FORMULAS TEST 3

$$\bar{x} = \frac{\sum x_i}{n} \qquad s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

Sample Size

For μ $$n = \left(\frac{z^* s}{m} \right)^2$$ For p $$n = \left(\frac{z^*}{m} \right)^2 p^*(1-p^*)$$

where m is margin of error

Parameter	Test Statistic	Confidence Interval
μ	$z = \frac{\bar{x} - m}{s / \sqrt{n}}$	$\bar{x} \pm z^*(s / \sqrt{n})$
	$t = \frac{\bar{x} - m}{s / \sqrt{n}}$	$\bar{x} \pm t^*(s/\sqrt{n})$ df = n-1
$\mu_1 - \mu_2$	$t = \frac{\bar{x}_1 - \bar{x}_2 - (m_1 - m_2)}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$	$\bar{x}_1 - \bar{x}_2 \pm t^* s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$
	where $s_p^2 = \frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1 + n_2 - 2}$	df = $n_1 + n_2 - 2$
p	$z = \frac{\hat{p} - p_o}{\sqrt{\frac{p_o(1-p_o)}{n}}}$	$\hat{p} = \frac{X}{n}$ $\hat{p} \pm z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$
$p_1 - p_2$	$z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}(1-\hat{p})(\frac{1}{n_1} + \frac{1}{n_2})}}$	$\hat{p}_1 - \hat{p}_2 \pm z^* \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$
	where $\hat{p} = \frac{X_1 + X_2}{n_1 + n_2}$	