

# t-Test

 **Follow** 10k

This example teaches you how to perform a t-Test in Excel. The t-Test is used to test the null hypothesis that the means of two populations are equal.

Below you can find the study hours of 6 female students and 5 male students.

$$H_0: \mu_1 - \mu_2 = 0$$

$$H_1: \mu_1 - \mu_2 \neq 0$$

H15			
	A	B	C
1	Female	Male	
2	26	23	
3	25	30	
4	43	18	
5	34	25	
6	18	28	
7	52		
8			
9			

## Excel Data Analysis

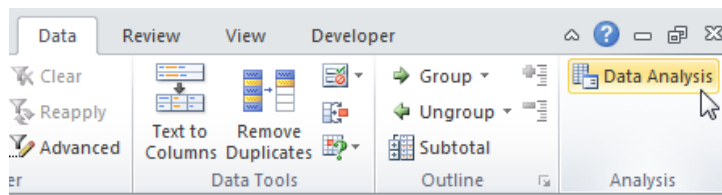
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To perform a t-Test, execute the following steps.

1. First, perform an [F-Test](#) to determine if the variances of the two populations are equal. This is not the case.
2. On the Data tab, click Data Analysis.



Note: can't find the Data Analysis button? Click [here](#) to load the [Analysis ToolPak add-in](#).

3. Select t-Test: Two-Sample Assuming Unequal Variances and click OK.

## Chapter

[Analysis ToolPak](#)

## Learn more, it's easy

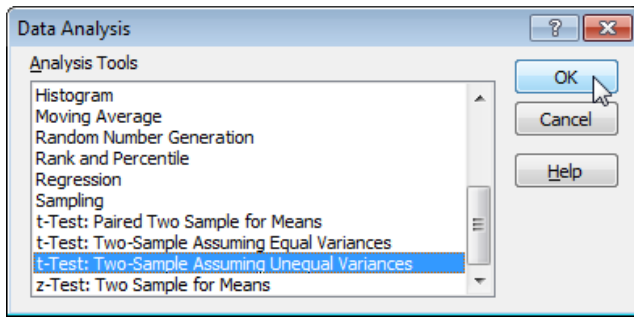
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## Download Excel File

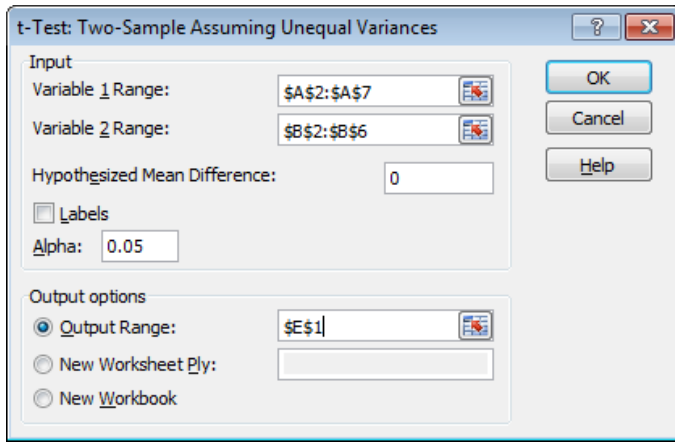
[t-test.xls](#)

## Follow Excel Easy





4. Click in the Variable 1 Range box and select the range A2:A7.
5. Click in the Variable 2 Range box and select the range B2:B6.
6. Click in the Hypothesized Mean Difference box and type 0 ( $H_0: \mu_1 - \mu_2 = 0$ ).
7. Click in the Output Range box and select cell E1.



8. Click OK.

Result:

E	F	G
<b>t-Test: Two-Sample Assuming Unequal Variances</b>		
	<i>Variable 1</i>	<i>Variable 2</i>
Mean	33	24.8
Variance	160	21.7
Observations	6	5
Hypothesized Mean Difference	0	
df	7	
t Stat	1.47260514	
P(T<=t) one-tail	0.092170202	
t Critical one-tail	1.894578605	
P(T<=t) two-tail	0.184340405	
t Critical two-tail	2.364624252	

Conclusion: We do a two-tail test (inequality). If  $t \text{ Stat} < -t \text{ Critical two-tail}$  or  $t \text{ Stat} > t \text{ Critical two-tail}$ , we reject the null hypothesis. This is not the case,  $-2.365 < 1.473 < 2.365$ . Therefore, we do not reject the null hypothesis. The observed difference between the sample means ( $33 - 24.8$ ) is not convincing enough to say that the average number of study hours between female and male students differ significantly.