$$RSS, \quad SSE = \sum (y_a - y_p)^2$$

$$SST = \sum (y_a - y_{mean})^2$$

$$SSR = \sum (y_p - y_{mean})^2$$

x_1	y_a	y_p	Residuals	SSE $\sum(y_a - y_p)^2$
10	5	5.5	-0.5	0.25
20	6	8	-2	4
30	7	10	-3	9
40	4	5	-1	1
50	3	3.5	-0.5	0.25

$\sum 14.5$

SSE = RSS //

KM //

x_1	y_a	y_p	(Residuals) $y_a - y_p$	SSE $\sum(y_a - y_p)^2$
	5000	5500	−500	250 000
	6000	8000	−2000	40000
	7000	10000	−3000	9000000
	4000	5000	−1000	1000000
	3000	3500	−500	25000

MY/

SSE $\sum$ _____

KM

$$SSE = \sum (y_a - y_p)^2 = \underline{\quad\quad} ?$$

M

$$SSE = \sum (y_a - y_p)^2 = \underline{\quad\quad} ?$$

Scale Varient

x_1	x_2	x_3	
1	1600	10,000	
2	2000	20000	Scale
3	3000	30000	Varient
4	4000	40000	
5	5000	50000	

R_2 Score = Scale Invarient

RxR x

$$R^2 \text{Score} = 1 - \frac{SSE}{SST}$$

$$= \frac{SST - SSE}{SST}$$

$$R_2 Score = 1 - \frac{SSE}{SST} =$$

1] $SSE = High,\quad SSJ = High$

$$SSE \cong SST$$

$$R_2 Score \cong 0$$

$$0 \Rightarrow$$ Worst score

1] $SSE = Low^2$, $SST = high, 8$

$$R^2 = 1 \leftarrow SSE/SST$$

$$= 1 - \frac{\sum (y_a - y_p)^2}{\sum (y_a - y_{mean})^2}$$

$\frac{8-2}{8} = \frac{6}{8}$

$= 0.7$

$= 7\%$

$R^2_{score} \cong 1$

$\underline{1} \rightarrow$ Best score

iii] $SSE = High$, $SST = low$

$$R^2_{Score} = 1 - \frac{SSE}{SST}$$

$$= \frac{low - high}{low}$$

$$R^2_{Score} = \underline{\underline{-ve}}$$

$$R^2_{score} = 1 - \frac{SSE}{SST} = \frac{SST - SSE}{SST}$$

$$= 1 - \frac{\sum(y_a - y_p)^2}{\sum(y_a - \bar{y})^2}$$

$$= 1 - \frac{\text{unexplained variation}}{\text{total variation}}$$

10 features + 1 feature
↳ correlated
feature

R^2 score = 0.85

$R = 0.9$

R^2 score = 0.87

10 features + 1 feature

↳ Non-correlated

R^2 Score = 0.85

$R = 0.4$

R^2 Score = 0.85

= 0.856

= 0.85001

$$\bar{R}^2 = R^2 - \frac{(K-1)(1-R^2)}{n-k}$$

N = Number of Sample Size

K = Number of Input variables/Attributes

5 Features   +   1 features
                    ↳ correlated
                          ↓
$$\overline{\overline{R}}^2 = 0.85$$ $R = 0.8$

$$\overline{R}^2 = 0.87$$

5 features $\qquad$ + $\qquad$ 1 feature

$\qquad\qquad\qquad\qquad\qquad\qquad$ $\rightarrow$ Non-correlated

$\bar{R}^2 = 0.85$ $\qquad\qquad\qquad\qquad\qquad$ $R = 0.3$

$\bar{R}^2 = \begin{array}{l} 0.84 \\ 0.838 \end{array}$

	R^2	$\bar{R}^2$
	0.85	0.85
F - correlated	0.87	0.87 ——→ Good
f - Non correlated	0.856 or 0.86	0.83 ——→ Bad