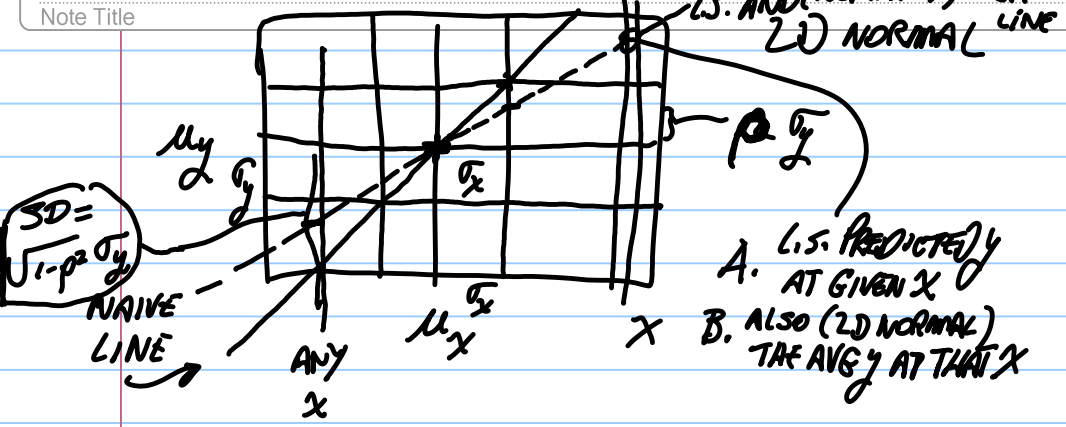
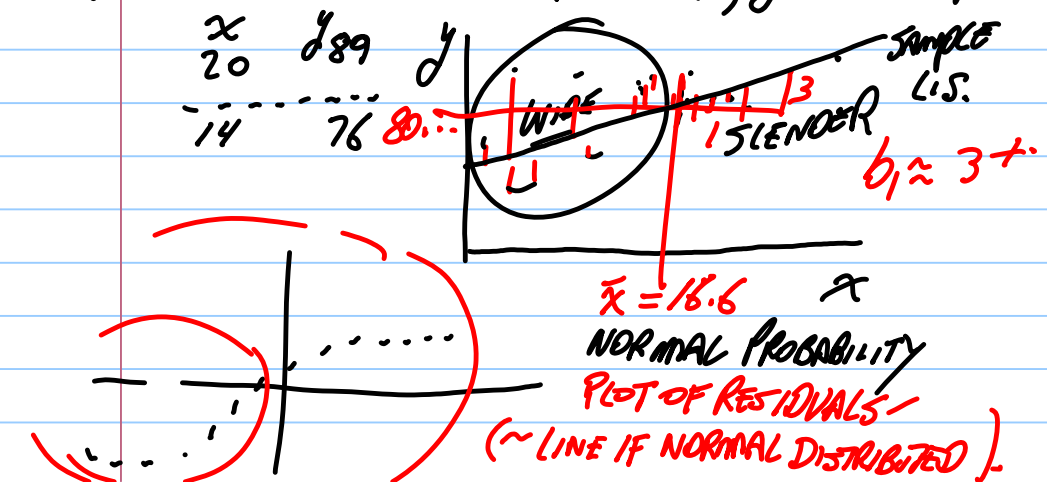
# STT 200 5:30 4-21-10

Note Title 4/21/2010




SHEET 4-21-10 $x$ = CHIRPS/SEC (?); $y$ = AIR TEMP.

| x | y |
|---|---|
| 20 | 89 |
| ... | ... |
| 14 | 76 |



REGRSTATS 16.6 80.133

$\bar{x}$ $\bar{y}$ $s_x$ $s_y$ $r$ $b_1$ $(b_1 = r\, s_y/s_x)$

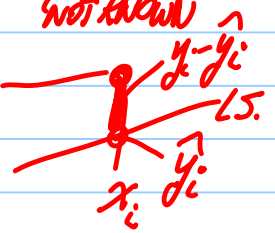
$b_1 = r\, s_y/s_x = (0.82\ldots)\frac{6.717\ldots}{1.72\ldots} = 3.216\ldots$

IF 2D NORMAL (OR MORE GENERALLY

$y_i = \beta_0 + \beta_1 x_i + \varepsilon_i \sim$ INDEP $N(0, \sigma^2)$ )

MODEL !!

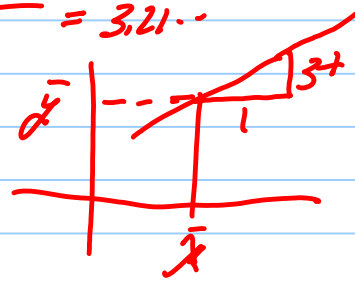
THEN $SE(b_1) \overset{\text{TEXT}}{=} \frac{s_{RESID}}{\sqrt{n-1}\, s_x}$




POSITION $= \frac{\sqrt{1-r^2}}{r\sqrt{n-2}}\, b_1$

OUR SITE

$b_1 = r\, s_y/s_x = \frac{0.82\ldots \cdot 6.71\ldots}{1.72\ldots} = 3.21\ldots$



$SE(b_1)$ IF NORMAL $= \frac{\sqrt{1-r^2}}{r\sqrt{n-2}}\, b_1 = 0.61\ldots$

95% $p(t)$ CI $n > 2$

$b_1 \pm t_{n-2 \text{ DF CONF}}\ SE(b_1)$

$3.21635 \pm 2.16\ \ 0.610236 = \{1.89824,\ 4.53446\}$.

