be tedious to perform by hand, but you can use a graphing calculator to make a scatter plot and perform linear regression on a data set.

EXAMPLE 1 **Create a scatter plot**

The table shows the total sales from women's clothing stores in the United States from 1997 to 2002. Make a scatter plot of the data. *Describe* **the correlation of the data.**

| Year	1997	1998	1999	2000	2001	2002
Sales (billions of dollars)	27.9	28.7	30.2	32.5	33.1	34.3

STEP 1 *Enter data*

Press **STAT** and select Edit. Enter years since 1997 (0, 1, 2, 3, 4, 5) into List 1 (L_1). These will be the *x*-values. Enter sales (in billions of dollars) into List 2 (L_2). These will be the *y*-values.
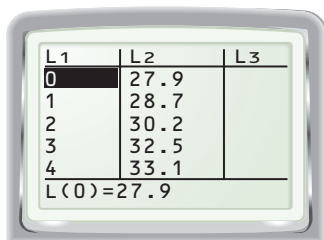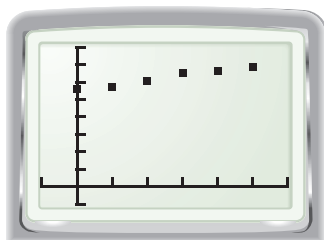
STEP 2 *Choose plot settings*

Press **2nd** **Y=** and select Plot1. Turn Plot1 On. Select scatter plot as the type of display. Enter L_1 for the Xlist and L_2 for the Ylist.
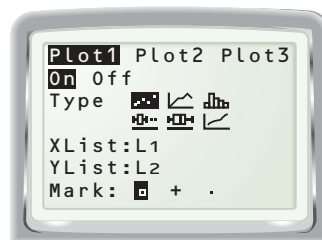
STEP 3 *Make a scatter plot*

Press **ZOOM** 9 to display the scatter plot so that the points for all data pairs are visible.

STEP 4 *Describe the correlation*

Describe the correlation of the data in the scatter plot.

The data have a positive correlation. This means that with each passing year, the sales of women's clothing tended to increase.