this time: correlation
&
next time: regression

read: LN pp. L-214 → L-218

AMS 7
20 Nov 18

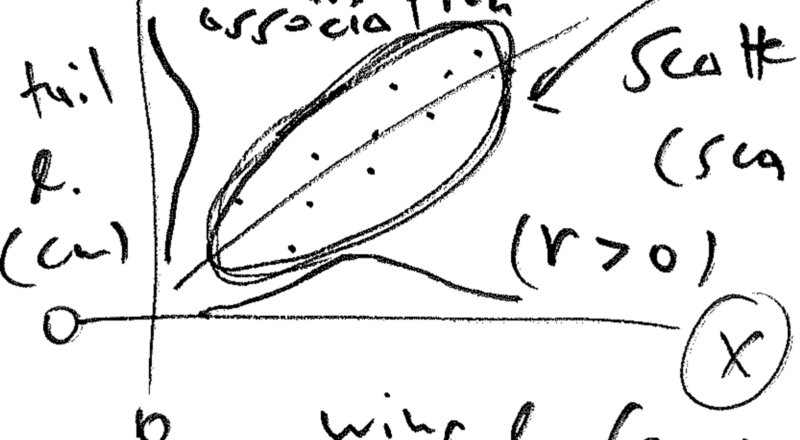
①

this time: LN pp. L-221 →

new due date for HW3: by 11:59pm on Wed 28 Nov 18

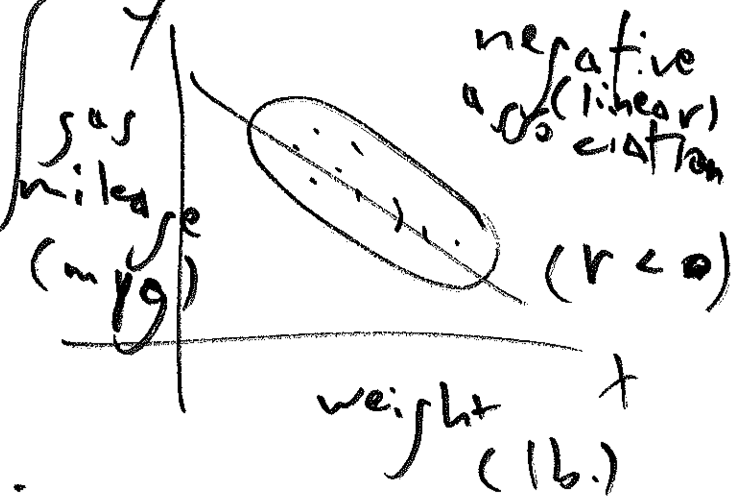
I will hold extra office hours next Mon & Wed to help with HW3

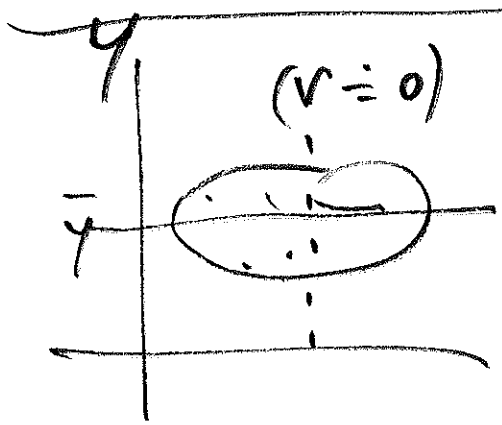
L-216



elliptical shape

scatterplot diagram (scatter diagram) (bivariate normal)

