Ch 9-4

4/17

$CI(p_1 - p_2)$ } 9 - 2

$H.T.(p_1 - p_2)$ } 9 - 2

$CI(\mu_1 - \mu_2)$ not matched pairs } 9-3

$H.T.(\mu_1 - \mu_2)$ } 9-3

p 436 $\hat{p} = \frac{X}{N}$ $\frac{\text{successes}}{\text{Trials}}$ p_1 & p_2

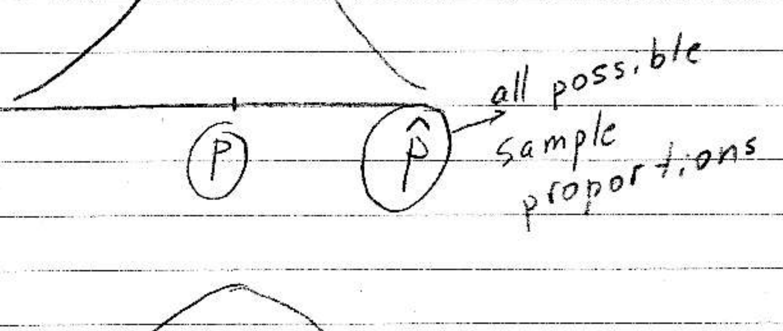
$X \sim B(n, p)$

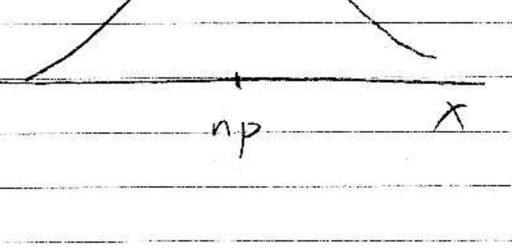
$\mu = np$

$\sigma = \sqrt{npq}$

$\mu = \sum x\, p(x)$

$\sigma = \sqrt{\sum (x-\mu)^2 p(x)}$





$\frac{np}{n}$

$\sigma_x^2 = npq$ $\qquad$ $Var = \sigma^2$

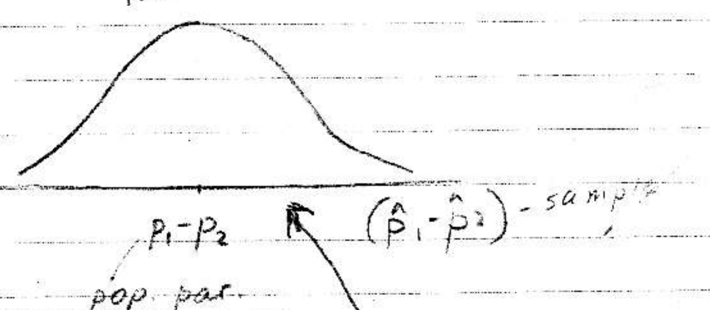
constant $\underline{\underline{a}}$ $\quad X$ (↑ r.v.)

$$\boxed{Var(aX) = a^2\, Var(X)}$$

$$\sigma_{\hat{p}}^2 = \left(\frac{1}{n}\right)X$$

$$\sigma_{\hat{p}}^2 = \left(\frac{1}{n}\right)^2 \sigma_x^2 = \left(\frac{1}{n}\right)^2 \cdot npq = \frac{npq}{n^2} = \frac{pq}{n}$$

$$\sigma_{\hat{p}} = \sqrt{\frac{pq}{n}}$$



$\hat{p}_1 - \hat{p}_2$

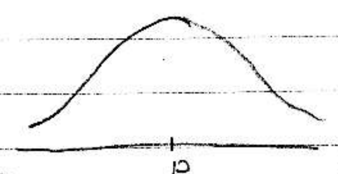
mean $= p_1 - p_2$

$$\boxed{Var(\hat{p}_1 - \hat{p}_2) = Var(\hat{p}_1) + Var(\hat{p}_2)} =$$

$$= \frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2} =$$

$$\sigma_{\hat{p}_1 - \hat{p}_2} = \sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}$$

