X	y	$x-\bar{x}$	$y-\bar{y}$	$(x-\bar{x})^2$	$(x-\bar{x})(y-\bar{y})$
1	8	-2	5	4	-10
3	0	0	~~6~~ -3	0	0
4	3	1	0	1	0
4	1	1	-2	1	-2

$$S_{xx} = 6 \qquad S_{xy} = -12$$

$$\bar{x} = \frac{12}{4} = 3$$

$$\bar{y} = \frac{12}{4} = 3$$

x = 2 ☺

$9 - 2(2) = 5$

$\hat{y} = 5$

x = 10 ✗ extrapolation!

$9 - 2(10) = -11 = \hat{y}$

$$b_1 = \frac{S_{xy}}{S_{xx}} = \frac{-12}{6} = -2$$

$$b_0 = \bar{y} - b_1\bar{x}$$

$$= 3 - (-2) \times 3$$

$$= 3 + 6$$

$$= 9$$

$y = mx + b$

$$\hat{y} = b_0 + b_1 x$$

$$\hat{y} = 9 - 2x$$
↙ slope

intercept — the predicted y-value when x = 0.

slope — the change in the predicted value of y for a one-unit change in x.