

## Exercise 1:

$$1. Y' = bX + A \quad M_x = 5.5 \quad M_y = 72.6$$

$$b = r \left( \frac{S_y}{S_x} \right) \quad S_x = 3.03 \quad S_y = 13.2$$

$$r = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}}$$

$$= 0.973$$

$$b = 0.973 \left( \frac{13.2}{3.03} \right)$$

$$= 4.239$$

$$A = \cancel{72.6} M_y - b(M_x)$$

$$= 72.6 - (4.239)(5.5)$$

$$= 49.3$$

$$\rightarrow Y' = 4.239X + 49.3$$

$$2. Y' = 4.239(7) + 49.3$$

$$= 78.97 \approx \boxed{79}$$

The predicted value is higher than the data in the table. The reason for this is because ~~of~~ the data sample data has more variability due to other factors, ~~and as these factors are not considered in the~~ affects the data.

$$3. Y' = 4.239(11) + 49.3$$

$$= 95.929 \approx \boxed{96}$$



## Exercise 2 :

$$1. \quad M_x = 64 \quad S_x = 3.162$$

$$M_y = 154 \quad S_y = 11.937$$

$$r = 0.728$$

$$b = r \left( \frac{S_y}{S_x} \right)$$

$$= 0.728 \left( \frac{11.937}{3.162} \right)$$

$$= \cancel{2.75} 2.748$$

$$A = M_y - b(M_x)$$

$$= 154 - 2.748(64)$$

$$= \cancel{-22} - 21.872$$

$$\boxed{Y' = 2.748X - 21.872}$$

$$2. \quad Y' = 2.748(70) - 21.872$$

$$= 170.488 \approx \boxed{170.5}$$

Predicted weight for 70-inch height person is  
170.5 pounds.