(1) $H_0: p = 0.22$

claim → $H_1: p > 0.22$

$\alpha = 0.05$ (own choice)

✓ Claim
✓ Data
✓ α
✓ TS
✓ PV, CV
✓ CON

USE: 1-Prop Z Test...

SAMPLE DATA

$n = 264$

$x = 65$

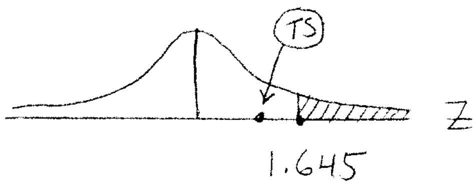
$\hat{p} = \frac{65}{264} \approx 0.246$

TEST STATISTIC

$$Z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}} \qquad Z \approx \frac{.246 - .22}{\sqrt{\frac{(.22)(.78)}{264}}} \approx \boxed{1.028}$$

P-Value $\approx \boxed{0.152}$

CRITICAL VALUE



Fail to Reject H_0

P-Value $> \alpha$

TS NOT IN CRITICAL REGION

THERE IS NOT SUFFICIENT EVIDENCE TO SUPPORT THE CLAIM THAT ENTERING UC Berkeley STUDENTS CLASSIFY THEMSELVES AS LIBERALS AT A GREATER RATE THAN THE RECENTLY PUBLISHED H.E.R 22%.

YES WE MUST DO A HYPOTHESIS TEST BECAUSE SAMPLES VARY AND WE NEED TO KNOW IF THIS IS USUAL SAMPLE VARIATION OR A STATISTICALLY SIGNIFICANT VARIATION.

(2) ENTER RAW DATA INTO L1.

(a) 95% CI for μ. (σ UNKNOWN, USE: T Interval...

$$\bar{x} - E < \mu < \bar{x} + E$$

$$E = t_{\frac{\alpha}{2}} \cdot \frac{s}{\sqrt{n}}$$

Sample Data (from L1)

$n = 8$ $df = 7$

$\bar{x} \approx 2.471$

$s \approx 0.064$

$\alpha = 0.05$ $\frac{\alpha}{2} = 0.025$

$$2.471 - E < \mu < 2.471 + E$$

$$E = (2.365) \cdot \frac{0.064}{\sqrt{8}}$$

$$\boxed{(2.418,\ 2.525)}$$

WE ARE 95% CONFIDENT THAT THE TRUE POPULATION MEAN IS BETWEEN 2.418 and 2.525 parts per million.

(b) 95% CI for σ

$$\sqrt{\frac{(n-1)s^2}{\chi^2_R}} < \sigma < \sqrt{\frac{(n-1)s^2}{\chi^2_L}}$$

SAMPLE DATA (above)

USE PROGRAM CISDEV

$\alpha = 0.05$ $\frac{\alpha}{2} = 0.025$

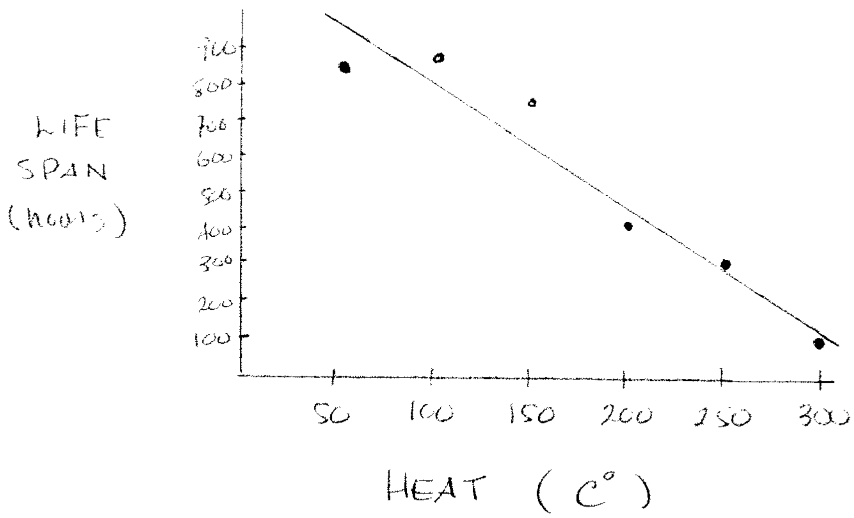
$$\sqrt{\frac{(7)(.064)^2}{16.013}} < \sigma < \sqrt{\frac{(7)(.064)^2}{1.690}}$$

$$\boxed{0.042 < \sigma < 0.130}$$

We are 95% confident that the true population standard deviation is between 0.042 and 0.130 parts per million.

