

## Unit 4: Correlation Coefficient ( $r$ )

↳ a measure of the strength  
of a correlation between 2 distributions

$$-1 \leq r \leq 1$$

$r = \pm 1$  - perfect correlation

$0.75 \leq r < 1$  - strong positive correlation

$0.6 \leq r < 0.75$  - moderate positive correlation

don't make  
any judgements  
w/ these correlations

$0.4 \leq r < 0.6$  - weak positive correlation

$r < 0.4$  - no correlation

# Calculating $r$ ! (graphically)



- draw the tightest rectangle around the data point as possible.

- measure your lines!

- use the following formula

$$r = \pm \left( 1 - \frac{\text{short}}{\text{long}} \right)$$

$$r = + \left( 1 - \frac{11}{36} \right)$$

$$r = 0.69$$

- a moderate positive correlation

take the sum of  $\rightarrow$

$$r = \frac{\sum_{i=1}^n (z_x z_y)}{n-1}$$

See p 4.24

$\Sigma$  = sum of  
 $z_x$  = z-score of x value  
 $z_y$  = standard score of y value  
 $n$  = # of data points

Que la calculatrice vive.

x	y	$z_x$	$z_y$	$z_x \cdot z_y$
5	61	-0.40	0.92	0.37
	$\vdots$	$\vdots$	$\vdots$	$\vdots$
Sum				20.39

$$r = \frac{20.39}{23} = 0.89$$

