R10 C10 20

§7.1 #16, 20, 24, 32

#16 Malpractice $n = 1228$
$x = 856$ dropped CL = .95

a) $\hat{p} = \frac{856}{1228} = .697$ ✓

b) $E = z_{\alpha/2}\sqrt{\frac{\hat{p}\hat{q}}{n}} = 1.96\sqrt{\frac{.697 \cdot .303}{1228}} = .0257$ ✓½

c) $0.671 < p < 0.723$ ✓½

d) We are 95% confident that the interval 0.671 to 0.723 does contain the proportion of Medical Mal practice Suits that are dropped or dismissed ✓

#20 Oxy Contin $n = 227$
$x = 52$ developed nausea

a) $\hat{p} = \frac{52}{227} = .229$ $E = 1.96\sqrt{\frac{.229 \cdot .771}{227}} = .055$

$17.4\% < p < 28.4\%$ ✓

b) Placebo give to be $1.93\% < p < 20.3\%$
Since these intervals overlap We cannot conclude that the rate of nausea increases with Oxycontin use. $\hat{p}_2 = .111 = 11.1\%$ ✓

#24 Nonvoters Say they Voted
$n = 1002$ $\hat{p} = 70\% = .70$
Voting records show 61% Voted

a) 98% CI for prop who say they voted

$z_{\alpha/2} = \text{invnorm}(1 - .02/2) = 2.33$ ✓

$E = 2.33\sqrt{\frac{.7 \cdot .3}{1002}} = .034$ $\hat{p} = .7$ $x = 701$ ✓

$.666 < p < .734$ ✓

b) .61 is Not in interval ✓ is ok

Responces are Not consistent with actual results. More people will say they voted than those that actually voted.

#32 Chickenpox Sample Size
90% CL $\Rightarrow z_{\alpha/2} = \text{invnorm}(1 - .1/2) = 1.645$

a) $n = \frac{z^2 \hat{p}\hat{q}}{E^2} \geq \frac{1.645^2 \cdot (.25)}{.02^2} = 1691.3 \rightarrow 1691$ ✓

If $n \geq 1692$ $E < .02$ ✓

b) $n = \frac{1.645^2 \cdot .95 \cdot .05}{.02^2} = 321.3$

$n \geq 322$ will give $E < .02$ ✓

c) Yes, There is a large difference in required Sample size ✓

R10
C10

§7.2 # 6, 22, 26, 32

STAT TStats One Sample With Data

#6 $t_{\alpha/2} = \text{invT}(1-.1/2, 60) = \text{invT}(1-\alpha/2, df)$

$t_{\alpha/2} = 1.671$ ✓ ✓

#22 CL = .99 n = 20

0, 0, 34, 34, 34, 45, 41, 51, 55, 36, 47, 41

0, 0, 53, 54, 38, 0, 41, 47 ✓

1-VarStats $\bar{x} = 32.55$, $S = 20.33$, $n = 20$

$t_{\alpha/2} = \text{invT}(1-.01/2, 19) = 2.861$ ✓

$E = t_{\alpha/2} \cdot \frac{S}{\sqrt{n}} = 2.861 \frac{20.33}{\sqrt{20}} = 13.0$

CI: $19.55 < \mu < 45.55$ ✓

This is NOT a good estimate of the mean amt of caffeen

Okay to Skip

① Some brands are consumed more so Amts should be weighted by their prop. in Market

② n < 30 and Dist. is Not Normal

Must have

Assumptions for Making a CI are Not Met! ✓

#26 Airport Data Speeds

Data Set 32 CL = 95% ✓

Sprint: $2.12 \text{ mbps} < \mu < 5.30 \text{ mbps}$

T-mobile: $8.9 \text{ mbps} < \mu < 13.07 \text{ mbps}$ ✓

Mean Speed for T-mobile is higher than the Mean Speed for Sprint Because ✓ intervals do Not overlap.

#32 Find n if $\sigma < 17.65$

CL = 90% E = 1.5 kg

$n = \left(\frac{t_{\alpha/2} S}{E}\right)^2 < \left(\frac{z_{\alpha/2} \cdot \sigma}{E}\right)^2$ ✓

$n = \left(\frac{1.645 \cdot 17.65}{1.5}\right)^2 = 374.66 \rightarrow 375$

Yes, it is reasonable to Assume that male Students have a smaller Standard deviation than the populati of all Males ✓

§6.5 # 4, 8, 10, 14

#4 Because the histogram is roughly bell shaped we conclud that the population is close to **Normal**.

