GOODNESS OF FIT

How to tell it's Goodness of Fit

- There is only 1 variable
- There are old/known values & new observed values

Hypotheses				
Ho	The proportions are correct.	H,	At least 1 proportion is incorrect.	

Math Time!			
Expected Counts	E;=n·pi		
Test Statistic	$ \chi_{g} = 12 = \underbrace{\left(\frac{(0 - \xi)_{g}}{\xi}\right)} $		
Degrees of Freedom	df= #catyories -1		
P-value	p=x2cdf(TS, E99, d+)		



Decision and Interpretation		
Rejecting Null (ペッp)	There is sufficient evidence to say that at least 1 proportion is incorrect.	
Failing to Reject Null (ペ~p)	There is insufficient evidence to say that at least 1 proportion is incorrect.	

Calculator Trick (X²GOF-Test)

How do you get there?	STAT → TESTS → D: 260F-Test
What do you need for it?	 Observed (ants in list Expected Gents in list Degrees of Freedom
What do you get from it?	·TS >> xe ·p-value ·DF

TEST OF INDEPENDENCE & TEST OF HOMOGENEITY

How to tell it's		
Test of Independence Test of Homogeneity		
 There are 2 variables Question has words like 'relationship' or 'association' 	 There are 2 variables Question has phrases like 'the same' or 'are equal' 	

	Hypotheses			
Test of Independence		Test of Homogeneity		
Ho	The variables are independent	The distributions are equal/the same		
H,	The variables are dependent	Н,	The distributions are unequal/not the same	



Math Time!		
Find Row/Column Totals & Overall Total	*Note: Overall total is found by adding row totals OR column totals	
Expected Counts	Ei, = (ith row total Xith column total) Overall total	
Test Statistic	$\chi^2 = TS = \underbrace{\left(\frac{\left(\mathcal{O}_{i,j} - \mathcal{E}_{i,j}\right)^2}{\mathcal{E}_{i,j}}\right)}$	

Degrees of Freedom	df=(#rows-1)(#columns-1)	
P-value	p= X2cdf (TS, E99,df)	



Decision and Interpretation				
Rejecting Null	TOI	There is sufficient evidence to say that the variables are dependent of each other.		
(d>p)	тон	There is sufficient evidence to say that the distributions are unequal.		
Failing to Reject Null	TOI	There is insufficient evidence to say that the variables are dependent of each other.		
(dep)	тон	There is insufficient evidence to say that the distributions are unequal.		

Calculator Trick				
Part 1: The Matrix				
How do you get there?	2nd → X ⁻¹ → Edit → Pick one			
What do you need for it?	Observed Cants			
Part 2: X ⁴ -Test				
How do you get there?	STAT > TESTS -> C: X2-Test			
What do you need for it?	· Observed Court Matrix · Empty Matrix for Epected Courts			
What do you get from it?	 Expected Cants TS = X² p-value df 			

<u>ANOVA</u>

How to tell it's ANOVA

- There is only 1 variable
- Question often has phrases like 'most', 'least', or 'different' when discussing the levels of the variable

Hypotheses			
Ho	$M_1 = M_2 = \cdots = M_T$	Н,	At least 1 mean differs

	Between	Within	
Sum of Squares	$SSB = \leq (n_i(\overline{x}_i - \overline{x})^2)$	SSW = $\mathbb{E}((n_i-1)s_i^2)$	
Degrees of Freedom	df _B =T-1	dfw=n-T	
Mean of Squares	MSB = SSB dfB	MSW = SSW OFW	
Test Statistic	F=TS = MSB MSW		
P-value	p=Fcdf(TS, E49, 10fb, 10fw)		



Decision and Interpretation		
Rejecting Null (dッp)	There is sufficient evidence to say that at least 1 mean differs.	

Failing to Reject Null
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There is insufficient evidence to say that at least 1 mean differs.

Calculator Trick (ANOVA)		
How do you get there?	STAT > TESTS > H: ANOVA (
What do you need for it?	All the levels'data in lists	
What do you get from it?	• F=TS • ρ-value • Factor Stats > Between Value • Error Stats > Within Values	

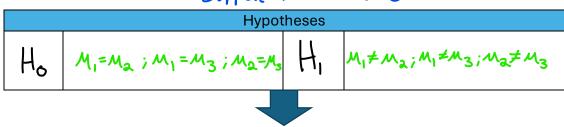
POST-HOC

How to tell it's Post-Hoc

 Question asks something along the line of which mean differs from the rest

*Note: Only use when you <u>REJECT NULL</u> on ANOVA!

Suppose there are 3 M



Decision and Interpretation for Each Comparison		
Rejecting Null (ヘンド)	M _# ≠M _#	
Failing to Reject Null	$M_{\sharp} = M_{\sharp}$	



Interpretation Overall		
There is sufficient evidence to say that the mean of from	are different	
# Honestly, just write/chose what you see in your analysis of the R code you are provided.		