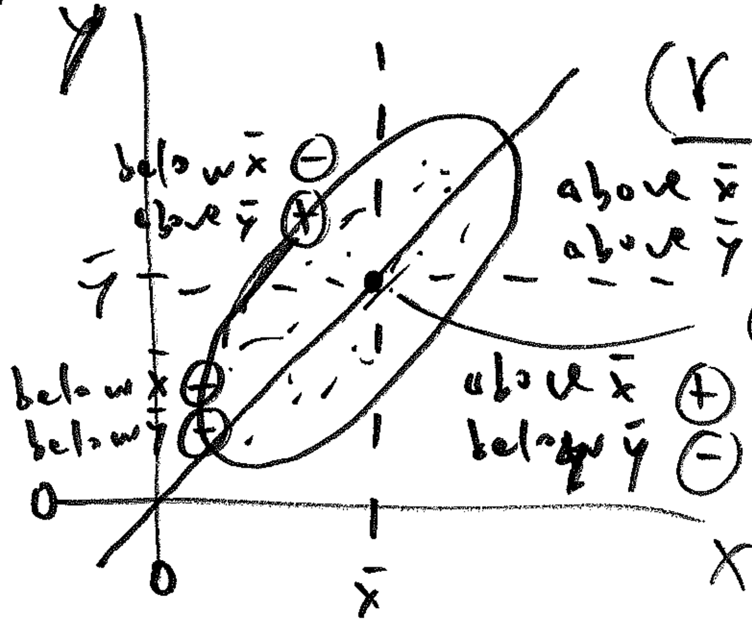




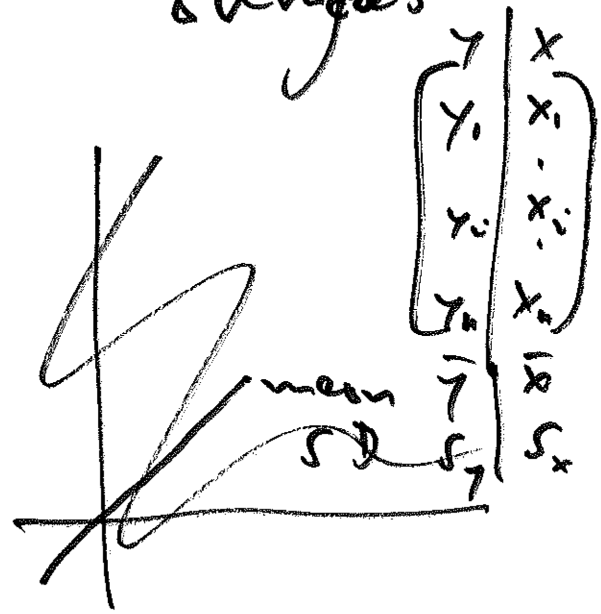
no (linear) association

(1890s) { Karl Pearson
Francis Galton

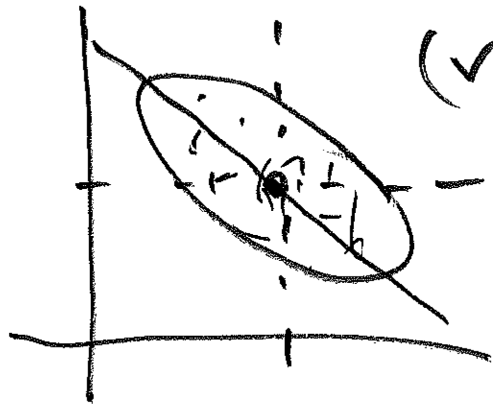
(r > 0)



$(\bar{x}, \bar{y})$ point of averages



(r < 0)



correlation between x & y → $r = \frac{1}{n}\sum_{i=1}^{n}\left(\frac{x_i - \bar{x}}{s_x^*}\right)\cdot\left(\frac{y_i - \bar{y}}{s_y^*}\right)$

