X

$\sum x_1 = 2700$; $\sum x_2 = 600$; $\sum y = 1200$;

$\sum x_1^2 = 264870$; $\sum x_2^2 = 12480$ $\sum y^2 = 109000$;

$\sum y \cdot x_1 = 165645$; $\sum y \cdot x_2 = 35640$; $\sum x_1 \cdot x_2 = 51894$

$$\begin{cases} 1200 = 30 \cdot a + b_1 \cdot 2700 + b_2 \cdot 600 \\ 165645 = a \cdot 2700 + b_1 \cdot 264870 + b_2 \cdot 51894 \end{cases}$$

$$\sum y \cdot x_n = a \cdot \sum x_p + b_1 \cdot \sum x_1 \cdot x_p + b_2 \cdot \sum x_2 \cdot x_p$$

$y_i - y$	~~y x~~	x y	x^2	x · y	y^2	$x_i - x$
-4	5	4	25	20		-7,5
4	6	4	36	24		6
6	8	6	64	48		8
5	8	5	64	40		8
7	10	7	100	70		10
8	10	8	100	80		10
9	14	8	196	112		14
10	20	10	400	200		20
12	20	12	400	240		20
18	24	16	576	384		24
	125	80	1961	1218		

$$\begin{cases} na + b\sum x = \sum y \\ a\sum x + b\sum x^2 = \sum xy \end{cases}$$

$$b = \frac{(n\sum xy - \sum x \sum y)}{n\sum x^2 - (\sum x)^2}$$

$$a = \frac{\sum y - b\sum x}{n}$$

$$b = \frac{10 \cdot 1218 - 125 \cdot 80}{10 \cdot 1561 - 125^2} = \frac{2180}{3985} = 0,547$$

$\sum xy = 1218$

$\sum x^2 = 1961$

$$a = \frac{30 - 0,547 \cdot 125}{10} = \frac{11.625}{10} = 1,1625$$

$$y \simeq 1,16 + 0,55x$$

$$r = \frac{\Sigma (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\Sigma (x_i - \bar{x})^2 \cdot \Sigma (y_i - \bar{y})^2}}$$

$\Sigma(x_i - \bar{x}) = 112{,}5$

$\Sigma(y_i - \bar{y}) = 72$

$$r = \frac{112{,}5 \cdot 72}{(112{,}5)^2 - 72^2} = \frac{81000}{7{,}472} \approx 1{,}08. \quad = 12{,}6$$

$$r_{xy} = \frac{\overline{xy} - \bar{x} \cdot \bar{y}}{\sigma_x \cdot \sigma_y}$$

Arifmetik o'rtacha

1) $\bar{x} = \frac{\Sigma x_i}{n}$ 2) $\bar{x} = \frac{\Sigma x_i f_i}{\Sigma f_i}$

Dispersiya

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

Korrelatsiya

$$r_{xy} = \frac{\overline{xy} - \bar{x} \cdot \bar{y}}{\sigma_x \sigma_y}$$

Regressiya

$\bar{y} = a + b_1 x$ $b_1 = \frac{\overline{x \cdot y} - \bar{x}\bar{y}}{\overline{x^2} - \bar{x}^2}$ $a = \bar{y} - b\bar{x}$

Variatsion kenglik

Razmax $R = x_{max} - x_{min}$

Chiziqli tavsifot

1) $\bar{d} = \frac{|x_2 - \bar{x}|}{n}$ $\bar{d} = \frac{|x_2 - \bar{x}|}{\Sigma f_i}$

2) Variation koeffitsient.

$$V = \frac{\sigma}{x_o}$$

3) Ostilyadsya koeffitsenti

$$Ve = \frac{R}{x_o}$$

4) Chiziqli tavofut kor-kich

$$V\bar{d} = \frac{\bar{d}}{x_o}$$