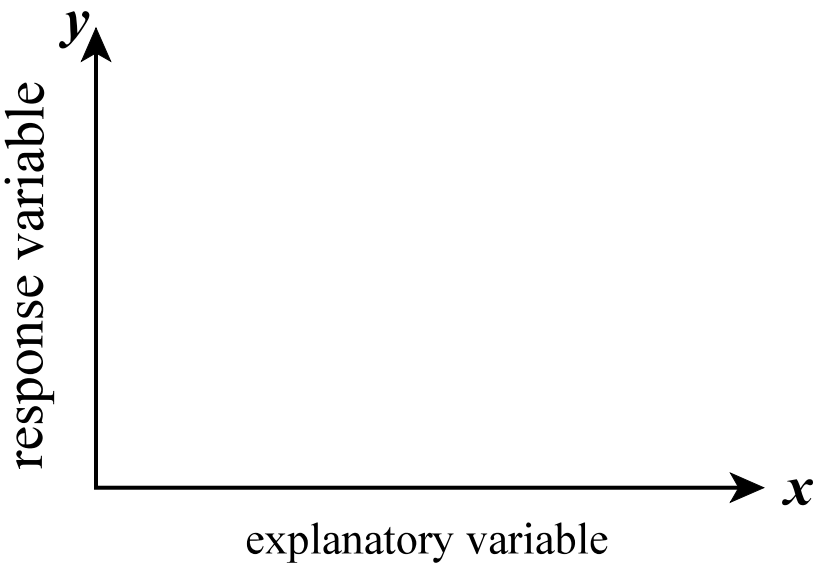
I. Correlation:

relationship between two quantities such that a change to one (***x***) "accompanies" a consistent change in the other (***y***);
If an increase/decrease in "***x***" is associated with...

(1) "***y***" increasing/decreasing, the correlation is positive,
(2) "***y***" decreasing/increasing the correlation is negative.

II. Scatter Diagram & Linear Correlation (p.535):

graph with stand-alone (***x***,***y***) data points plotted...



see Figure 9.1

vs.

Figure 9.2 (a&b)

III. Examples (p.548): #14ab,**16ab**

IV. Correlation Coefficient, "r" (p.540):

(1) $$r = \frac{n \cdot \sum_{i=1}^{n} x_i \cdot y_i - \sum_{i=1}^{n} x_i \cdot \sum_{i=1}^{n} y_i}{\sqrt{n \cdot \sum_{i=1}^{n} (x_i)^2 - \left(\sum_{i=1}^{n} x_i\right)^2} \cdot \sqrt{n \cdot \sum_{i=1}^{n} (y_i)^2 - \left(\sum_{i=1}^{n} y_i\right)^2}}$$

(2) $\mathbf{-1 \le r \le 1}$

(3) No correlation ⇄ $r = 0$, Weak ⇄ $r \approx 0$
Moderate ⇄ $r \approx \pm 0.5$ ☜ but also "risky"
Strong ⇄ $r \approx \pm 1$, Perfect ⇄ $r = \pm 1$

(4) Examples (p.548): #4,14c,**16c**

HW: pp.547-549 / #3,5,7,13-19(odd)
Read pp.552-564 (section 9.2)