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		σ known	σ unknown	
Case 1:	$n_1 > 30$ & $n_2 > 30$	$Z = \dfrac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\dfrac{\sigma_1^2}{n_1} + \dfrac{\sigma_2^2}{n_2}}}$	$Z = \dfrac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\dfrac{S_1^2}{n_1} + \dfrac{S_2^2}{n_2}}}$	
Case 2:	$n_1 \leq 30$ or $n_2 \leq 30$	$Z = \dfrac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\dfrac{\sigma_1^2}{n_1} + \dfrac{\sigma_2^2}{n_2}}}$	Case A: $\sigma_1^2 = \sigma_2^2$ $t = \dfrac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{S_p^2 \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$ S_p^2 = Pooled variance $S_p^2 = \dfrac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$ $df = n_1 + n_2 - 2$	Case B: $\sigma_1^2 \neq \sigma_2^2$ $t = \dfrac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\dfrac{S_1^2}{n_1} + \dfrac{S_2^2}{n_2}}}$ $df = \dfrac{\left[\dfrac{S_1^2}{n_1} + \dfrac{S_2^2}{n_2}\right]^2}{\dfrac{(S_1^2/n_1)^2}{n_1 - 1} + \dfrac{(S_2^2/n_2)^2}{n_2 - 1}}$

For case 2, To check their Averages are equal or not, we need to do first variance test i.e called 'F' test.

Steps for 'F' test:

① Calculate the variances for both Samples.

② Highest from among those is named as S_1 & the lower variance is called S_2

③ Calculate $F_{Calc} = \dfrac{S_1 \text{ (Highest)}}{S_2 \text{ (Lowest)}}$

④ Frame the hypothesis $H_0: \sigma_1^2 = \sigma_2^2$
$H_1: \sigma_1^2 \neq \sigma_2^2$

⑤ Use the template "F.xls" calculate F_1 tab and then $F_2 \text{ tab} = \dfrac{1}{F_1 \text{ tab}}$

Ex:- $F_{1Tab} = 1.4$, $F_{2Tab} = \dfrac{1}{1.4}$

⑥ If $F_{1Tab} < F_{Calc} < F_{2Tab}$ H_0 is Accepted o.w. H_0 is Rejected.

⑦ Based on the Result of hypothesis, we need to go for either Case A or Case B.