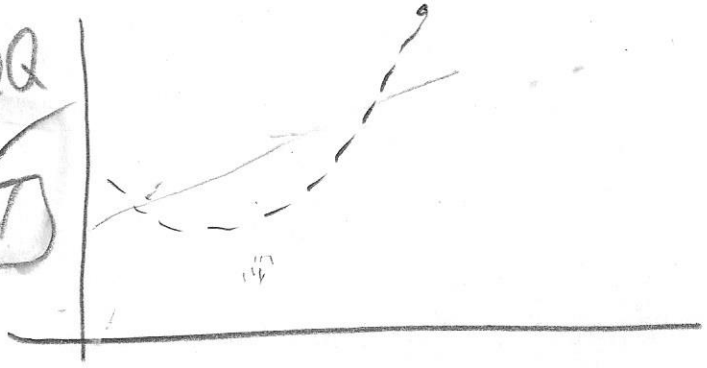
#8 **Not Normal.** the QQPlot is not close to a straight line and it has a pattern that is not straight.

#10 Ages of Best Actresses ~~QQ~~ Histogran ✓

1 **Not Normal**

#14 QQ

Not Normal ✓



See Attached

6.5 #10 and #14

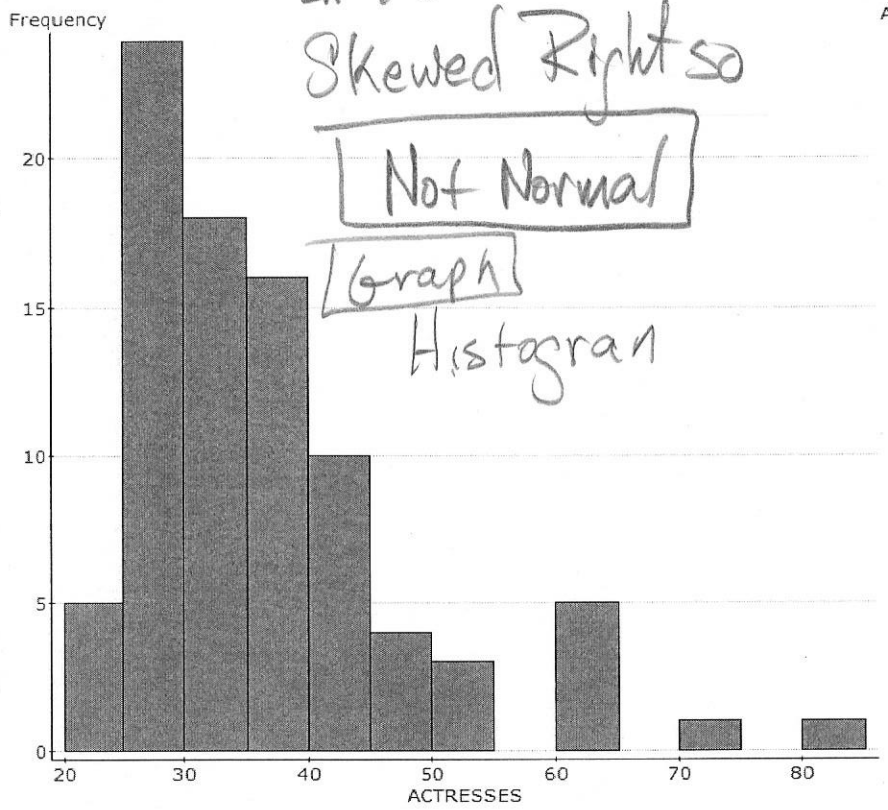
#10

Skewed Right so

Not Normal

Graph

Histogram

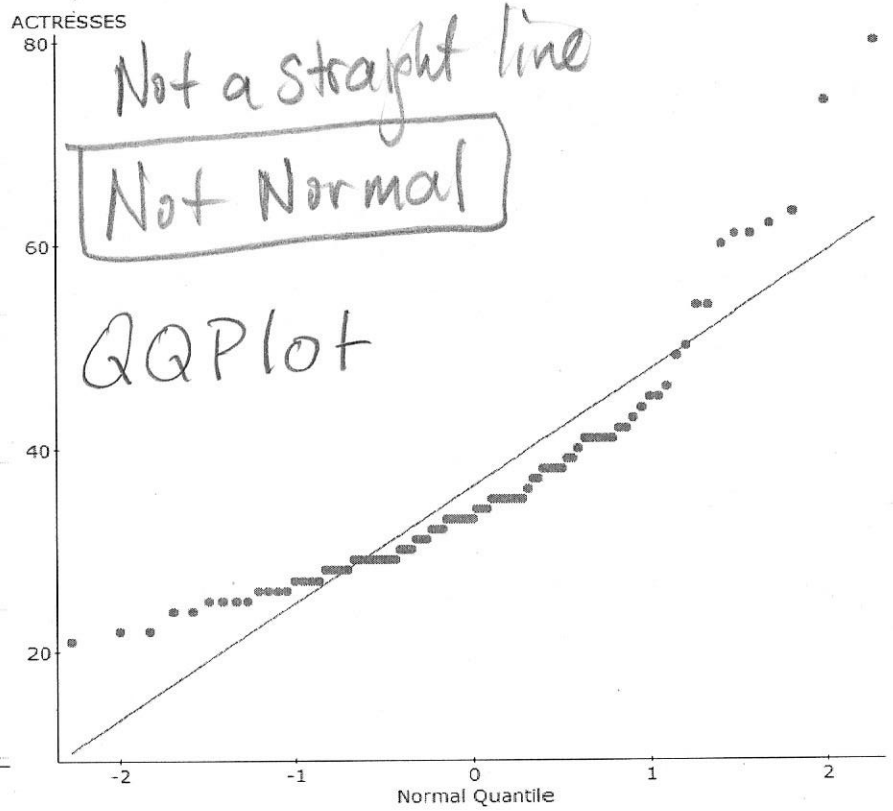


#14

Not a straight line

Not Normal

QQPlot



§8.1 #3, 6, 10, 14, 26, 30

#3 Men Heights (Claim) $\mu = 174.1$ ✓

a) H_0: $\mu = 174.1$

b) H_1: $\mu \neq 174.1$

c) Reject that $\mu = 174.1$

fail to Reject that $\mu = 174.1$ ✓

d) No, we can not Support that a Mean equals 174.1

#6 Cell Phones

Claim: $p < .95$

H_0: $p = .95$ $\hat{p} = .87$ ✓

H_1: $p < .95$ $n = 1128$ ✓

#10 Conclusion about Cell phones

TISE to Support that the Proportion who own cell phones is less than 95% ✓

"OR"

Can Not

TINSE to Support that the proportion of Adults who own Cell phones is less than 95%

#14 cell phone

$TS: z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}} = \frac{.87 - .95}{\sqrt{\frac{.95 \cdot .05}{1128}}}$ ✓

$z = -12.3$ ✓

$x = 981$

#26 Test at $\alpha = .05$ ✓

Claim: $p < .9$ $H_0: p = .9$ $H_1: p < .9$

Reject H_0 $p = .0003 < \alpha = .05$

TISE to Support that the Proportion who own a cell Phone is less than 90% ✓

#30 The prop of people with blue eyes is .35

$H_0: p = .35$ $H_1: p \neq .35$

Type I ✓ data Shows that Prop is Not .35 when the True prop of people with ble eyes is .35

