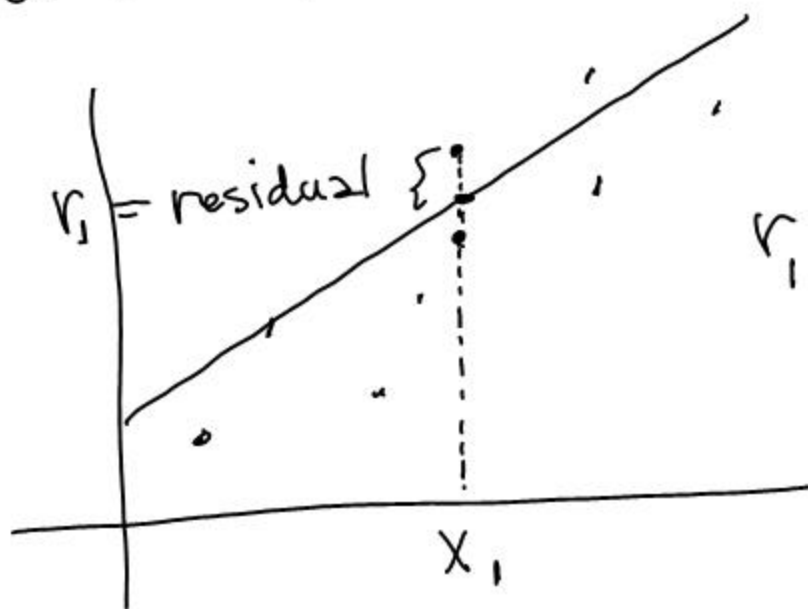


What makes the "line of best fit" the best?



r_i = actual value of y
minus the predicted
value of y (\hat{y})

$$r_i = y - \hat{y}$$

The line of best fit is the line for which $r_1^2 + r_2^2 + r_3^2 + \dots + r_n^2$ is the smallest possible value.

p. 350 formula for the correlation coefficient

$$\boxed{WF} \#1. r = 0.863$$

↑
The Pearson product-moment correlation coefficient

(b) Find the residual value for subject F.

$$r_F = 28 - (1.01(25) + 20.7) = 28 - 45.95 = \underline{\underline{-18.0}}$$

↑
actual
y-value

$$\hat{y} = 1.01x + 20.7$$

$$r_F = 28 - Y_1(25)$$

↑

f(25)

vars

Y-vars

Function

Y₁

$$(c) \text{ Find } r_A = 87 - Y_1(56) = 9.87$$

(d) Predict the Spanish score of a student who made 52 on the French test.

$$Y_1(52) = 73.1$$

(e) Predict the French score of a student who made 52 on the Spanish test.

$$\begin{array}{c} \text{Spanish} \\ \downarrow \\ y = 1.01x + 20.7 \\ \downarrow \\ \text{French} \end{array}$$

$$52 = 1.01x + 20.7$$

$$x = \frac{52 - 20.7}{1.01} = \underline{31.0}$$

(f) Julie made 100 on the French test. Predict her Spanish score.

We can't answer this

$$Y_1(100) = 122 \leftarrow \text{This is an } \underline{\text{extrapolation}}.$$

Correlation and Causation



NO CAUSATION

Non-Calc # 3
Calc # 1 - 3

Wednesday Test