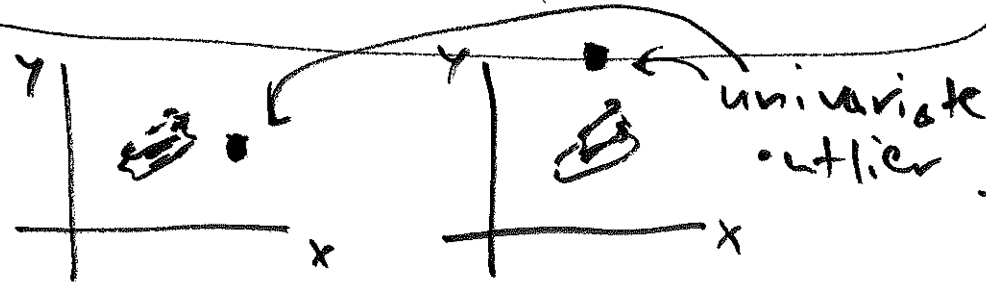
cm

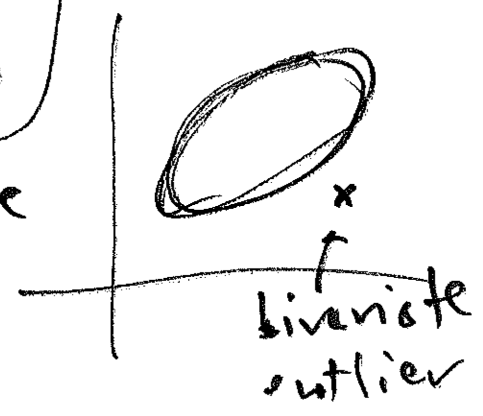
$$s_x^* = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^2}$$

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

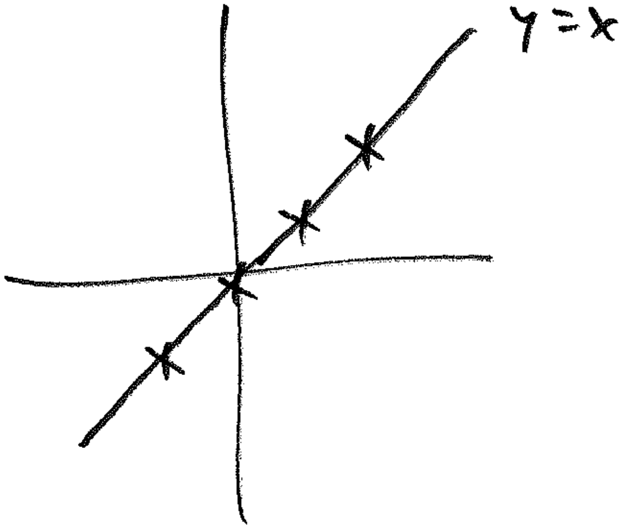
L - 225

② $-1 \leq r \leq +1$





R-73



y	x
3	3
9	9
-4	-4

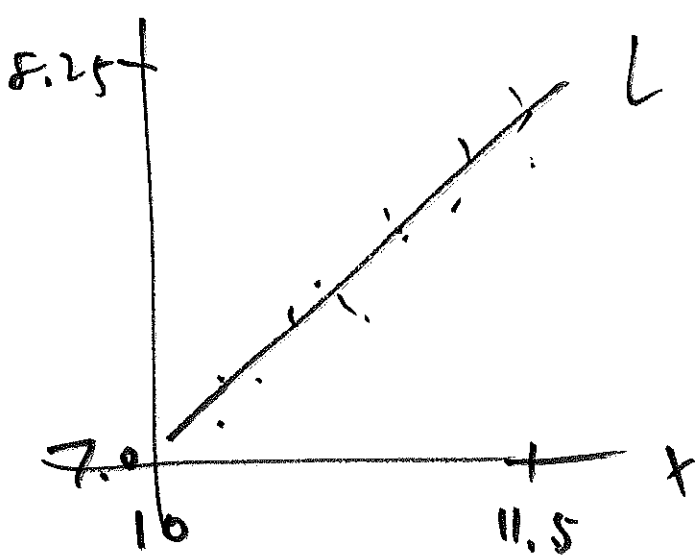
L-226 | Q: Is an r of (12.44)

0.87 large in practical terms?

(is it pract. sig?) same argument for showing a slope is pract. sig.

A: A sparrow with smallest x ($\doteq$ 10 cm) has $y \doteq \underline{\underline{7.25}}$ cm²; a sparrow with longest

L-216



x ($\doteq$ 11.25) has $y \doteq$ 8 cm; 7.25 & 8 are dramatically different.

④

therefore $r \doteq +0.87$ is large (sharply different from 0) in practical terms

L-228

L-231 + L-244 extra credit

R-25

$$+0.87 \pm \underbrace{(2)(0.081)}_{0.16}$$

approx. 95% CI for ρ