

## Chapter 23 Correlation Analysis

I. Correlation analysis measures the strength of the arithmetic relationship between two variables.

II. Correlation may be visually represented with a scatter diagram.

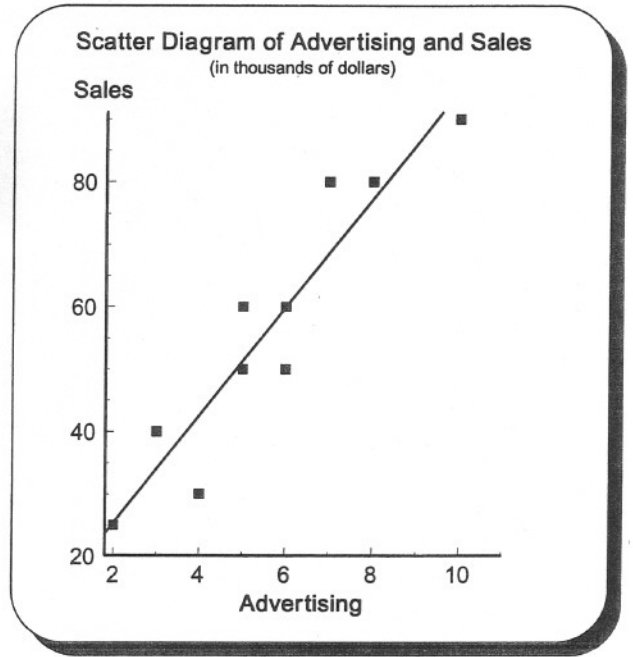
A. Linda Smith is interested in analyzing the relationship between monthly advertising expenditures and monthly sales revenue. Data on these variables was first presented in chapter 7.

B.

Advertising expenditures (000)	5	2	7	6	10	4	6	5	3	8
Sales revenue (000)	50	25	80	50	90	30	60	60	40	80

C. She began by making a **scatter diagram** of the data.

1. Sales is the dependent variable because sales revenue, to some degree, is dependent upon advertising expenditures. This dependency was verified on page 121. The dependent variable is graphed on the y-axis.
2. The independent variable, advertising expenditures, is graphed on the x-axis (abscissa).
3. In chapter 24, we will learn to draw a regression line through the middle of a scatter diagram.



III. The sample coefficient of correlation ( $r$ )

A. The coefficient of correlation ( $r$ ) measures the strength of the relationship between 2 variables. It takes values between  $\pm 1$  inclusive.

$$-1 \leq r \leq +1$$

B. The closer  $r$  is to either extreme, the higher (stronger) is the relationship (correlation).

1. An  $r$  of about .8 or so is high positive correlation.
2. An  $r$  of about .2 to -.2 is low correlation.
3. An  $r$  of about -.8 or so is high negative correlation.

