Principles of Statistics (Medicine and Dentistry) Formulas' sheet

H_0: $p_1 = p_2 = p$	$z = (\hat{p}_1 - \hat{p}_2) / \sqrt{pq(1/n_1 + 1/n_2)} \sim N(0,1)$ Where p is estimated by $\hat{p} = \frac{n_1\hat{p}_1 + n_2\hat{p}_2}{n_1 + n_2} = \frac{x_1 + x_2}{n_1 + n_2}$ If corrected for continuity $z = \frac{\lvert\hat{p}_1 - \hat{p}_2\rvert - \left(\frac{1}{2n_1} + \frac{1}{2n_2}\right)}{\sqrt{\hat{p}\hat{q}\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$ Yates-Corrected Chi-Square Test for a 2×2 Contingency Table $X^2 = (\lvert O_{11} - E_{11}\rvert - .5)^2 / E_{11} + (\lvert O_{12} - E_{12}\rvert - .5)^2 / E_{12} + (\lvert O_{21} - E_{21}\rvert - .5)^2 / E_{21} + (\lvert O_{22} - E_{22}\rvert - .5)^2 / E_{22}$
Chi-square test for testing relation between two discrete or categorical variables	$X^2 = (O_{11} - E_{11})^2 / E_{11} + (O_{12} - E_{12})^2 / E_{12} + \cdots + (O_{RC} - E_{RC})^2 / E_{RC}$
Chi-square goodness-of-fit test with g groups.	$X^2 = \frac{(O_1 - E_1)^2}{E_1} + \cdots + \frac{(O_g - E_g)^2}{E_g}$
Sample Correlation Coefficient	$L_{xx} = \sum_i^n x_i^2 - \frac{(\sum_i^n x_i)^2}{n}$ $L_{yy} = \sum_i^n y_i^2 - \frac{(\sum_i^n y_i)^2}{n}$ $L_{xy} = \sum_i^n x_i y_i - \frac{(\sum_i^n x_i)(\sum_i^n y_i)}{n}$ $r = \frac{L_{xy}}{\sqrt{L_{xx} L_{yy}}}$
$H_0: \rho = 0$	$t = \frac{r\sqrt{n-2}}{\sqrt{1 - r^2}}$
$H_0: \rho = \rho_0$	$\lambda = (z - z_0)\sqrt{n-3}$ $z = \frac{1}{2} ln\left(\frac{1+r}{1-r}\right)$
One-Way ANOVA Sum of Squares	$\text{Between SS} = \sum_{i=1}^{k} n_i \bar{y}_i^2 - \frac{\left(\sum_{i=1}^{k} n_i \bar{y}_i\right)^2}{n} = \sum_{i=1}^{k} n_i \bar{y}_i^2 - \frac{y_{..}^2}{n}$ $\text{Within SS} = \sum_{i=1}^{k} (n_i - 1) s_i^2$