$(x_1, y_1), (x_2, y_2), \cdots, (x_{100}, y_{100})$

$(x_1, y_1), (x_2, y_2), \cdots, (x_{50}, y_{50})$ $\longrightarrow$ $\hat{\beta}_0, \hat{\beta}_1$

training data

$(x_{51}, y_{51}), (x_{52}, y_{52}), \cdots, (x_{100}, y_{100})$

test data

$$\hat{y}_i = \hat{\beta}_0 + \hat{\beta}_1 x_i, \qquad i = 51, 52, \cdots, 100$$

$$\sum_{i=51}^{100} (y_i - \hat{y}_i)^2$$

$$(x_1, y_1), (x_2, y_2), \cdots, (x_{100}, y_{100})$$

$$(\quad, \quad), (x_2, y_2), \cdots, (x_{50}, y_{50}) \quad \Longrightarrow \quad \boxed{\hat{\beta}_0, \hat{\beta}_1}$$

training data

$$(x_1, y_1)$$

test data

$$\boxed{\hat{y}_1 = \hat{\beta}_0 + \hat{\beta}_1 x_1}$$

$$\boxed{(y_1 - \hat{y}_1)^2} \quad \Longrightarrow \quad \boxed{\sum_{i=1}^{100}(y_i - \hat{y}_i)^2}$$