

Semester 2 Final - Formula Sheet

	Sampling Mean	$Statistic \pm \left(\begin{smallmatrix} \text{critical} \\ \text{value} \end{smallmatrix} \right) \left(\begin{smallmatrix} \text{standard deviation} \\ \text{of statistic} \end{smallmatrix} \right)$	$\begin{matrix} \text{Standardized} \\ \text{test} \\ \text{statistic} \end{matrix} = \frac{\text{statistic} - \text{parameter}}{\text{standard error of statistic}}$												
Proportion															
One Sample	$\mu_{\hat{p}} = p$	$\hat{p} \pm z^* \sqrt{\frac{\hat{p}(1 - \hat{p})}{n}}$	$z = \frac{\hat{p} - p}{\sqrt{\frac{p(1 - p)}{n}}}$												
Two Samples	$\mu_{\hat{p}_1 - \hat{p}_2} = p_1 - p_2$	$(\hat{p}_1 - \hat{p}_2) \pm z^* \sqrt{\frac{\hat{p}_1(1 - \hat{p}_1)}{n_1} + \frac{\hat{p}_2(1 - \hat{p}_2)}{n_2}}$	$z = \frac{(\hat{p}_1 - \hat{p}_2) - 0}{\sqrt{\frac{\hat{p}_c(1 - \hat{p}_c)}{n_1} + \frac{\hat{p}_c(1 - \hat{p}_c)}{n_2}}}$												
Mean															
One Sample	$\mu_{\bar{x}} = \mu$	$\bar{x} \pm t^* \frac{s_x}{\sqrt{n}}$	$t = \frac{\bar{x} - \mu}{\frac{s_x}{\sqrt{n}}}$												
Two Samples	$\mu_{\bar{x}_1 - \bar{x}_2} = \mu_1 - \mu_2$	$(\bar{x}_1 - \bar{x}_2) \pm t^* \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$	$t = \frac{(\bar{x}_1 - \bar{x}_2) - 0}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$												
Difference of Mean															
One Sample of Difference		$\bar{x}_{diff} \pm t^* \frac{s_{diff}}{\sqrt{n_{diff}}}$	$t = \frac{\bar{x}_{diff} - 0}{\frac{s_{diff}}{\sqrt{n_{diff}}}}$												
Chi-square															
			$\chi^2 = \frac{\sum(\text{observed} - \text{expected})^2}{\text{expected}}$												
Other - miscellaneous															
$z = \frac{x - \mu}{\sigma}$	$\mu_x = np \quad \sigma_x = \sqrt{np(1 - p)}$	$ME \geq z^* \sqrt{\frac{p(1 - p)}{n}}$	Decision/Conclusion <table><tr><td></td><th colspan="2">Truth</th></tr><tr><td></td><th>H₀</th><th>H_a</th></tr><tr><th>Reject H₀</th><td>Type I Error</td><td>Good Decision</td></tr><tr><th>Fail to Reject H₀</th><td>Good Decision</td><td>Type II Error</td></tr></table>		Truth			H ₀	H _a	Reject H ₀	Type I Error	Good Decision	Fail to Reject H ₀	Good Decision	Type II Error
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