Person	Rating 1 (x)	Rating 2 (Y)
A	4	3
B	2	4
C	3	2
D	5	5
E	1	3
F	3	1

⇒ Step 1:

X	Y	XY	X^2
4	3	12	16
2	4	8	4
3	2	6	9
5	5	25	25
1	3	3	1
3	1	3	9
$\Sigma x = 18$	$\Sigma y = 18$	$\Sigma xy = 57$	$\Sigma x^2 = 64$

Here, $\bar{x} = \frac{18}{6} = 3$

$\bar{y} = \frac{18}{6} = 3$

Step 2: Calculate value of 'a': ($n = 6$)

$$a = \frac{n\Sigma xy - \Sigma x \Sigma y}{n\Sigma x^2 - (\Sigma x)^2} = \frac{6(57) - (18 \times 18)}{6(64) - (18)^2}$$

$$= \frac{342 - 324}{384 - 324} = \frac{18}{60} = 0.3$$

$\boxed{a = 0.3}$

Step 2: Calculate of value of 'b'.

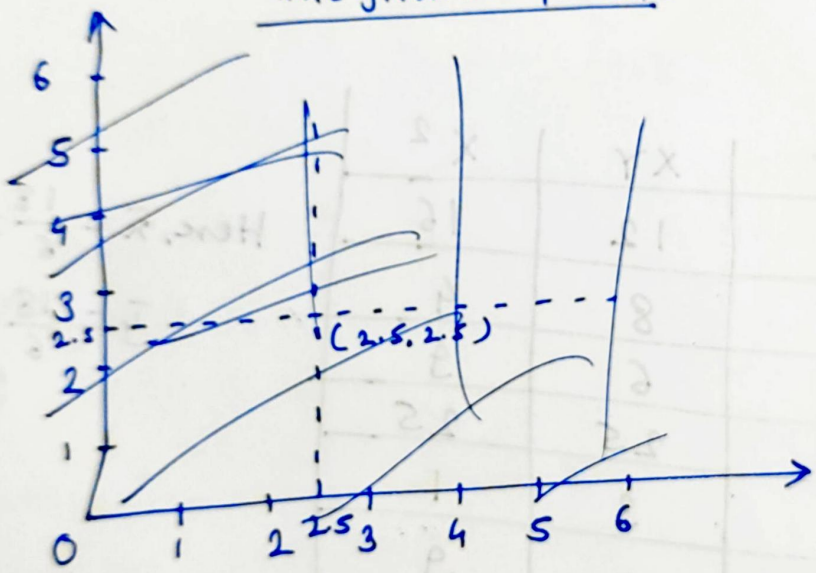
$$b = \frac{1}{n}\left[\Sigma y - a\Sigma x\right] = \frac{1}{6}\left[18 - (0.3)(18)\right]$$

$$= \frac{1}{6}\left[18 - 5.4\right] = \frac{1}{6}\left[12.6\right] = 2.1$$

$\therefore$ $y = ax + b$

$$\boxed{y = (0.3)x + 2.1}$$

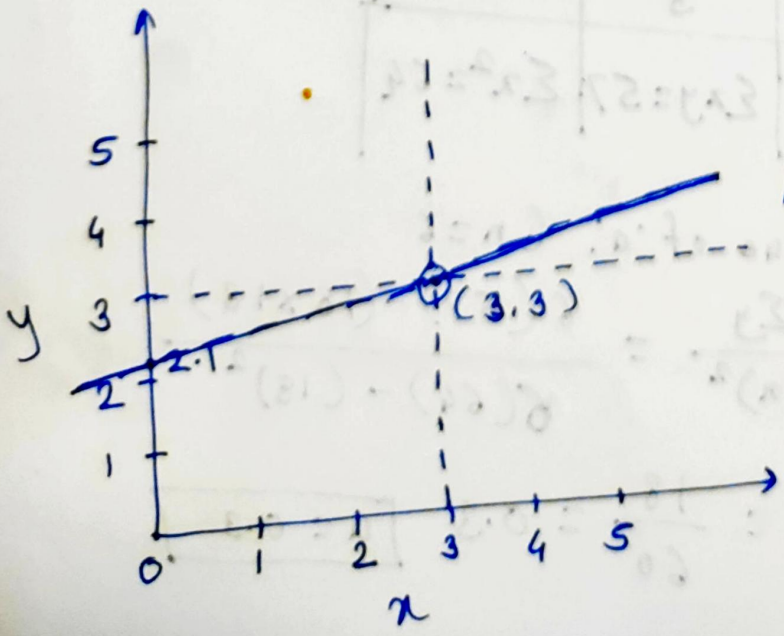
Find regression line that best fit the given sample data.



Regression line which is best fit, always passes through dense data.

Regression line passes through mean values of & 'y' intercept.

Her, 'b' is 'y' intercept & 'a' is slope.



Line of best fit, for given sample data.

Interpret & explain equation of regression line.

⇉ For it we need to find standard error of estimate.

$$\text{Standard error of estimate} = \sqrt{\frac{\Sigma(\hat{y}-y)^2}{n-2}}$$

We have, $\hat{y} = 2.1 + 0.3(x)$

Now, we will calculate different values of $\hat{y}$, for different values of 'x'.

x	$\hat{y}$	$(\hat{y}-y)$	$(\hat{y}-y)^2$
4	3.3	0.3	0.9
2	2.7	-1.3	1.69
3	3.0	1	1
5	3.6	-1.4	1.96
1	2.4	-0.6	0.36
3	3.0	2	4
			$\Sigma(\hat{y}-y)^2 = 9.91$

Generally standard error of estimate should be less than '1' to have good regression solution.

$$\text{Standard error of estimate} = \sqrt{\frac{9.91}{6-2}} = \sqrt{\frac{9.91}{4}}$$

$$= \sqrt{2.47} \approx 1.5 < 1$$ (Ideally it should be less than '1')

Here, $\hat{y} = 2.1 + 0.3(x)$ is not good equation of regression line as standard error of estimate.

So, we can have (or need) more sample data to get better regression line.