Nature of the population	Parameter	H_0	H_a	TS	Reject H_0 if TS is
Both variances known, both opoulations normal	$\mu_1 - \mu_2$	$\mu_1 = \mu_2$	1. $\mu_1 > \mu_2$ 2. $\mu_1 < \mu_2$ 3. $\mu_1 \neq \mu_2$	$\dfrac{\bar{x} - \bar{y}}{\sqrt{\dfrac{\sigma_1^2}{m} + \dfrac{\sigma_2^2}{n}}}$	1. greater than z_α 2. less than $-z_\alpha$ 3. less than $-z_{\frac{\alpha}{2}}$ *or* greater than $z_{\frac{\alpha}{2}}$
Both variances unknown,. "large samples, not necessarily normal	$\mu_1 - \mu_2$	$\mu_1 = \mu_2$	1. $\mu_1 > \mu_2$ 2. $\mu_1 < \mu_2$ 3. $\mu_1 \neq \mu_2$	$\dfrac{\bar{x} - \bar{y}}{\sqrt{\dfrac{s_1^2}{m} + \dfrac{s_2^2}{n}}}$	1. greater than z_α 2. less than $-z_\alpha$ 3. less than $-z_{\frac{\alpha}{2}}$ *or* greater than $z_{\frac{\alpha}{2}}$
Both variances unknown, but. assumed equal, both populations normal	$\mu_1 - \mu_2$	$\mu_1 = \mu_2$	1. $\mu > \mu_0$ 2. $\mu < \mu_0$ 3. $\mu \neq \mu_0$	$\dfrac{\bar{x} - \bar{y}}{s_p\sqrt{\dfrac{1}{m} + \dfrac{1}{n}}}$ $s_p = \sqrt{\dfrac{(m-1)s_1^2 + (n-1)s_2^2}{m+n-2}}$	1. greater than $t_{\nu,\alpha}$ 2. less than $-t_{\nu,\alpha}$ 3. less than $-t_{\nu,\frac{\alpha}{2}}$ *or* greater than $t_{\nu,\frac{\alpha}{2}}$ where $\nu = m + n - 2$
Paired observations	$\mu_1 - \mu_2$ $(= \mu_d)$	$\mu_d = 0$	1. $\mu_d > 0$ 2. $\mu_d < 0$ 3. $\mu_d \neq 0$	$\dfrac{\bar{x}_d}{\dfrac{s_d^2}{\sqrt{n}}}$	1. greater than $t_{n-1,\alpha}$ 2. less than $-t_{n-1,\alpha}$ 3. less than $-t_{n-1,\frac{\alpha}{2}}$ *or* greater than $t_{n-1,\frac{\alpha}{2}}$
Population proportion	$p_1 - p_2$	$p_1 = p_2$	1. $p_1 > p_2$ 2. $p_1 < p_2$ 3. $p_1 \neq p_2$	$\dfrac{\hat{p}_1 - \hat{p}_2}{\sqrt{pq\left(\dfrac{1}{m} + \dfrac{1}{n}\right)}}$ $p = \dfrac{\hat{p}_1 + \hat{p}_2}{m+n}$	1. greater than z_α 2. less than $-z_\alpha$ 3. less than $-z_{\frac{\alpha}{2}}$ *or* greater than $z_{\frac{\alpha}{2}}$