$$CI(p) = \hat{p} \pm Z_{\alpha/2} \sqrt{\frac{\hat{p}\hat{q}}{n}}$$

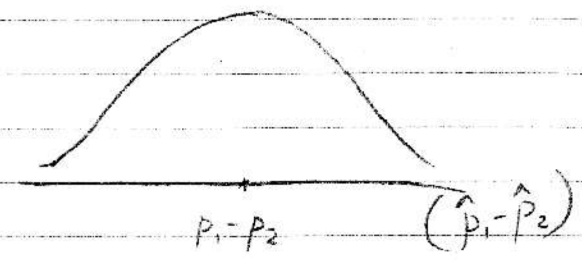


$$\boxed{CI(p_1 - p_2) = (\hat{p}_1 - \hat{p}_2) \pm Z_{\alpha/2} \sqrt{\frac{\hat{p}_1 \hat{q}_1}{n_1} + \frac{\hat{p}_2 \hat{q}_2}{n_2}}}$$

$$\sigma_{\hat{p}} = \sqrt{\frac{pq}{n}}$$

$$E = Z_{\alpha/2} \sqrt{\frac{\hat{p}_1 \hat{q}_1}{n_1} + \frac{\hat{p}_2 \hat{q}_2}{n_2}}$$

Quiz 15 (3)
Quiz 15 (1) } Quiz set
Quiz 15 (2)



$$\sigma_{(\hat{p}_1 - \hat{p}_2)} = \sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}$$

Ex. Exam Set # 3
p. 1 # 5

Ch. 9-3

$$CI\,(\mu_1 - \mu_2) = (\bar{x}_1 - \bar{x}_2) \pm t \left(\text{stand diviation of } (\bar{x}_1 - \bar{x}_2) \right)$$

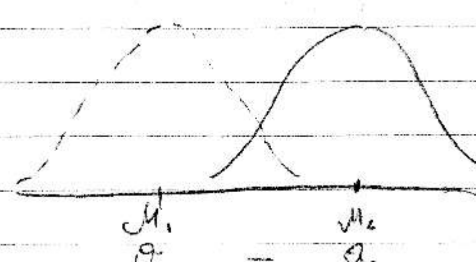
$$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} \qquad CI(\mu) = \bar{x} \pm t_{\alpha/2}\left(\frac{s}{\sqrt{n}}\right)$$

$$\sigma_{\bar{x}}^2 = \frac{\sigma^2}{n} \qquad \sigma^2_{(\bar{x}_1 - \bar{x}_2)} = \frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}$$

$$\sigma_{(\bar{x}_1 - \bar{x}_2)} = \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$$

$$\boxed{CI\,(\mu_1 - \mu_2) = (\bar{x}_1 - \bar{x}_2) \pm t_{\alpha/2} \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

What if $\sigma_1 = \sigma_2 \; ? = \sigma$
$\uparrow s_1 \quad \uparrow s_2$



p.457 $$S^2_{pool} = \frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{(n_1-1)(n_2-1)}$$ d.f = (n-1)

equal variances
homogeneous variance
homoschedastic variance
← All the same

$$CI(\mu_1 - \mu_2) = (\bar{x}_1 - \bar{x}_2) \pm t_{\alpha/2}\sqrt{\frac{S^2_{pool}}{n_1} + \frac{S^2_{pool}}{n_2}}$$

if $\sigma_1 = \sigma_2 = \sigma$

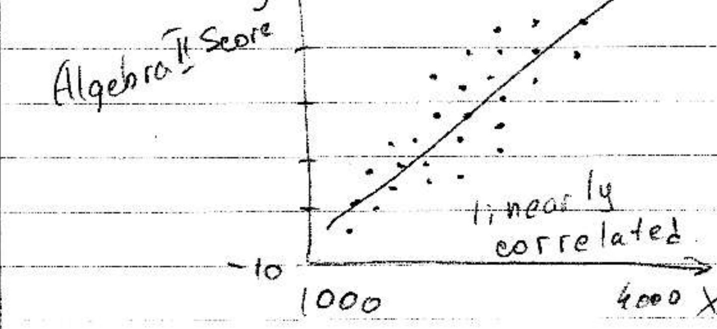
Ex Exam Set #3
p 2 (bottom)
p 4 # 11
Quiz #16 (1)
p 4 # 2