(3) Enter: Heat into L1 and Life Span into L2.

(a)
(e)



(b) $r \approx \boxed{-0.964}$ P-Value ≈ 0.002

(c) $H_0 : \rho = 0$
$H_1 : \rho \neq 0$
$\alpha = 0.05$

SINCE P-Value $\leq \alpha$ we REJECT H_0

$\boxed{\text{SIG. NEG. LINEAR CORR.}}$

(d) $\boxed{\hat{y} \approx 1136 - 3.217X}$

(e) given above

(f) $\hat{y} \approx 1136 - 3.217(175) \approx \boxed{573 \text{ hours}}$

(g) 95% P. I. CV_t: 2.776

$\alpha = 0.05$ $\frac{\alpha}{2} = 0.025$
df = 4 (n-2)

Use Program PREDINT

$\boxed{295 < y < 851}$

(A) Paired T - Test

✓ Claim
✓ Data
✓ α
✓ TS
✓ PV
✓ CON

$H_0 : \mu_d = 0$

claim $H_1 : \mu_d > 0$

$\alpha = 0.05$ (our choice)

SAMPLE DATA

SUBJECT	A	B	C	D	E	F	G	H	I	J
BEFORE	45	32	58	57	60	38	47	51	42	38
AFTER	47	34	60	59	63	44	46	53	46	41
L2-L1=L3 DIFFERENCE:	2	2	2	2	3	6	-1	2	4	3

SAMPLE DATA (L3)

$n = 10$

$\bar{d} = 2.5$

$S_d \approx 1.7795$

TEST STATISTIC

$$t = \frac{\bar{d} - \mu_d}{\frac{S_d}{\sqrt{n}}} \qquad t = \frac{2.5 - 0}{\frac{1.7795}{\sqrt{10}}}$$

$$t \approx \boxed{4.44}$$

P-Value $\approx 8.1E-4 \approx \boxed{0.0008}$

P-value $\leq \alpha$ $\boxed{\text{REJECT } H_0}$

There is sufficient evidence to support the claim that the score on a concentration test increased after taking the drug.

(5) Contingency Table

✓ Claim
✓ Data
✓ α
✓ TS
✓ PV
✓ Concl

Claim → H_0: Severity is INDEPENDENT of receiving therapy

H_1: Severity DEPENDS on receiving therapy

$\alpha = 0.01$

TEST STATISTIC

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

OBSERVED

MATRIX A

	MILD	MOD	SEV
YES	26	66	40
NO	30	24	7

EXPECTED

MATRIX B

	MILD	MOD	SEV
YES	38.3	61.6	32.1
NO	17.7	28.4	14.9

$$\chi^2 \approx \frac{(26-38.3)^2}{38.3} + \cdots + \frac{(7-14.9)^2}{14.9}$$

$$\chi^2 \approx \boxed{19.588}$$

P-value $\approx$ 5.6E-5 $\approx \boxed{0.00006}$

P-value $\leq \alpha$ $\boxed{\text{REJECT } H_0}$

There is sufficient evidence to reject the claim that the severity of the disability is independent of patient receiving occupational therapy.

(6) (a) ANOVA   TS: $F \approx \boxed{0.411}$

P-Value $\approx \boxed{0.670}$

There is NOT sufficient evidence to reject the claim that the mean fat content is the same for all three brands.

(b) NPROP $\hat{p}$ KNOWN TO $\approx .18$

N MUST BE $\boxed{1997}$

(c) P-Value ≈ 0.259

There is NOT sufficient evidence to support the claim the mean is less than 3.75

(d) USE PROGRAM CORRELAT $\alpha = 0.052$

NO LINEAR CORRELATION

use $\bar{y} = \boxed{14}$

(e) 2-SAMP T Test...   assume $\alpha = 0.05$ (our choice)

TS: $t \approx \boxed{2.024}$ P-Value $\approx \boxed{0.023}$ $\boxed{\text{REJECT } H_0}$

(f) GOODNESS OF FIT $\alpha = 0.05$

TS: $\chi^2 \approx \boxed{12.052}$ P-Value $\approx \boxed{0.034}$

$\boxed{\text{REJECT } H_0}$