

Q) The following data relate to age of husbands & wives.

i) Estimate the age of a lady whose husband is 24 yrs

ii) " " " " " man " wife " 27 years

	Husband
Mean	26 yrs \bar{x}
S.D (σ)	3 yrs σ_x
r	0.9

$$b_{xy} = r \times \frac{\sigma_x}{\sigma_y} = 0.9 \times \frac{3}{2} = 1.35$$

$$b_{yx} = r \times \frac{\sigma_y}{\sigma_x} = 0.9 \times \frac{2}{3} = 0.6$$

$$y - \bar{y} = b_{yx} (x - \bar{x})$$

$$y - 22 = 0.6 (x - 26)$$

$$y - 22 = 0.6x - 15.6$$

$$y = 0.6x - 15.6 + 22$$

$$y = 0.6x + 6.4$$

When $x = 24$ $y = ?$

$$y = 0.6(24) + 6.4$$

$$y = 14.4 + 6.4 = 20.8 \quad \left. \begin{array}{l} \text{wife is } 20.8 \\ \text{yrs} \end{array} \right\}$$

$$x - \bar{x} = b_{xy} (y - \bar{y})$$

$$x - 26 = 1.35 (y - 22) \rightarrow$$

$$x - 26 = 1.35y - 29.7$$

$$x = 1.35y - 29.7 + 26$$

$$x = 1.35y - 3.7$$

when $y = 27$ $x = ?$

$$x = 1.35(27) - 3.7$$

$$x = 36.45 - 3.7$$

$$x = 32.75 \quad \left. \begin{array}{l} \text{Husband is} \\ 32.75 \text{ years} \end{array} \right\}$$