CHI SQUARE TEST OF ASSOCIATION/INDEPENDENCE

*This test is used to determine whether there is a significant association between 2 categorical variables from the **same sample**.*

To determine of there was a relationship between smoking status and socioeconomic levels, researchers categorized 356 federal male employees:

ACTUAL COUNTS	Socioeconomic Level		
	High	Middle	Low
Current Smoker	51	22	43
Former Smoker	92	21	28
Never Smoked	68	9	22

DETERMINE EXPECTED COUNTS:

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

EXPECTED COUNTS	Socioeconomic Level		
	High	Middle	Low
Current Smoker			
Former Smoker			
Never Smoked			

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:**