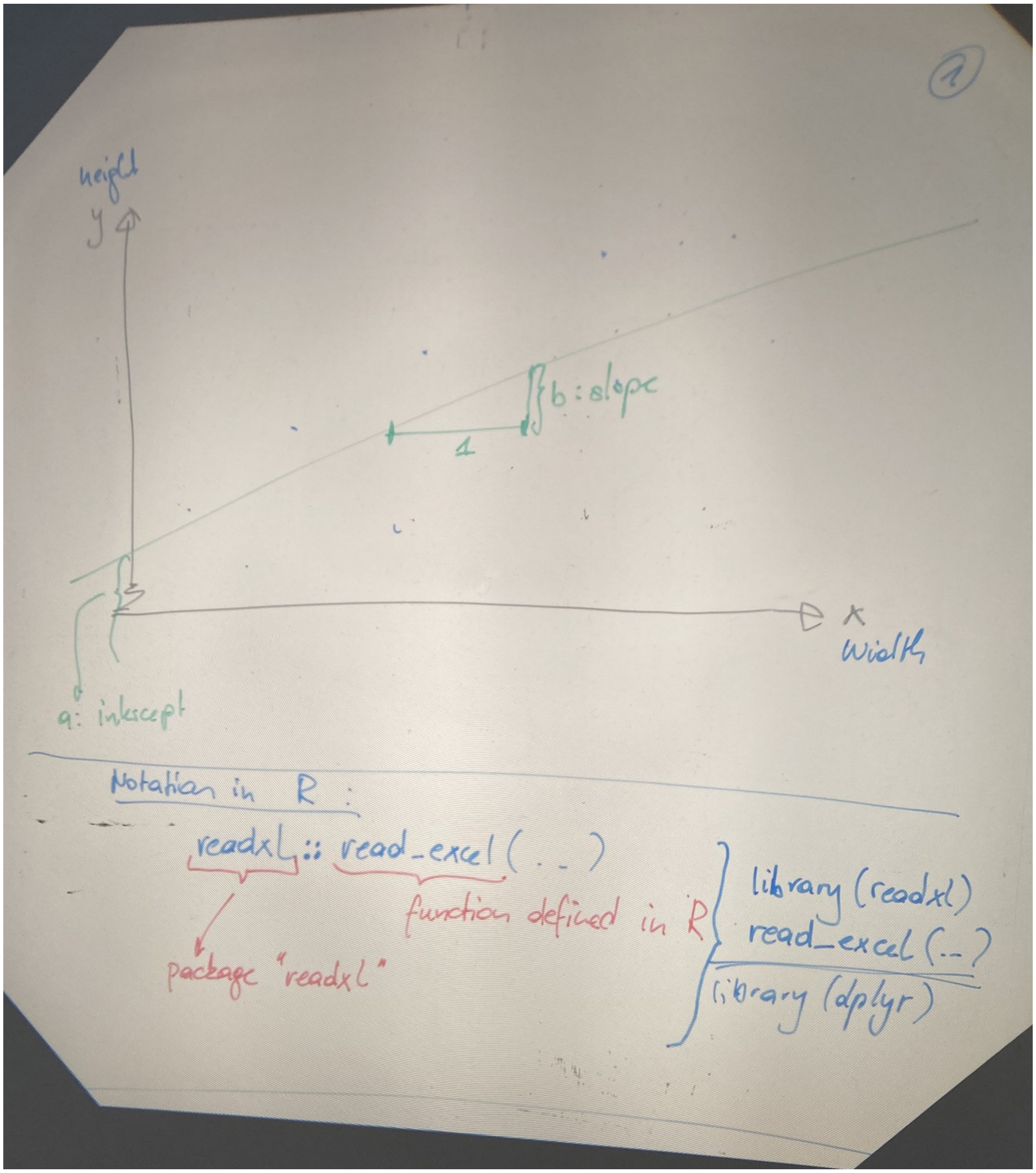
