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ANOVA Formula

The **ANOVA formula** is made up of numerous parts. The best way to tackle an ANOVA test problem is to organize the formulae inside an ANOVA table.

Here's a general structure of an ANOVA table:

ANOVA Table				
Source of Variation	Sum of Squares	Degree of Freedom	Mean Squares	F Value
Between Groups	$SSB = \sum n_j (\bar{X}_j - \bar{X})^2$	$df_1 = k - 1$	$MSB = SSB / (k - 1)$	$F = MSB / MSE$ or, $F = MST/MSE$
Error	$SSE = \sum n_j (\bar{X}_j - \bar{X})^2$	$df_2 = N - k$	$MSE = SSE / (N - k)$	
Total	$SST = SSB + SSE$	$df_3 = N - 1$		

where,

- F = ANOVA Coefficient
- MSB = Mean of the total of squares between groupings
- MSW = Mean total of squares within groupings
- MSE = Mean sum of squares due to error
- SST = total Sum of squares
- p = Total number of populations
- n = The total number of samples in a population
- SSW = Sum of squares within the groups
- SSB = Sum of squares between the groups
- SSE = Sum of squares due to error
- s = Standard deviation of the samples
- N = Total number of observations