Type II ✓ Data does Not show $p \neq .35$ when it actually is Not .35

§8.2 #6,8,20,26

#6 $n=1000$ $\hat{p}=.29$ $x=290$

Claim $p>.25$

H_0: $p=.25$ TS $z=2.92$

H_1: $p>.25$ p-value $=.0017$

a) Right Tailed ✓

b) TS: $z=2.92$ ✓

c) p-value $=.0017$ ✓

d) H_0: $p=.25$ ✓

We Reject H_0 ✓

e) TISE to Support that More than 1/4 of adults feel comfortable in Self-driving Cars. ✓

#8 Biometric $n=510$ $\hat{p}=.53$

Claim: $p=.5$

a) Two Tailed ✓

b) TS: $z=1.3284$ ✓

c) p-value $=.1840$ ✓

d) H_0: $p=.5$ H_1: $p\neq.5$ ✓

e) TINSE to reject that half say we should replace passwords with Biometric Sensors ✓

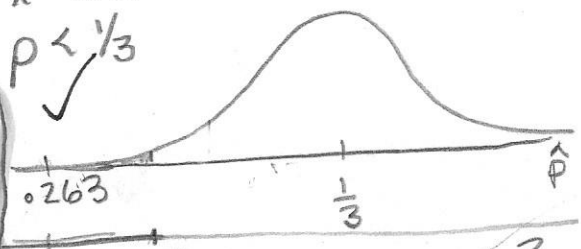
#20 Tennis Instant Replay

$n=879$ $x=231$ $\alpha=.01$

Claim: $p<1/3$ ✓

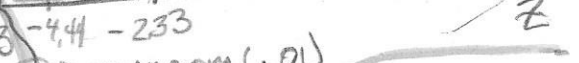
H_0: $p=\frac{1}{3}$

H_1: $p<\frac{1}{3}$



CV: $z=-2.33$ → invnorm(.01)

TS: $z=-4.44$



PE: $\hat{p}=\frac{231}{879}=.263$

p-value $=.000005$ ✓

TISE to Support that fewer than 1/3 of calls are overturned. ✓

Players are Not good at catching referee errors.

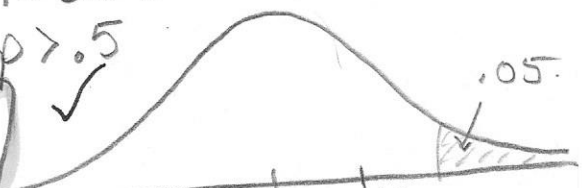
#26 Nicotine Patch

$x=39$ $n=32+39=71$ $\alpha=.05$

Claim: $p>.5$ ✓

H_0: $p=.5$

H_1: $p>.5$



PE: $\hat{p}=.549$

TS: $z=.83$ $=\frac{.549-.5}{\sqrt{.5\cdot.5/71}}$

CV: $z=1.645$ = invnorm(1-.05) ✓

p-Value $=.203$ fail to Reject H_0

TINSE to Support that more than 50% are Not Smoking ✓

It is so hard to quit that even getting close to half is good.

(Anything here is okay)