Exercises :

1. The estimated regression equation for a model involving two independent variables and ten observation follows. $\hat{y} = 29.1270 + 0.5906 x_1 + 0.4980 x_2$.

a. Interpret b_1 and b_2 in this estimated regression equation ?

b. Estimate y when $x_1 = 180$ and $x_2 = 310$.

$$y = 29.127 + 0.5906(180) + 0.498(310)$$
$$= 289.82.$$

2.

a. Develop an estimated regression equation relating y to x_1. estimate y is $x_1 = 45$.

$b_0 = 45.06$

$b_1 = 1.94$

$$\hat{y} = 45.06 + 1.94 x_1$$
$$y(45) = 45.06 + 1.94(45)$$
$$= 132.36$$

2. b. Develope an estimated regression equation relating y to x_2. estimate y if $x_2 = 15$.

$b_0 = 85.22$

$b_1 = 4.32$

$\hat{y} = 85.22 + 4.32 x_2$

$y(15) = 85.22 + 4.32 (15)$

$= 150.02$.

c. Develope an estimated regression equation relating y to x_1 and x_2, estimate y if $x_1 = 45$ and $x_2 = 15$.

$\hat{y} = b_0 + b_1 x_1 + b_2 x_2$.

By Excel

3.b. Estimate y when $x_1 = 10$, $x_2 = 5$, $x_3 = 1$, $x_4 = 2$.

$$\hat{y} = 17.6 + 3.8x_1 + -2.3x_2 + 7.6x_3 + 2.7x_4.$$

$$= 17.6 + (3.8)(10) - 2.3(5) + 7.6 + (2.7)(2)$$

$$= 39.5.$$

4.