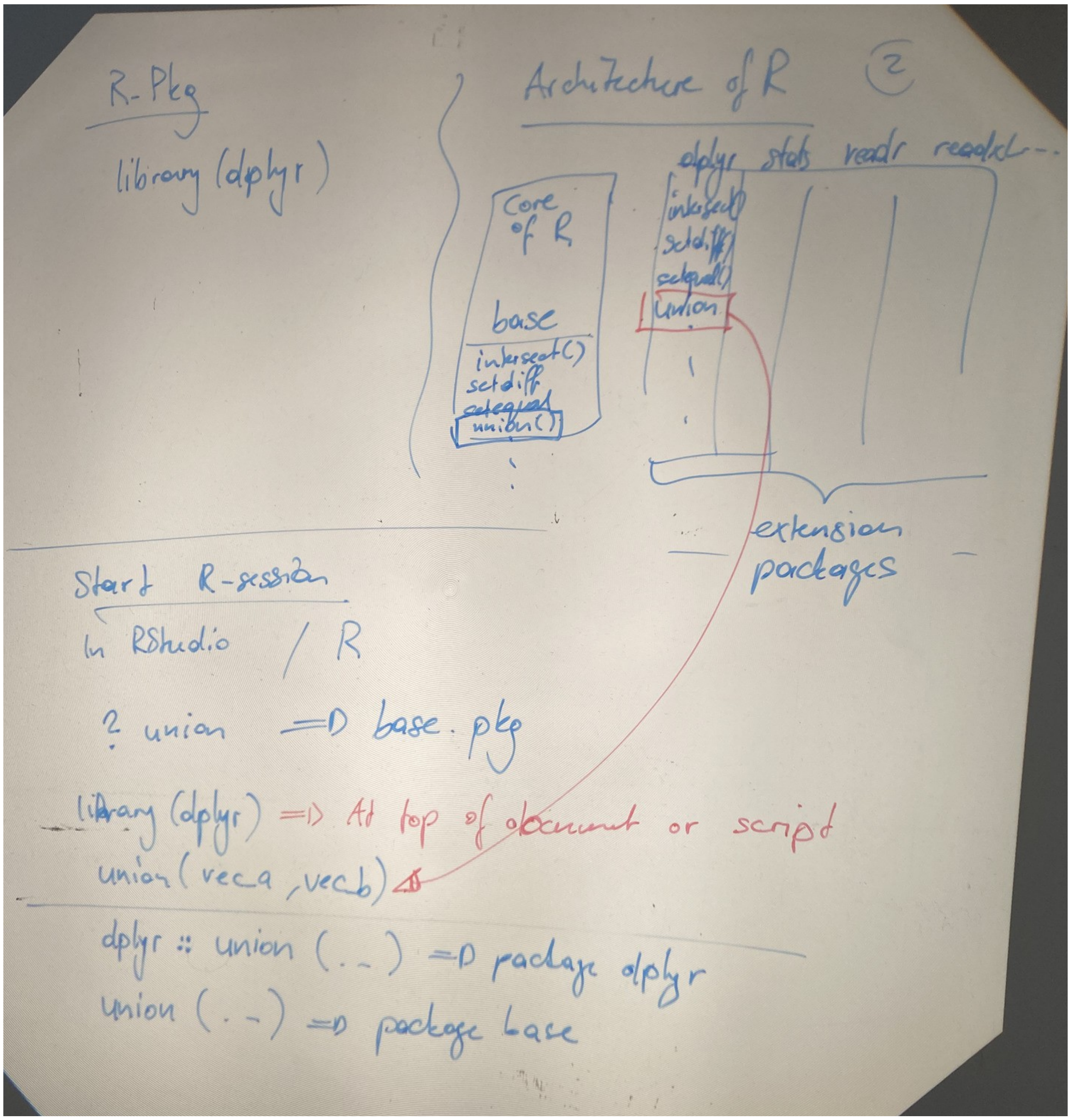
