1. TURN IN Take Home LCQ

2. Let me know about questions on the Geom/Trig assign.

3. Calculate the expected frequencies (given the observed frequencies, f_o)

Fav. Sport \ favorite ice cream	Chocolate	Cherry Garcia
Soccer	10	15
American Football	6	5
Basketball	11	14

Fav. Sport \ favorite ice cream	Chocolate	Cherry Garcia	
Soccer	10	15	25
American Football	6	5	11
Basketball	11	14	25
	27	34	61

favorite ice cream

Fav. Sport	Chocolate	Cherry Garcia	
Soccer	10	15 (13.934)	25
American Football	6	5	11
Basketball	11	14	25
	27	34	61

$f_e = \frac{25 \times 34}{61}$

$= 13.934$

favorite ice cream

Fav. Sport	Chocolate	Cherry Garcia	
Soccer	10 (11.066)	15 (13.934)	25
American Football	6 (4.8689)	5 (6.1311)	11
Basketball	11 (11.066)	14 (13.934)	25
	27	34	61

$f_e = \frac{25 \times 34}{61}$

$= 13.934$

FYI... your GDC can calculate these for you

Mrs. Wierhman
tomorrow

Today:

Continue learning how to carry out the Chi-Square test of Independence

Continue learning about the Project Scoring Guide with Karlie's project

Criteria D, E, F, G

Schedule

Next class---The full Chi-Square Test of Indep. Process with P-Value

Tuesday- Special Situations + big **LCQ**

Wednesday- Get a list of Unit 2 Test items, continued practice,

Packet P3 (Info on selecting a project and Ideas for project)

Thursday- Evaluate another past project (using the scoring guide) + Use

Computer spreadsheet to calculate r and LSRL

Friday - Review Questions + Start Numerical Trigonometry

Monday - Test on Unit 2 (Statistical Applications) ← MON. OCT. 8th

Pick UP
the
Class Notes

read the first 4 slides
and then stop

X^2 is a statistic that measures the difference between observed values and expected values in a contingency table

Observed Frequencies

	Regular exercise	*No regular exercise*	
Male	112	104	216
Female	96	88	184
	208	192	400

EXPECTED frequencies

	Regular exercise	*No regular exercise*	*sum*
Male	$\frac{216\times208}{400} \doteq 112.3$	$\frac{216\times192}{400} \doteq 103.7$	216
Female	$\frac{184\times208}{400} \doteq 95.7$	$\frac{184\times192}{400} \doteq 88.3$	184
sum	208	192	400

If the chi square value that we calculate is big enough, then we can establish a:

linkage between two variables

association between to variables

~~correlation~~

If the variables in this example are, indeed, associated, then gender might have an effect on regular exercise but just being associated or linked does not prove causation.

What you can say is.....

Chi Square Statistic is :

$$\chi^2 = \sum \frac{(f_e - f_o)^2}{f_e}$$

Formula packet

f_e = expected frequency

and we compare it to.....

f_o = observed freq (whole)

....the cutoff, or critical Chi-Square Value which is either given to you (or found in a resource table) .

..... which, in turn, will tell us whether to accept or reject the assumed independence between the two variables.

Independent ⟷ Not Independent

~~Dependent~~

Associated

AIM:

Calculate the Chi-Square Statistic, 3 different ways

Before we go on to a new situation we need to practice calculating X^2 by using the formula itself.

For this we'll continue to use the same example from yesterday

handout

Once the expected cell frequencies are computed, it is convenient to enter them into the original table as shown below. The expected frequencies are in parentheses.

	Graduated	Failed to Graduate	Total
Experimental	73 (59.042)	12 (25.958)	85
Control	43 (56.958)	39 (25.042)	82
Total	116	51	167

Observed frequencies

	Graduated	Failed to Graduate	Total
Experimental	73	12	85
Control	43	39	82
Total	116	51	167

Expected frequencies

	Graduated	Failed to Graduate	Total
Experimental	59.042	25.958	85
Control	56.958	25.042	82
Total	116	51	167

$$\chi^2 = \sum \frac{(f_e - f_o)^2}{f_e}$$

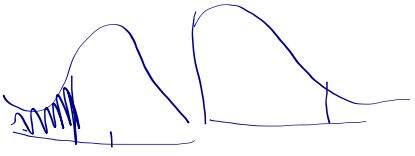
$$= \frac{(59.042 - 73)^2}{59.042} + \frac{(25.958 - 12)^2}{25.958} + \cdots = 22.0$$

alternative:

$$\chi^2 = \sum \frac{(f_e - f_o)^2}{f_e}$$

f_o	f_e	$f_e - f_o$	$(f_e - f_o)^2$	$\frac{(f_e - f_o)^2}{f_e}$
73	59.042	−13.96	194.83	3.2998
12	25.958			
43	56.958			
39	25.042			
				22.0

