

# How can I perform a t-test in Excel?

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## RECOMMENDED CITATION

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A t-test is a statistical test used to determine if there is a significant difference between the means of two sets of data. To perform a t-test in Excel, first organize your data into two columns, with one column representing each group or sample. Then, use the "Data Analysis" tool in the "Data" tab to select the appropriate t-test for your data (e.g. paired t-test, independent t-test). Next, input the data ranges and select the desired significance level. Excel will then calculate the t-value and p-value, which can be used to determine the significance of the difference between the two groups.

This article describes the formula syntax and usage of the **TTEST** function in Microsoft Excel.

Returns the probability associated with a Student's t-Test. Use TTEST to determine whether two samples are likely to have come from the same two underlying populations that have the same mean.

**Important:** This function has been replaced with one or more new functions that may provide improved accuracy and whose names better reflect their usage. Although this function is still available for backward compatibility, you should consider using the new functions from now on, because this function may not be available in future versions of Excel.

For more information about the new function, see [T.TEST](#) function.

## Syntax

TTEST(array1,array2,tails,type)

The TTEST function syntax has the following arguments:

**Array1** Required. The first data set.

**Array2** Required. The second data set.

**Tails** Required. Specifies the number of distribution tails. If tails = 1, TTEST uses the one-tailed distribution. If tails = 2, TTEST uses the two-tailed distribution.

**Type** Required. The kind of t-Test to perform.

If type equals	This test is performed
1	Paired
2	Two-sample equal variance (homoscedastic)
3	Two-sample unequal variance (heteroscedastic)

## Remarks

If array1 and array2 have a different number of data points, and type = 1 (paired), TTEST returns the #N/A error value.

The tails and type arguments are truncated to integers.

If tails or type is nonnumeric, TTEST returns the #VALUE! error value.

If tails is any value other than 1 or 2, TTEST returns the #NUM! error value.

TTEST uses the data in array1 and array2 to compute a non-negative t-statistic. If tails=1, TTEST returns the probability of a higher value of the t-statistic under the assumption that array1 and array2 are samples from populations with the same mean. The value returned by TTEST when tails=2 is double that returned when tails=1 and corresponds to the probability of a higher absolute value of the t-statistic under the "same population means" assumption.

## Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data 1	Data 2	
3	6	
4	19	
5	3	
8	2	
9	14	
1	4	
2	5	
4	17	
5	1	
Formula	Description (Result)	Result
=TTEST(A2:A10,B2:B10,2,1)	Probability associated with a Student's paired t-Test, with a two-tailed distribution. Uses values in A2:A10 and B2:B10.	0.19602