DF = 15 − 2 = 13

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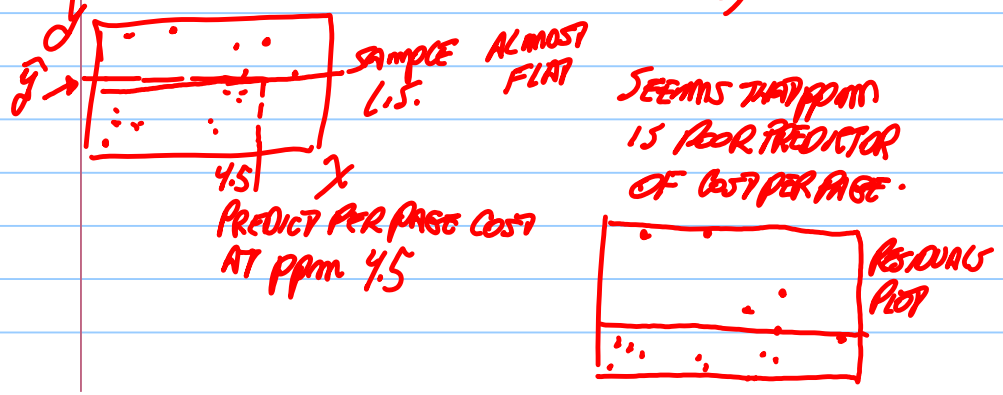
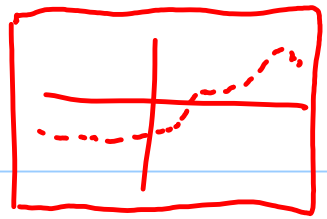
3rd SHEET. Pages per minute (ppm)
Cost (per page).

UNIT = PRINTER (ALL DIFF MODELS)




SEEMS THAT ppm IS POOR PREDICTOR OF COST PER PAGE.



NORMAL PROBABILITY PLOT – TEXTBOOK HORROR STORY –

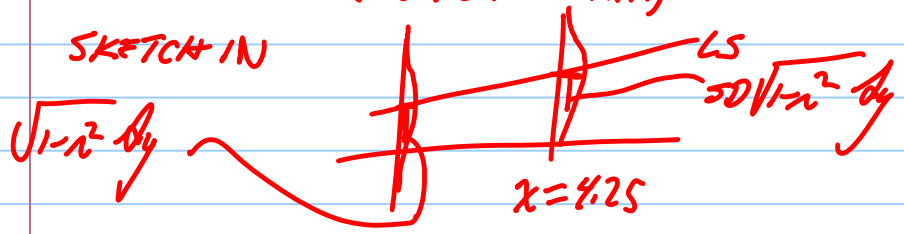
1

① YOU – (FORMALLY) FIND $b_1$ FROM REGRESSARS } from $\bar{x}, \bar{y}, s_x, s_y, r$, ⑥ CHECK AGREEMENT. $b_1 = r s_y / s_x$

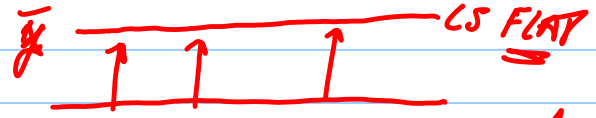
② EVALUATE $SE(b_1) = \frac{\sqrt{1-r^2}}{\sqrt{n-2}}\, s_y$, ② 95% CI $b_1 \pm 2.101\, SE(b_1)$

③ IN FIRST PICTURE (LS PLOT OF DATA)

SKETCH IN $\sqrt{1-r^2}\, s_y$



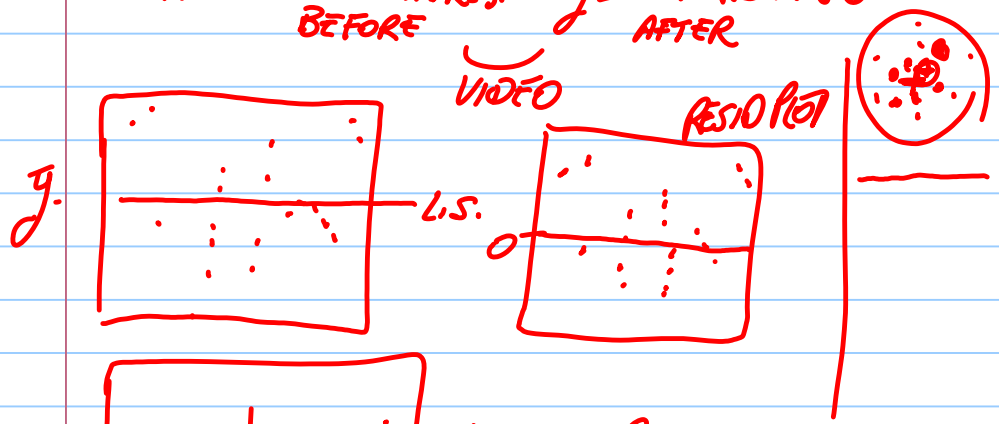

④ COMMENT ON THE SUITABILITY OF "NORMAL MODEL."




YOUR CASE $\sqrt{1-r^2}\, s_y \sim \sqrt{1-.02^2}\, s_y \sim s_y$.

Q2. LITTLE LEAGUE BASEBALL PITCHERS.
EACH TOSSES 50 PITCHES.
RECORD $x$ = #STRIKES BEFORE $y$ = #STRIKES IN 50 AFTER

VIDEO




NORMAL PROB PLOT - CASUALLY EXAMINED LOOKS LIKE WHAT 2D NORMAL DATA WOULD PRODUCE.