

PSYC 2317 – Introduction to Statistical Methods
Computational Exam #3 (Final) Formula Sheet

Sample Standard Deviation $\sqrt{\frac{\sum X^2 - \frac{(\sum X)^2}{N}}{N}}$	<i>t</i>-test for Independent Samples $\frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{SS_1 + SS_2}{N_1 + N_2 - 2}\right)\left(\frac{N_1 + N_2}{N_1 * N_2}\right)}}$ df = N₁ + N₂ - 2
Sample Mean $\frac{\sum X}{N}$	<i>t</i>-test for Related Samples $\frac{\frac{\sum D}{N}}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N(N - 1)}}}$ df = N - 1
standard score $\frac{X - \bar{X}}{s}$	Significance of Pearson r $\frac{\frac{z_r}{1}}{\sqrt{N - 3}}$
Centile Point (Raw Score) $zs + \bar{X}$	Slope $\frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sum X^2 - \frac{(\sum X)^2}{N}}$ Y-intercept $\bar{Y} - b\bar{X}$ Regression Equation $Y' = bX + a$
Pearson r $\frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{\left[\sum X^2 - \frac{(\sum X)^2}{N}\right]\left[\sum Y^2 - \frac{(\sum Y)^2}{N}\right]}}$	

Sum of Squares (Total Sum of Squares) $SS_{\text{total}} = \sum X_{\text{total}}^2 - \frac{(\sum X_{\text{total}})^2}{N}$ df = N - 1 (NOTE: also used as SS for independent t-test)	Sum of Squares Treatment (Between) $SS_{\text{treatment}} = \frac{\sum (\sum X_{\text{group}})^2}{n} - \frac{(\sum X_{\text{total}})^2}{N}$ df = k - 1
Sum of Squares Error (Within) $SS_{\text{error}} = \sum \left[\sum X_{\text{group}}^2 - \frac{(\sum X_{\text{group}})^2}{n} \right]$ df = N - k	Mean Square Treatment $MS_{\text{treatment}} = \frac{SS_{\text{treatment}}}{df_{\text{treatment}}}$
Mean Square Error $MS_{\text{error}} = \frac{SS_{\text{error}}}{df_{\text{error}}}$	$F = \frac{MS_{\text{treatment}}}{MS_{\text{error}}}$
Unbiased Estimate of the Population Standard Deviation $\sqrt{\frac{\sum X^2 - \frac{(\sum X)^2}{N}}{N - 1}}$	Standard error of the mean $\frac{\hat{\sigma}}{\sqrt{N}}$
Confidence Interval Limits = $\bar{X} \pm \sigma_{\bar{X}}(t_{\text{crit}})$ df = N - 1	Expected Frequency $\frac{\text{row sum} \times \text{column sum}}{N}$