7.

z.z.: $Y = \alpha + \beta X$

$\Rightarrow \bar{Y} = \alpha + \beta \bar{X}$

$$\bar{y} = \frac{1}{n} \sum_{i=1}^{n} y_i =$$

$$\bar{y} = \frac{1}{n} \sum_{i=1}^{n} (\alpha + \beta x_i) =$$

$$= \bar{y} = \underbrace{\frac{1}{n} \sum_{i=1}^{n} \alpha}_{} + \beta \underbrace{\frac{1}{n} \sum_{i=1}^{n} x_i}_{}$$

$$= \bar{y} = \frac{1}{\cancel{n}} \cancel{n} \cdot \alpha + \beta \bar{x}$$

z.z. $y = \alpha + \beta X \Rightarrow s_Y^2 = \beta^2 s_X^2$.

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

$$= \frac{1}{n} \sum_{i=1}^{n} (\alpha + \beta x_i - (\alpha + \beta \bar{x}))^2 =$$

$$= s_y^2 = \frac{1}{n} \sum_{i=1}^{n} (\alpha + \beta x_i - \alpha - \beta \bar{x})^2 =$$

$$= s_y^2 = \frac{1}{n} \sum_{i=1}^{n} (\beta x_i - \beta \bar{x})^2 = \beta^2 \underbrace{\frac{1}{n} \sum_{i=1}^{n} (x_i - \bar{x})^2}_{}$$

$$= \beta^2 s_X^2$$