Example:

You wish to know whether there are more Chevrolets, Fords, or Buicks passing the window of your laboratory during the lunch hour. You count the cars passing from noon to 1:00 P.M and find that there are 56 Chevrolets, 71 Fords and 83 Buicks. For the purposes of your null hypothesis that 56 : 71 : 83 = 1 : 1 : 1, you need to have a theoretically expected ratio. In this case, the three observed values are summed and divided by three so that you can use your mean as the expected. You would arrange your data in this way:

	Chevrolets	Fords	Buicks	
observed	56	71	83	
expected	70	70	70	
obs. − exp.	−14	1	13	
$(obs. - exp.)^2$	196	1	169	
$\frac{(obs. - exp.)^2}{exp.}$	2.80	.01	2.41	X^2 = the sum of this line $X^2 = 5.22$

Since there are three categories, your degrees of freedom = 2. You check the Chi-Square table at your appropriate d.f. and find the critical value is 5.99. Since your calculated Chi-Square value (5.22) is less than the critical value, you fail to reject the null hypothesis. Therefore you can conclude that there is no statistically significant difference among the number of Chevrolets, Fords, and Buicks passing the window during the hour in question.

Handbook of Biological Investigation 6TH Edition
by Harrison W Ambrose