

FORMULA SHEET FOR ONE-WAY ANOVA

I. DEGREES OF FREEDOM

- Degrees of freedom total $df_T = n_T - 1$
- Degrees of freedom between $df_{between} = K - 1$
- Degrees of freedom within $df_w = N - ab$
- Degrees of freedom a $df_A = a - 1$
- Degrees of freedom b $df_b = b - 1$
- Degrees of freedom a*b $df_{a*b} = (a - 1)(b - 1)$

II. SUM OF SQUARES

- Sum of Squares total $SS_T = \sum x_T^2 - \frac{(\sum x_T)^2}{n_T}$
- Sum of Squares between $SS_{between} = \frac{(\sum x_1)^2}{n_1} + \frac{(\sum x_2)^2}{n_2} + \dots - \frac{(\sum x_T)^2}{n_T}$
- Sum of Squares within $SS_w = SS_T - SS_b$
- Sum of Squares a $SS_a = \sum \frac{(\sum \text{for each row})^2}{n \text{ for each row}} - \frac{(\sum x)^2}{N}$
- Sum of Squares b $SS_b = \sum \frac{(\sum \text{for each column})^2}{n \text{ for each column}} - \frac{(\sum x)^2}{N}$
- Sum of Squares a*b $SS_{ab} = SS_{between} - SS_a - SS_b$

III. MEAN SQUARES

- Mean square between $MS_{between} = \frac{SS_{between}}{df_b}$
- Mean square within $MS_w = \frac{SS_w}{df_w}$
- Mean square a $MS_a = \frac{SS_a}{df_a}$
- Mean square b $MS_b = \frac{SS_b}{df_b}$
- Mean square a*b $MS_{a*b} = \frac{SS_{a*b}}{df_{a*b}}$

IV. OBTAINED F

- F-obtained $f = \frac{MS_{between}}{MS_w}$
- F-obtained a $f_a = \frac{MS_a}{MS_w}$
- F-obtained b $f_b = \frac{MS_b}{MS_w}$
- F-obtained a*b $f_{a*b} = \frac{MS_{a*b}}{MS_w}$