Regression ⇒ $y = mx + c$

$$\bar{x} = \frac{1}{n}\Sigma x_i \quad , \quad \bar{y} = \frac{1}{n}\Sigma y_i$$

$$var(x) = \frac{1}{n-1}\Sigma (x_i - \bar{x}_i)^2$$

$$Cov(x, y) = \frac{1}{n-1}\Sigma [(x_i - \bar{x}_i) \cdot (y_i - \bar{y}_i)]$$

$$m = \frac{Cov(x,y)}{Var(x)}, \quad c = \bar{y} - m\bar{x}$$

Q ⇒

x	y
43	99
21	65
25	79
42	75
57	87
59	81

$$\bar{x} = \frac{1}{n}\Sigma x_i \quad , \quad \bar{y} = \frac{1}{n}\Sigma y_i$$

$\bar{x} = 41.16$, $\bar{y} = 81$

$$var(x) = \frac{1}{n-1}\sum_{i=1}^{n} (x_i - \bar{x}_i)^2$$

$$= 248.16$$

$$Cov(x, y) = \frac{1}{n-1}\sum_{i=1}^{n} (x_i - \bar{x}_i)(y_i - \bar{y}_i)$$

$$= 6.62 + 64.51 + 6.46 - 1.008 + 19.008 + 0$$

$$= 95.6 \text{ J.}$$

$$m = \frac{Cov(x,y)}{Var(x)} = \frac{95.6}{248.16} = 0.385$$

$$c = \bar{y} - m\bar{x} = 81 - 0.385 * 41.16 = 65.15$$

$$\boxed{y = 0.385x + 65.15}$$