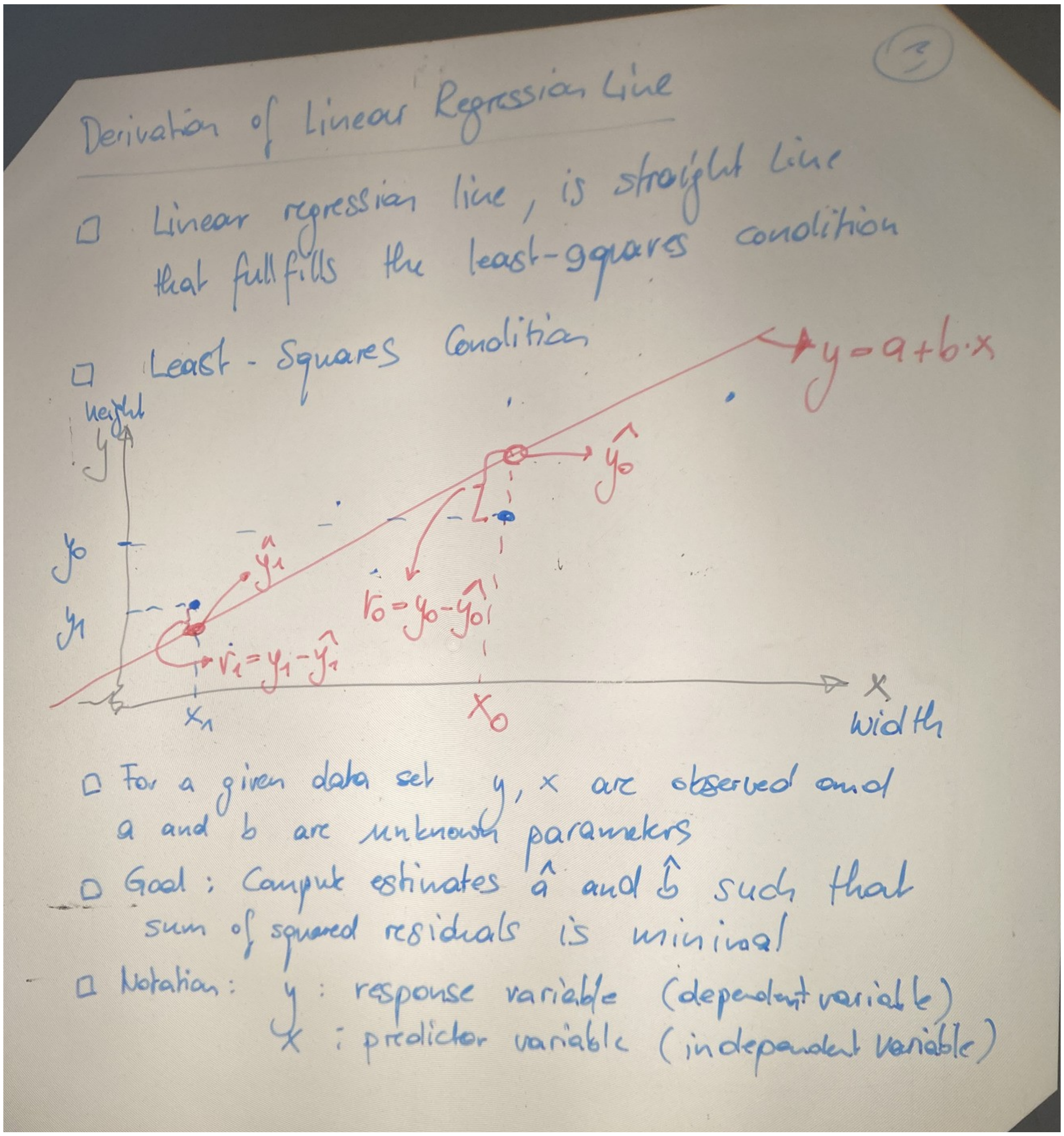
OHP Picture 1