$(-1) \times 0 = 0$ $x^3 \cdot x^4 = x^7$ $(x^2)^4 = x^8$

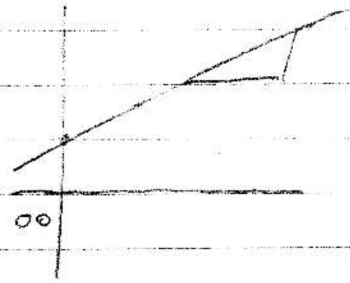
$\frac{x^3}{x^4} = x^{-1} = \frac{1}{x}$ $\frac{x^{143}}{x^{81}} = x^{62}$

Ex. Exam Set # 3
p 5 # 5 Don't do this problem

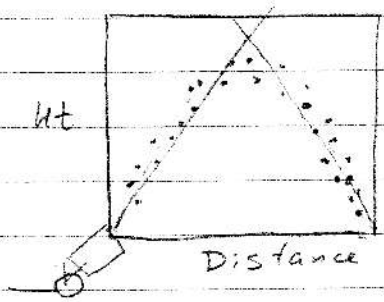
Ch. 10



As x increases y also (sort of) increases

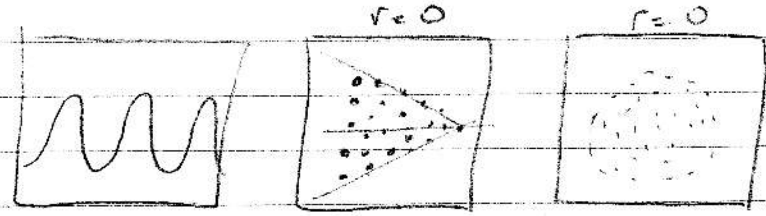


$y = mx + b$

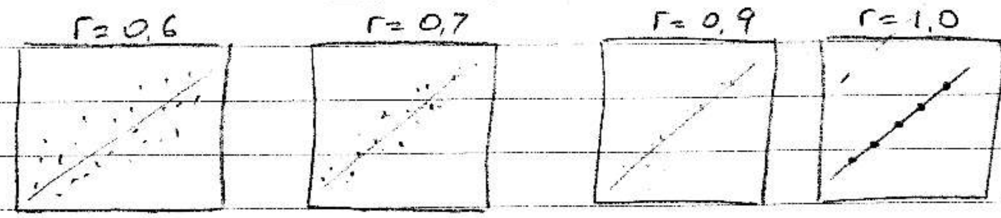


corralated, but not linearly

Zero correlation

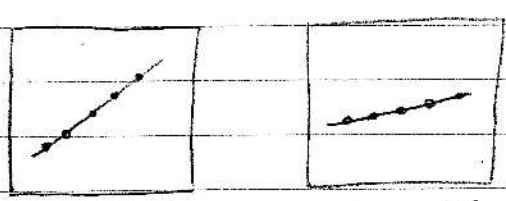


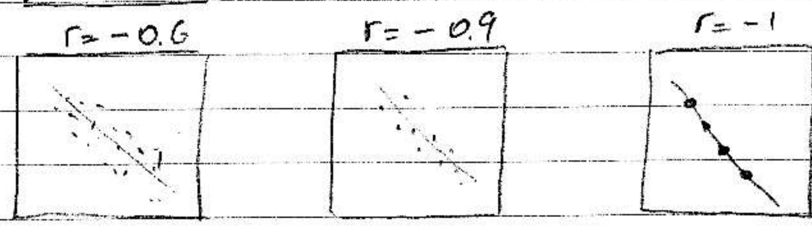
Pos. correlation



strong correlation

$\rho = 1.0$ $\rho = 1.0$





Quiz #17