

ACTIVITY 5.4

Using Technology

Graphing Calculator Activity for use with Lesson 5.4

Best-Fitting Lines

A graphing calculator can be used to find a best-fitting line. One way to tell how well a line fits a set of data is to look at the r -value. The closer the absolute value of r is to 1, the better the line fits the data.

STUDENT HELP

Look Back
For help with scatter plots, see p. 209.



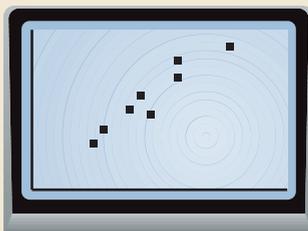
See keystrokes for several models of calculators at www.mcdougallittell.com

EXAMPLE

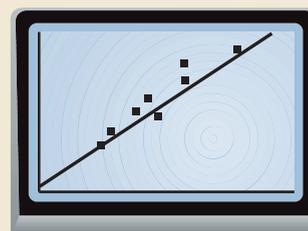
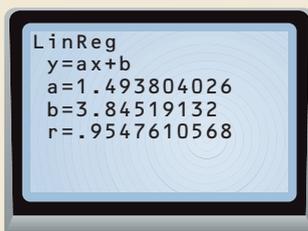
Use a graphing calculator to find the best-fitting line for the data.
(38, 62), (28, 46), (56, 102), (56, 88), (24, 36), (77, 113), (40, 69), (46, 60)

SOLUTION

- 1 Enter the ordered pairs into the graphing calculator. Make a scatter plot of the data.
- 2 Use linear regression to find the best-fitting line. Select L_1 as the x list and L_2 as the y list.



- 3 The equation $y = 1.49x + 3.85$ is the line of best fit with an r -value of approximately 0.95.
- 4 Graph the equation $y = 1.49x + 3.85$ with the data points.



The r -value of 0.95 is close to 1. The equation $y = 1.49x + 3.85$ fits the data points well.

EXERCISES

Find the best-fitting line for the points.

1. (0.1, 2.1), (1.0, 2.5), (2.2, 2.9), (2.9, 3.4), (4.0, 4.0), (4.9, 4.3)
2. (31, 114), (40, 136), (49, 165), (62, 177), (70, 185), (78, 209)
3. (0, 1), (1, 2), (1, 3), (2, 3), (2, 3.5), (3, 4), (3, 4.5), (4, 5.5), (4, 6), (5, 5), (5, 6), (5, 6.5), (6, 7), (6, 8), (7, 7.5)
4. (0, 8), (1, 7.5), (1, 6), (2, 6.5), (2, 6), (3, 5.5), (3, 5), (4, 4), (4, 3.5), (5, 3), (5, 2.5), (6, 2), (6, 1.5), (7, 1), (7, 0)