How can I use the AND function in Excel to evaluate multiple conditions at once?

Authored by

stats writer

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The AND function in Excel allows users to evaluate multiple conditions at once. This function checks if all the conditions provided are true, and returns a TRUE value if they are, or a FALSE value if any of the conditions are not met. This can be useful for creating complex logic statements and making data analysis more efficient. By using the AND function, users can easily determine if a specific set of criteria is met, without having to manually check each condition. This feature is particularly useful for organizing data, creating filters, and performing calculations in a spreadsheet.

Use the **AND** function, one of the logical functions, to determine if all conditions in a test are TRUE.

Example

	A	B	C
1	Formula	Description	Result
2	=AND(TRUE,TRUE)	All arguments are TRUE	TRUE
3	=AND(TRUE,FALSE)	One argument is FALSE	FALSE
4	=AND(1=1,2=2,3=3)	All arguments are TRUE	TRUE
5	=AND(1=2,2=3,3=4)	One argument is FALSE	FALSE

The **AND** function returns TRUE if all its arguments evaluate to TRUE, and returns FALSE if one or more arguments evaluate to FALSE.

One common use for the **AND** function is to expand the usefulness of other functions that perform logical tests. For example, the **IF** function performs a logical test and then returns one value if the test evaluates to TRUE and another value if the test evaluates to FALSE. By using the **AND** function as the **logical_test** argument of the **IF** function, you can test many different conditions instead of just one.

Syntax

AND(logical1, , ...)

The **AND** function syntax has the following arguments:

Argument	Description
Logical1	Required. The first condition that you want to test that can evaluate to either TRUE or FALSE.

Argument	Description
Logical2, ...	Optional. Additional conditions that you want to test that can evaluate to either TRUE or FALSE, up to a maximum of 255 conditions.

Remarks

The arguments must evaluate to logical values, such as TRUE or FALSE, or the arguments must be arrays or references that contain logical values.

If an array or reference argument contains text or empty cells, those values are ignored.

If the specified range contains no logical values, the **AND** function returns the #VALUE! error.

Examples

Here are some general examples of using **AND** by itself, and in conjunction with the **IF** function.

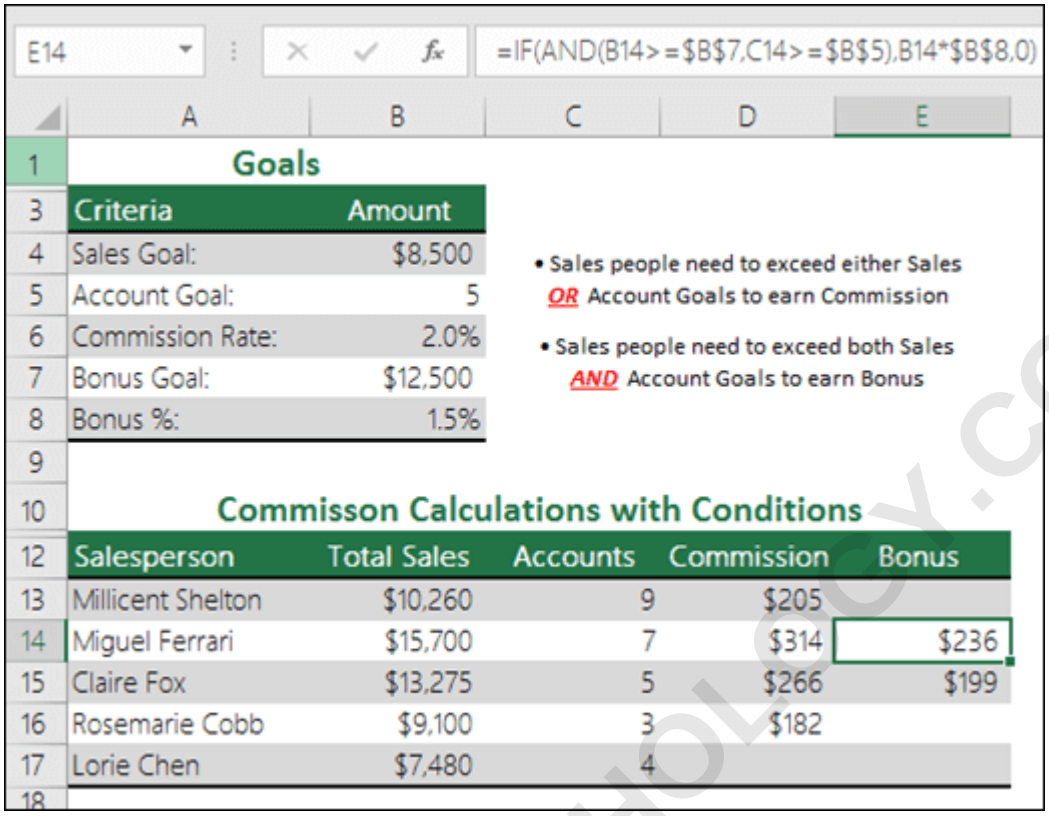
	A	B	C	D	E
1	Values				
2	50				
3	100				
4					
5	Formula	Result			Result
6	=AND(A2>1,A2<100)				TRUE
7	=IF(AND(A2<A3,A2<100),A2,"The value is out of range")				50
8	=IF(AND(A3>1,A3<100),A3,"The value is out of range")				The value is out of range

Formula	Description
=AND(A2>1,A2<100)	Displays TRUE if A2 is greater than 1 **AND** less than 100, otherwise it displays FALSE.
=IF(AND(A2<A3,A2<100),A2,"The value is out of range")	Displays the value in cell A2 if it's less than A3 **AND** less than 100, otherwise it displays the message "The value is out of range".
=IF(AND(A3>1,A3<100),A3,"The value is out of range")	Displays the value in cell A3 if it is greater than 1 **AND** less than 100, otherwise it displays a message. You can substitute any message of your choice.

Bonus Calculation

Here is a fairly common scenario where we need to calculate if sales people qualify for a bonus

using **IF** and **AND**.



=IF(AND(B14>=$B$7,C14>=$B$5),B14*$B$8,0) - **IF** Total Sales are greater than or equal (>=) to the Sales Goal, **AND** Accounts are greater than or equal to (>=) the Account Goal, then multiply Total Sales by the Bonus %, otherwise return 0.

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