

	X_1	X_2	\bar{Y}
H	1	0	80
M	0	1	60
L	0	0	50

$$\hat{Y} = b_0 + b_1 X_1 + b_2 X_2$$

$$\textcircled{1} \quad 50 = b_0 + 0 \cdot X_1 + 0 \cdot X_2$$

$$\textcircled{3} \quad 60 = 50 + b_1 \cdot 0 + b_2 \cdot 1$$

$$60 - 50 = b_2$$

$$\boxed{10 = b_2}$$

$$\textcircled{2} \quad 80 = 50 + b_1 \cdot 1 + 10 \cdot 0$$

$$80 - 50 = b_1$$

$$\boxed{30 = b_1}$$

$$\textcircled{4} \quad e = Y - \hat{Y} \rightarrow e = 100 - 50 = 50$$

$$SS_{\text{exp } X_1} = 40$$

$$SS_{\text{exp } X_2} = 60$$

$$SS_{\text{exp } X_1, X_2} = 80$$

$$SS_{\text{res } X_1, X_2} = 20$$

$$SS_T = 100$$

$$\textcircled{13} \quad R^2_{Y.12} = \frac{80}{100} = 0.8$$

$$\textcircled{14} \quad R^2_{Y(1.2)} = \frac{80 - 60}{100} = 0.2$$

$$\textcircled{15} \quad R^2_{Y(2.1)} = \frac{80 - 40}{100} = 0.4$$