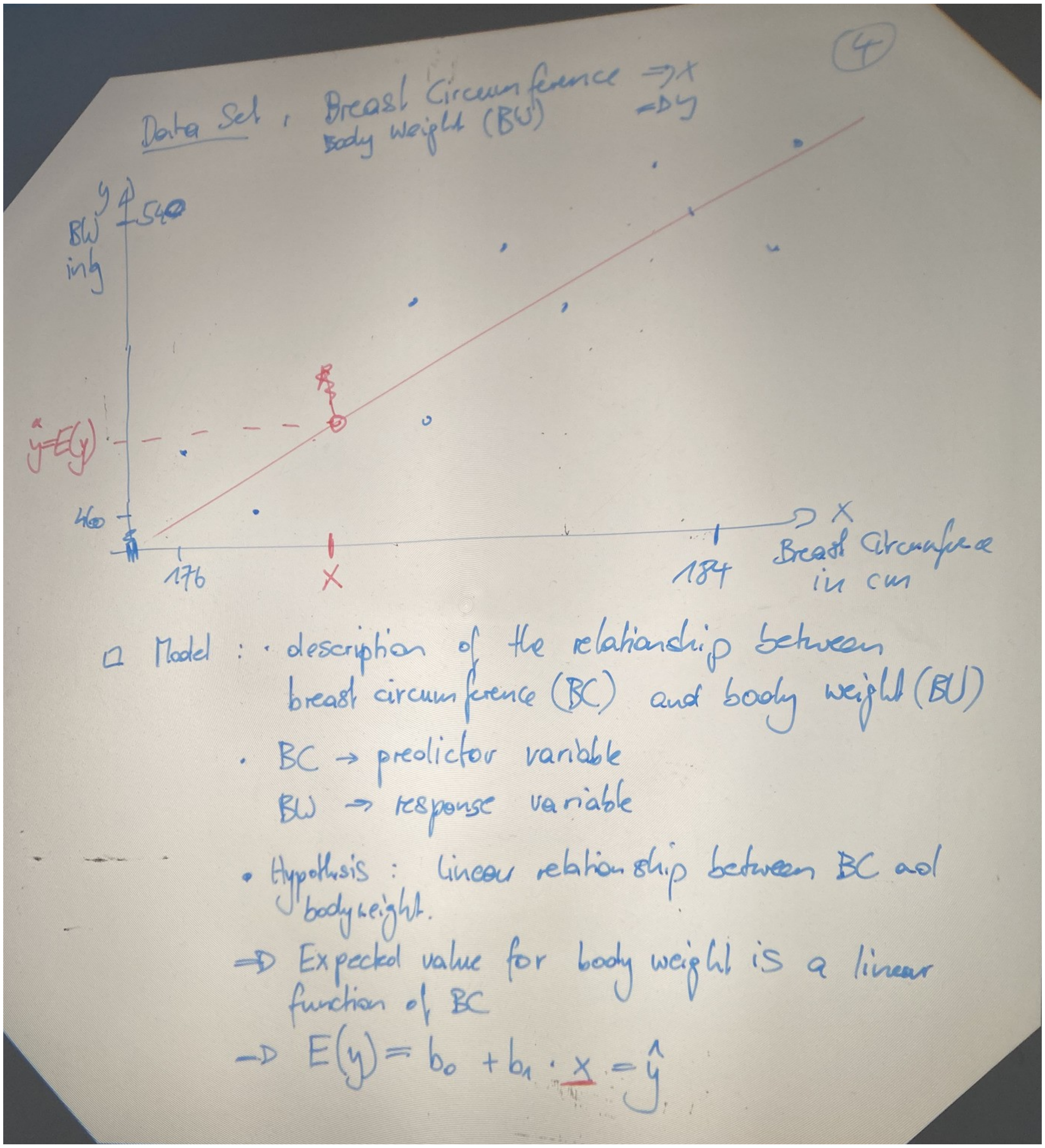
OHP Picture 2



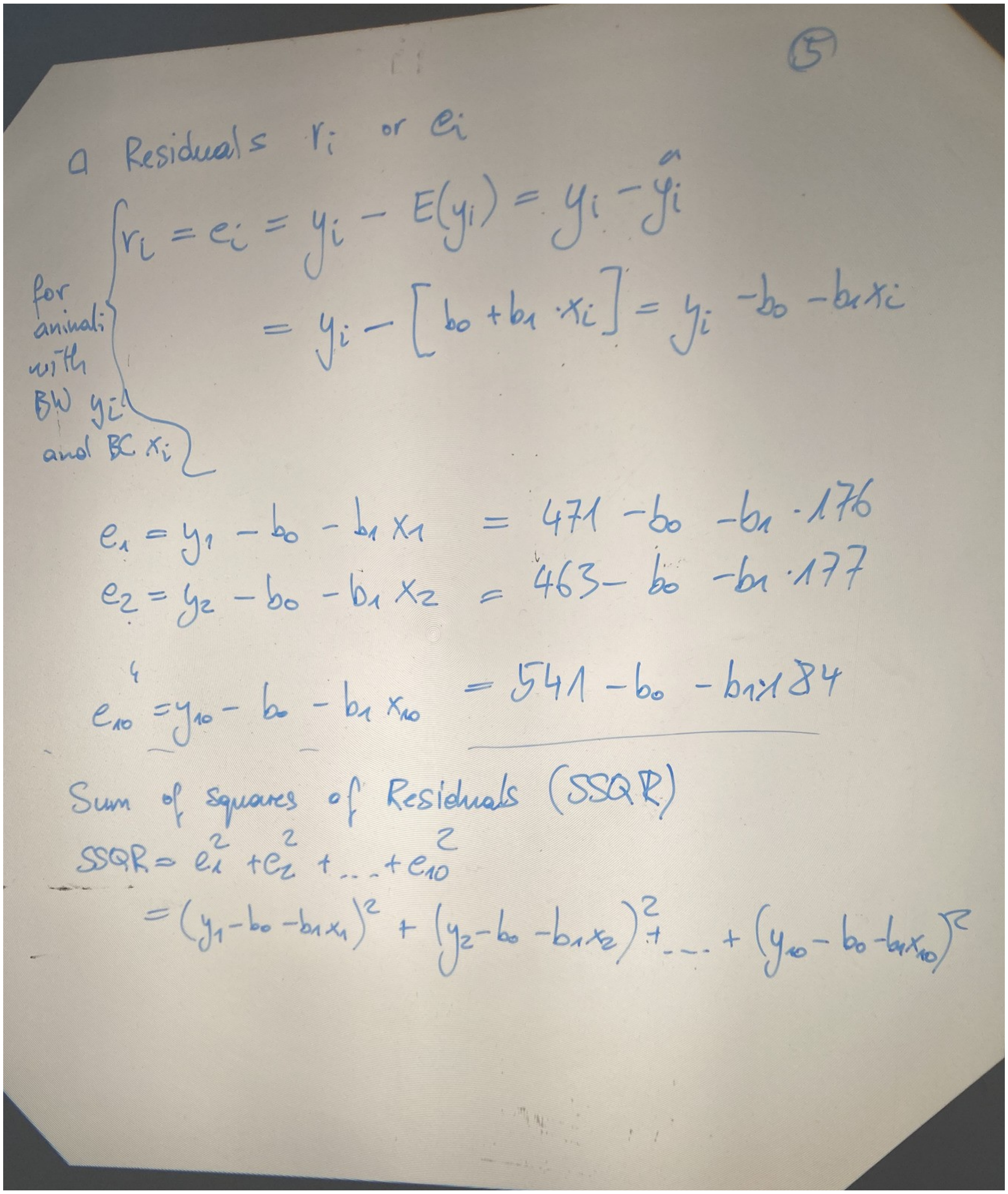
OHP Picture 3



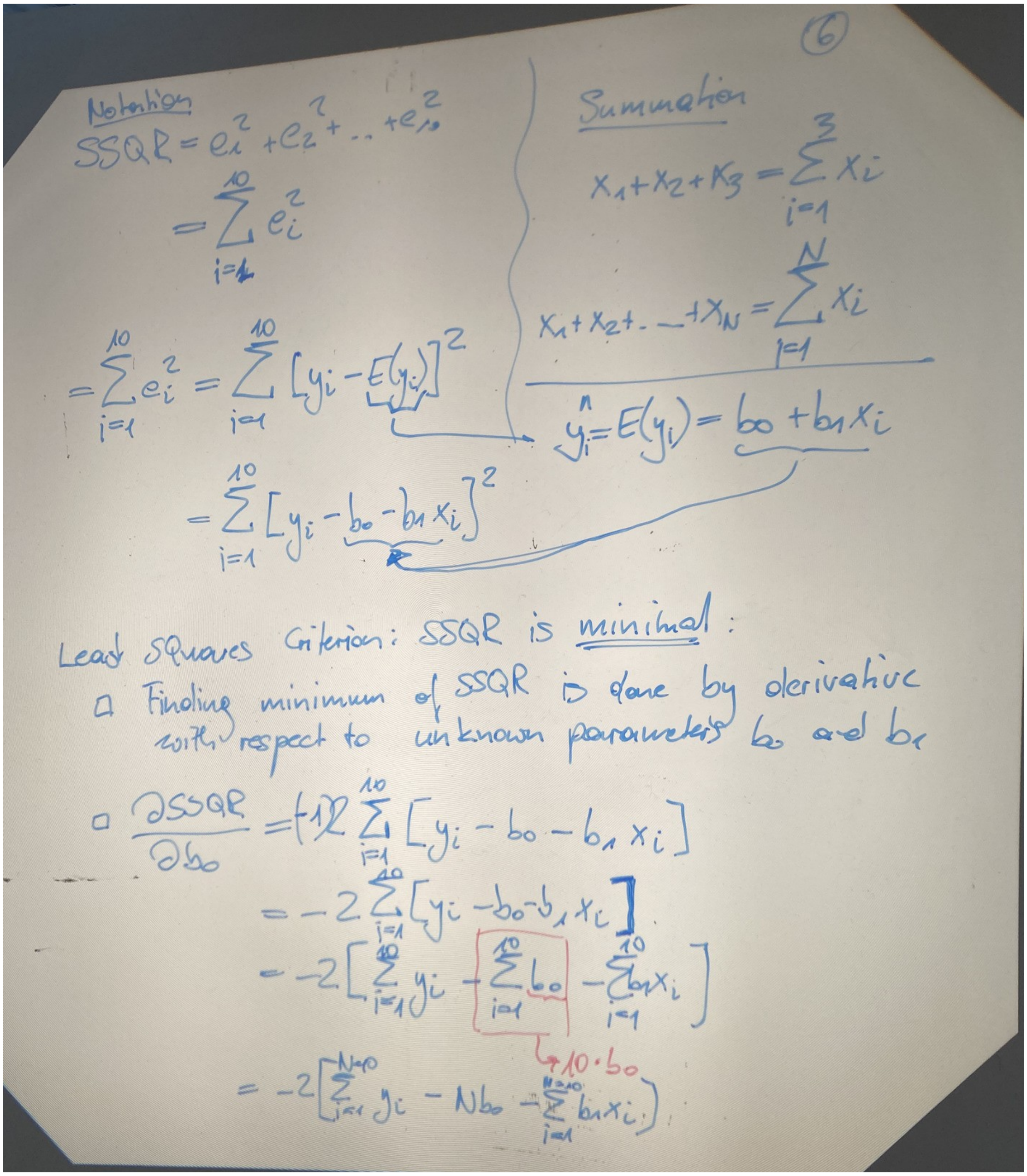
OHP Picture 4



OHP Picture 5



OHP Picture 6



(6)

Notation

$$SSQR = e_1^2 + e_2^2 + \dots + e_{10}^2 = \sum_{i=1}^{10} e_i^2$$

Summation

$$x_1 + x_2 + x_3 = \sum_{i=1}^{3} x_i$$

$$x_1 + x_2 + \dots + x_N = \sum_{i=1}^{N} x_i$$

$$\hat{y}_i = E(y_i) = b_0 + b_1 x_i$$

$$= \sum_{i=1}^{10} e_i^2 = \sum_{i=1}^{10} \left[y_i - E(y_i)\right]^2$$

$$= \sum_{i=1}^{10} \left[y_i - b_0 - b_1 x_i\right]^2$$

Least Squares Criterion: SSQR is minimal:

- Finding minimum of SSQR is done by derivative with respect to unknown parameters b_0 and b_1
- $$\frac{\partial SSQR}{\partial b_0} = (-1)2 \sum_{i=1}^{10} \left[y_i - b_0 - b_1 x_i\right]$$

