CHI-SQUARE TEST FOR HOMOGENEITY OF POPULATIONS

*This test is used to determine if a single categorical variable has the same distribution in 2 (or more) distinct populations from **2 (or more) samples**.*

To determine if there was an association between race and opinions about schools, researchers surveyed 3 randomly selected groups of parents and asked them "Are high schools in your state doing an excellent, good, fair or poor job or don't you know enough to say?".

	Black Parents	**Hispanic Parents**	**White Parents**	**TOTAL**
Excellent	12	34	22	**68**
Good	69	55	81	**205**
Fair	75	61	60	**196**
Poor	24	24	24	**72**
Don't Know	22	28	14	**64**
TOTAL	**202**	**202**	**201**	**605**

DETERMINE EXPECTED COUNTS:

Expected Count = (Row Total)(Column Total)/ Sample Size

	Black Parents		**Hispanic Parents**		**White Parents**	
	Actual	Expected	Actual	Expected	Actual	Expected
Excellent	12		34		22	
Good	69		55		81	
Fair	75		61		60	
Poor	24		24		24	
Don't Know	22		28		14	

H STATE NULL AND ALTERNATIVE HYPOTHESES

A DETERMINE THAT CONDITIONS FOR TEST ARE ACCEPTABLE:

- Random
- Every expected count ≥ 5
- Independent

T **PERFORM TEST USING…**

FORMULA/TABLE C:

a) Chi-Square Statistic: $X^2 = \Sigma (O_i - E_i)^2 / E_i =$

b) Degrees of Freedom = $(r - 1)(c - 1) =$

Number of rows in table ↗ Number of columns in table ↖

c) *P*-Value

i) Table C

ii) Calculator:

CALCULATOR:

a) Store observed counts in a [R,C] matrix:

b) Perform X^2 Test:

NOTE:

S **STATE CONCLUSION IN CONTEXT:**