

Given Dataset

Weight (X)	Price (Y)
2	35
4	60
5	20
3	50
6	50
5	55
7	60

Formula of Linear Regression

$$Y = MX + c$$

$$c = \bar{Y} - M\bar{X}$$

$$M = \frac{\bar{X} \cdot \bar{Y} - \overline{XY}}{(\bar{X})^2 - \overline{X^2}}$$

$$\bar{X} = \text{Mean } X$$

$$\bar{Y} = \text{Mean } Y$$

Calculation Table for Linear Regression

X	Y	XY	X ²	\bar{X}	\bar{Y}	$\bar{X}\bar{Y}$	$(\bar{X})^2$	$\overline{X^2}$
2	35	70	4	$\frac{32}{7}$ $= 4.57$	$\frac{330}{7}$ $= 47.14$	$\frac{1555}{7}$ $= 222.14$	$(4.57)^2$ $= 20.88$	$\frac{164}{7}$ $= 23.43$
4	60	240	16					
5	20	100	25					
3	50	150	9					
6	50	300	36					
5	55	275	25					
7	60	420	49					

$$\text{Now, } M = \frac{\bar{X} \cdot \bar{Y} - \overline{XY}}{(\bar{X})^2 - \overline{X^2}}$$

$$= \frac{4.57 \times 47.14 - 222.14}{20.88 - 23.43}$$

$$= \frac{215.43 - 222.14}{20.88 - 23.43}$$

$$= \frac{-6.71}{-2.55}$$

$$\text{Slope, } M = 2.63$$

$$\text{Now, } C = \bar{Y} - M\bar{X}$$

$$= 47.14 - 2.63 \times 4.57$$

$$= 47.14 - 12.02$$

$$\text{Intercept, } C = 35.12$$

Now, predicted price for vegetable weight 6

$$\text{is, } Y = MX + C$$

$$= 2.63 \times 6 + 35.12$$

$$= 50.9$$