STA 6126 - Practice Problem Solutions - Part 3 (1)

QH.1. True

QH.2 P.2.a. 16.67 P.2.b. $\chi^2_{.05,4} = 9.49$ Yes

QH.3. FALSE **QH.4.** TRUE **QH.5.** b, c (Same answer) **QH.6.** c

QH.7 P.7.b $.05(200) = 10$ P.7.c $.0877(200) = 17.54$ P.7.d. $\frac{(10-17.54)^2}{17.54} = 3.241$

QH.8. P.8.a. $-.432 \pm \underbrace{1.96(.052)}_{.102} = (-.534, -.330)$ P.8.b. (i)

QH.9. $df = 2$ $\chi^2_{.05,2} = 5.991$ $P(X_2^2 \geq 5.50) > .05$ (a)

QH.10. (b) **QH.11.** (c)

QH.12. P.12.a Conditional Dists

	Any	No	
SJW	.381	.619	1.000
Ser	.486	.514	1.000
Pla	.431	.569	1.000
Overall	.432	.568	1.000

P.12.b. $\frac{113(146)}{338} = 48.81$

QH.13. $.177 \pm \underbrace{1.96(.028)}_{.055} = (.122, .232)$

QH.14. P.14.a $\frac{80(78)}{324} = 19.26$ P.14.b. $\frac{(19-19.26)^2}{19.26} = .0035$

QH.15. $C = 28\overbrace{(24+12+17+24)}^{77} + 15\overbrace{(12+24)}^{36} + 14\overbrace{(17+24)}^{41} + 24(24) = 3846$

$D = 7\overbrace{(14+24+9+17)}^{64} + 15\overbrace{(14+9)}^{23} + 12\overbrace{(9+17)}^{26} + 24(9) = 1321$

$\hat{\gamma} = \frac{3846-1321}{3846+1321} = \frac{2525}{5167} = .489$ $.489 \pm \underbrace{1.96(.092)}_{.180} = (.309, .669)$

QI.1 TRUE Q.I.2. (d)

QI.3. a) $\hat{Y} = 10.25 + 1.045X$ b) $\hat{\sigma} = 4.1967$ c) .913

d) (.958, 1.132) e) .955 f) .000

QI.4. a) $\frac{700}{100} = 7.00$ b) $\frac{700}{\sqrt{100(10000)}} = \frac{700}{1000} = 0.700$

QI.5. (c) QI.6. both have same sign, same t-statistic

QI.7. 1st choice

QI.8.

Source	df	SS	MS	F
Regression	1	800	800	15.33
Residual	23	1200	52.17	
Total	24	2000		

QI.9. (d) QI.10. TRUE

QI.11. TSS = 883.471 $b = 1.886$ $r = .973$ $\hat{\sigma} = .68816$ $\hat{\sigma}_b = .045$

QI.12. a) $\hat{Y} = 80.0 + 40.0(2) = 160.0$ ($10000s) b) $\hat{\sigma} = \sqrt{\frac{198}{24-2}} = 3$ $\hat{\sigma}_b = \frac{3}{\sqrt{16}} = 0.75$

$160.0 \pm \underbrace{2.074(0.75)}_{1.56} = (158.44, 161.56)$

QI.13. a) $t = \frac{.25}{\sqrt{\frac{1-.25^2}{20-2}}} = 1.095$ b) $|t| \geq 2.101$ c) $> .05$

QI.14. $b = \frac{-2400}{10000} = -0.24$ $r = \frac{-2400}{\sqrt{10000(625)}} = -0.96$

QI.15. TS: $t = 2.50$ RR: $|t| \geq 2.28$ Reject H_0

$MSE = \frac{1000}{26-2} = 41.67$ $MSR = 600$ TS: $F = 14.4$ (Note: this would not happen w/ real data)

RR: $F \geq 4.26$ $p < .05$

QI.16. True QI.17. False QI.18. FALSE QI.19. TRUE

QI.20. FALSE Q[redacted]

QI.21. $H_0: \rho = 0$ $H_A: \rho \neq 0$ T.S. $t = \frac{-.25}{\sqrt{\frac{1-(-.25)^2}{28-2}}} = -1.21$ RR: $|t| \geq 2.074$

(ii)

QI.22. a) $SSR = 14332.274 = MSR$ $df_E = 38$ $F = 10.36$

b) $n = 40$, $\hat{Y} = 109.340 + 0.116X$ $\Sigma(Y-\bar{Y})^2 = 66897.60$

$r = .463$ $r^2 = .214$

c) TS: $t = 3.219$ $p = .003$

d) TS: $F = 10.36$ $p = .003$ e) $\beta > 0$

QI.1. TRUE QI.2. $\chi^2 = 0$ statistical Interaction