χ^2



$\chi^2 = 22.0$

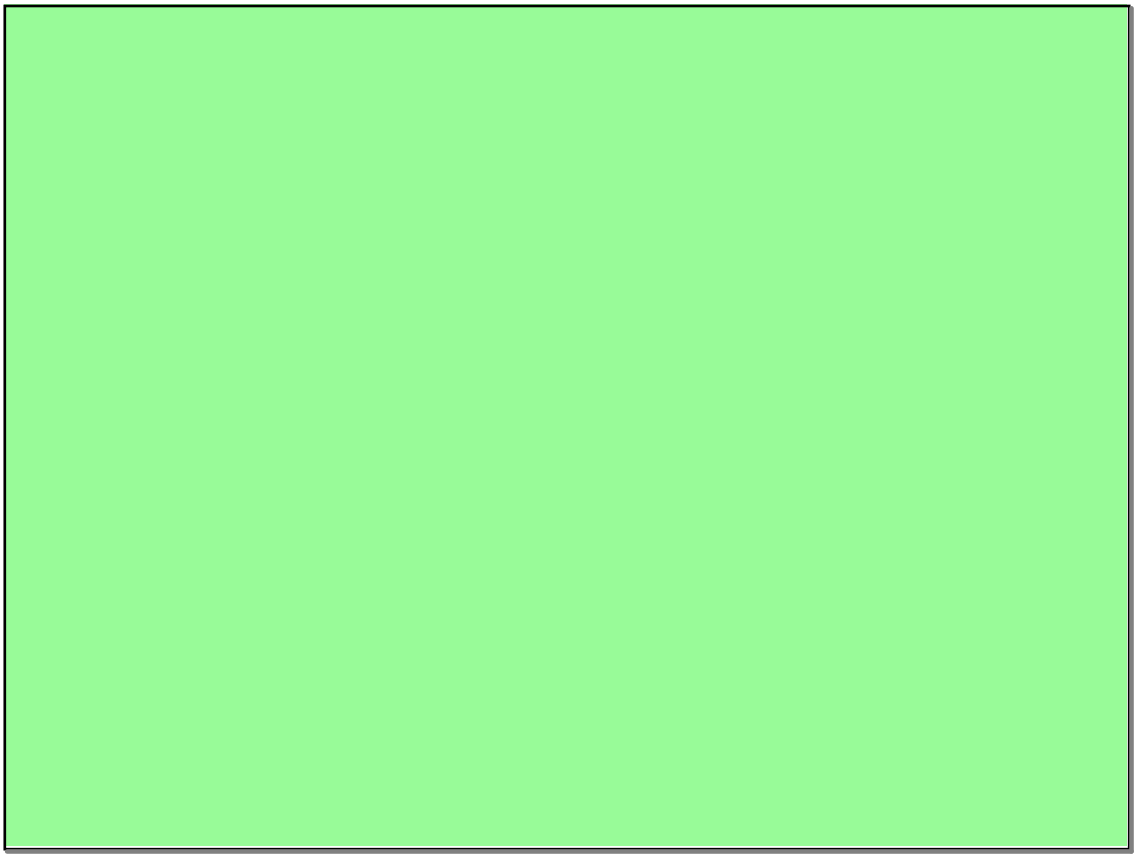
and to calculate χ^2 Uber quickly

Use GDC !!!

SECTION J of your calculator Basics

See your Calculator Basics for instructions

a. Choose **MATRIX** and go to **EDIT**
b. Make sure your matrix is the right size
c. Enter your **Observed** values in **Matrix A**
d. Choose **STAT** and go to **TESTS**
e. Scroll down to χ^2-**Test** and press **ENTER**
f. Choose **Calculate**.
g. Your **expected** values can now also be found in **Matrix B**



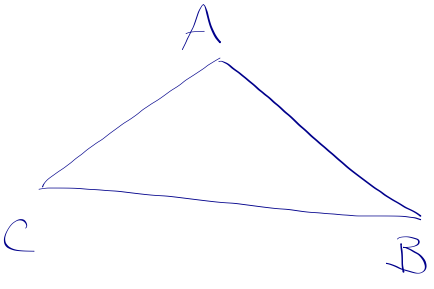
B.B.

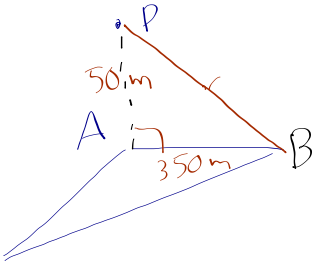
When finished, pick up the notes

1. Once again pick up the project on Teenage pregnancy. Have your Project Scoring Criteria out as well.

2. **Quietly** read Critera D.

Then score the project but don't write on it.





$a^2 + b^2 = PB^2$

$50^2 + 350^2 = PB^2$

$PP =$

Assignment:

Assignment #5

handout with graph paper