Given Dataset

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

Formula of Linear Regression

$$Y = MX + C$$

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

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

$\bar{X}$ = Mean X

$\bar{Y}$ = Mean Y

Calculation Table for Linear Regression

X	Y	XY	X^2	$\bar{X}$	$\bar{Y}$	$\overline{XY}$	$(\bar{X})^2$	$\overline{X^2}$
2	35	70	4					
4	60	240	16					
5	20	100	25					
3	50	150	9	32/7	330/7	1555/7	$(4.57)^2$	161/7
6	50	300	36	=4.57	= 47.14	= 222.14	=20.88	=23.43
5	55	275	25					
7	60	420	49					

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

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

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

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

Slope, $M = 2.63$

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

$= 47.14 - 2.63 \times 4.57$

$= 47.14 - 12.02$

Intercept, $c = 35.12$

Now, predicted price for vegetable weight 6 is, $Y = MX + C$

$= 2.63 \times 6 + 35.12$

$= 50.9$

Now, we find the predicted value for the given dataset and also calculate the residuals :

weight	value	predicted_value	residuals
2	35	40.38	5.38
4	60	45.64	14.36
5	20	48.27	28.27
3	50	43.01	6.99
6	50	50.90	0.90
5	55	48.27	6.73
7	60	53.53	6.47

Now, Take another table for calculating MSE & MAE :

actual value (y_i)	predicted value ($\hat{y}_i$)	$y_i - \hat{y}_i$	$\lvert y_i - \hat{y}_i \rvert$	$(y_i - \hat{y}_i)^2$
35	40.38	-5.38	5.38	28.94
60	45.64	14.36	14.36	206.21
20	48.27	-28.27	28.27	799.19
50	43.01	6.99	6.99	48.86
50	50.90	-0.9	0.9	0.81
55	48.27	6.73	6.73	45.29
60	53.53	6.47	6.47	41.86

Mean Absolute Error (MAE):

$$MAE = \frac{1}{n}\sum_{i=1}^{n} |y_i - \hat{y}_i|$$

$$= \frac{5.38 + 14.36 + 28.27 + 6.99 + 6.9 + 6.73 + 6.47}{7}$$

$$= \frac{69.1}{7}$$

$$= 9.87$$

Mean Squared Error (MSE):

$$MSE = \frac{1}{n}\sum_{i=1}^{n} (y_i - \hat{y})^2$$

$$= \frac{28.94 + 206.21 + 799.19 + 48.86 + 0.81 + 45.29 + 41.86}{7}$$

$$= \frac{1171.16}{7}$$

$$= 167.31$$