Worksheet for 2 Mean, Equal Variance, t Test

Test the difference between 2 sample means ($\bar{X}_1$ vs $\bar{X}_2$) when σ_1 and σ_2 are unknown but considered equal.
n < 30 otherwise use Z-Test and Normal distribution. Equal variance will be confirmed in this worksheet.

H_0:
Generally $\mu_1 = \mu_2$

H_1:
Generally $\mu_1 \neq \mu_2$

One sided or two sided?_____ Risk _____% α _____
If H_0 is = then two sided. If H_0 is >, <, <=, or >= then one sided. If 2 sided then α = Risk/2 otherwise α = risk.

Fill in the following information:

$\bar{X}_1$ = **S_1 =** **S_1^2 =** **n_1 =**

$\bar{X}_2$ = **S_2 =** **S_2^2 =** **n_2 =**

Distribution Normal or Non-Normal_____
Use normal probability paper if necessary. If data is crowding 0% or 100% it may not be normal. If not normal, the t test may not be the best test to use.

Calculate the F statistic as follows:

$F = S_x^2/S_y^2$ = ____/_____ = _____ (Note: Put the larger S^2 in the numerator) **$df_x = n_x-1$= ___ $df_y = n_y-1$=___**

Look up F statistic in table for a given alpha. **F risk,df_x,df_y = _____**
If the calculated F statistic is larger than the F value from the table, the sample data are non-equal variant and can not use this sheet.

Calculation t Statistic as follows:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{Sp\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \qquad Sp = \sqrt{\frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{n_1+n_2-2}}$$

t =

DF = $n_1 + n_2 - 2$ = _____

$t_{\alpha,DF} = t$ ____,____ = _____ Use t Table. This is the critical value.

If t statistic is greater than the critical value then the Null Hypothesis (H_0) is rejected. Other wise the Null Hypothesis fails to be rejected.