

## قائمة قوانين رقم 1

قوانين الجزء الأول والثاني		
$S_{\bar{X}}^2 = \frac{S^2}{n}$	$S^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}$	$\hat{p} = \frac{x}{n}$
$S_{\bar{X}} = \sqrt{S_{\bar{X}}^2} = \frac{S}{\sqrt{n}}$	$S^2 = \frac{\sum_{i=1}^n x_i^2 - n(\bar{x})^2}{n-1}$	$\bar{X} = \frac{\sum_{i=1}^n x_i}{n}$
	$S^2 = \frac{\sum_{i=1}^n x_i^2 - \frac{(\sum_{i=1}^n x_i)^2}{n}}{n-1}$	

قوانين الجزء الثالث		
$S_D = \sqrt{S_D^2}$	$S_{\bar{X}_1 - \bar{X}_2} = S_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$	$\bar{X} = \frac{\sum_{i=1}^n X_i}{n}$
$S_{\bar{D}} = \frac{S_D}{\sqrt{n}}$	$t^* = \frac{(\bar{X}_1 - \bar{X}_2)}{S_{\bar{X}_1 - \bar{X}_2}}$	$S^2 = \frac{\sum_{i=1}^n (X_i - \bar{X})^2}{n-1}$
$t^* = \frac{\bar{D}}{S_{\bar{D}}} = \frac{\bar{D}}{S_D/\sqrt{n}}$	$(\bar{X}_1 - \bar{X}_2) \pm t_{\frac{\alpha}{2}} S_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$	$S^2 = \frac{\sum_{i=1}^n X_i^2 - n(\bar{X})^2}{n-1}$
$\bar{D} \pm t_{\frac{\alpha}{2}} \frac{S_D}{\sqrt{n}} = \bar{D} \pm t_{\frac{\alpha}{2}} S_{\bar{D}}$	$(\bar{X}_1 - \bar{X}_2) \pm t_{\frac{\alpha}{2}} S_{\bar{X}_1 - \bar{X}_2}$	$S^2 = \frac{\sum_{i=1}^n X_i^2 - \frac{(\sum_{i=1}^n X_i)^2}{n}}{n-1}$
$F^* = \frac{S_1^2}{S_2^2}$	$\bar{D} = \frac{\sum_{i=1}^n D_i}{n}$	$S_p^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$
$F_{1-\alpha}(v_1, v_2) = \frac{1}{F_{\alpha}(v_2, v_1)}$	$S_D^2 = \frac{\sum_{i=1}^n (D_i - \bar{D})^2}{n-1}$ $= \frac{\sum_{i=1}^n D_i^2 - n(\bar{D})^2}{n-1}$	$t^* = \frac{(\bar{X}_1 - \bar{X}_2)}{S_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$

قوانين الجزء الرابع	
$MSTrt = \frac{SS_{Trt}}{k-1}$	$N = kn$
$MSE = \frac{SS_E}{N-k} = \frac{SS_E}{k(n-1)}$	$Y_{i\bullet} = \sum_{j=1}^n Y_{ij}$
$F^* = \frac{MSTrt}{MSE}$	$\bar{Y}_{i\bullet} = \frac{Y_{i\bullet}}{n} = \frac{\sum_{j=1}^n Y_{ij}}{n}$
$S_{\bar{Y}_{i\bullet}} = \sqrt{\frac{MSE}{n}}$	$Y_{\bullet\bullet} = \sum_{i=1}^k Y_{i\bullet} = \sum_{i=1}^k \sum_{j=1}^n Y_{ij}$
$S_{\bar{Y}_{i\bullet} - \bar{Y}_{k\bullet}} = \sqrt{\frac{2MSE}{n}}$	$\bar{Y}_{\bullet\bullet} = \frac{Y_{\bullet\bullet}}{N} = \frac{\sum_{i=1}^k \sum_{j=1}^n Y_{ij}}{kn}$
$N = \sum_{i=1}^k n_i$	$SS_{Total} = \sum_{i=1}^k \sum_{j=1}^n (Y_{ij} - \bar{Y}_{\bullet\bullet})^2$
$Y_{\bullet\bullet} = \sum_{i=1}^k \sum_{j=1}^n Y_{ij}$	$SS_{Trt} = n \sum_{i=1}^k (\bar{Y}_{i\bullet} - \bar{Y}_{\bullet\bullet})^2$

تابع: قوانين الجزء الرابع

$Y_{i\bullet} = \sum_{j=1}^{n_i} Y_{ij}$	$SS_E = \sum_{i=1}^k \sum_{j=1}^n (Y_{ij} - \bar{Y}_{i\bullet})^2$
$SS_{Total} = \sum_{i=1}^k \sum_{j=1}^{n_i} (Y_{ij} - \bar{Y}_{\bullet\bullet})^2$ $= \sum_{i=1}^k \sum_{j=1}^{n_i} Y_{ij}^2 - CF$	$CF = \frac{Y_{\bullet\bullet}^2}{N}$
$SS_{Trt} = \sum_{i=1}^k n_i (\bar{Y}_{i\bullet} - \bar{Y}_{\bullet\bullet})^2$ $= \sum_{i=1}^k \frac{Y_{i\bullet}^2}{n_i} - CF$	$SS_{Total} = \sum_{i=1}^k \sum_{j=1}^n Y_{ij}^2 - CF$
$SS_E = \sum_{i=1}^k \sum_{j=1}^{n_i} (Y_{ij} - \bar{Y}_{i\bullet})^2$ $= SS_{Total} - SS_{Trt}$	$SS_{Trt} = \frac{\sum_{i=1}^k Y_{i\bullet}^2}{n} - CF$
	$SS_E = SS_{Total} - SS_{Trt}$ $= \sum_{i=1}^k \sum_{j=1}^n Y_{ij}^2 - \frac{\sum_{i=1}^k Y_{i\bullet}^2}{n}$

ملاحظة:

على الطالب معرفة القوانين الأخرى التي لم تُدرج هنا.