T -test

T -test: Test between the means of two groups

Experiment group	Control group
9	4
8	5
11	3
8	5
5	6
5	6
8	7
9	4
5	3
10	8
Mean= 7.80 SD=2.15 SD^2= 4.6 N=10	Mean= 5.10 SD=1.66 SD^2= 2.77 N=10

$$T = \frac{\text{mean group}_1 - \text{mean group}_2}{\sqrt{\left[\frac{(n_1-1)SD_1^2 + (n_2-1)SD_2^2}{n_1+n_2-2}\right]\left[\frac{n_1+n_2}{n_1*n_2}\right]}}$$

$$T = \frac{7.80 - 5.10}{\sqrt{\left[\frac{\mathbf{(10-1)*4.6} + (10-1)*2.77}{10+10-2}\right]\left[\frac{10+10}{10*10}\right]}}$$

$$T = \frac{7.80 - 5.10}{\sqrt{\left[\frac{\mathbf{41.6} + 24.90}{18}\right]\left[\frac{20}{100}\right]}}$$

$$T = \frac{2.70}{\sqrt{\left[\frac{66.5}{18}\right]\left[\frac{20}{100}\right]}}$$

$$T = \frac{2.7}{\sqrt{3.69 * 0.20}}$$

$T_{calculate} = 3.14$

Degree of freedom= n_1+n_2-2

$= 18$

Two tail test

Degree of freedom	0.05
18	2.10

If $T_{calulate} > T_{table}$ ⟶ There is a significant

3.14 >2.10 ⟶ There is a significant difference