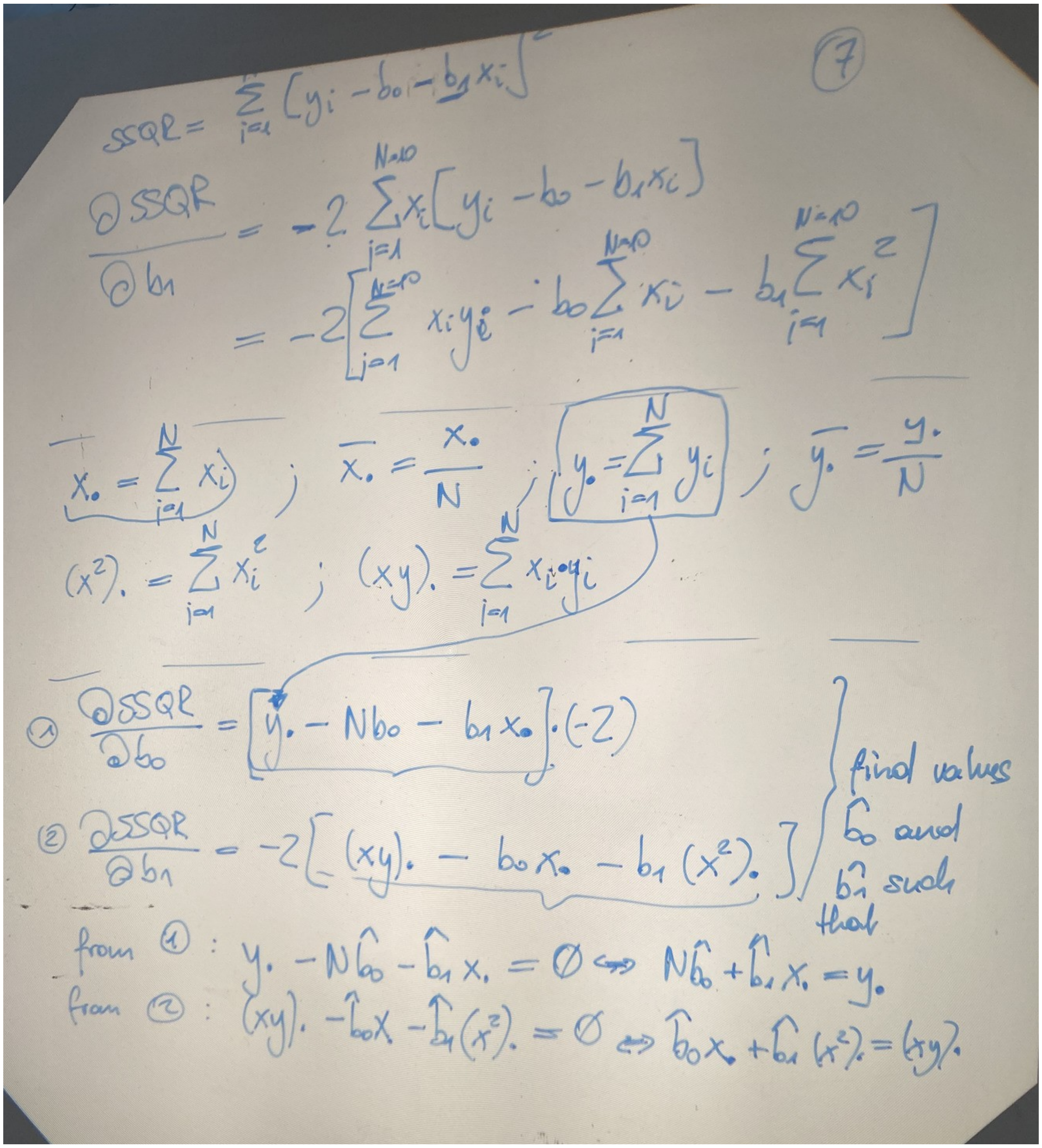
$$= -2 \sum_{i=1}^{10} \left[y_i - b_0 - b_1 x_i\right]$$

$$= -2 \left[\sum_{i=1}^{10} y_i - \sum_{i=1}^{10} b_0 - \sum_{i=1}^{10} b_1 x_i\right]$$

$\sum_{i=1}^{10} b_0 \rightarrow 10 \cdot b_0$

$$= -2 \left[\sum_{i=1}^{N=10} y_i - N b_0 - \sum_{i=1}^{N=10} b_1 x_i\right]$$

OHP Picture 7



OHP Picture 8