LOOKUP function

⊞ Show All

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

Description

The **LOOKUP** function returns a value either from a one-row or one-column range or from an array. The **LOOKUP** function has two syntax forms: the vector form and the array form.

If you want to	Then see	Usage
Look in a one-row or one-column range (known as a vector) for a value and return a value from the same position in a second one-row or one-column range	Vector form	Use the vector form when you have a large list of values to look up or when the values may change over time.
Look in the first row or column of an array for the specified value and return a value from the same position in the last row or column of the array	Array form	Use the array form when you have a small list of values and the values remain constant over time.

NOTES

- You can also use the **LOOKUP** function as an alternative to the **IF** function for elaborate tests or tests that exceed the limit for nesting of functions. See the examples in the array form.

- For the **LOOKUP** function to work correctly, the data being looked up must be sorted in ascending order. If this is not possible, consider using the VLOOKUP, HLOOKUP, or MATCH functions.

Vector form

A vector is a range of only one row or one column. The vector form of **LOOKUP** looks in a one-row or one-column range (known as a vector) for a value and returns a value from the same position in a second one-row or one-column range. Use this form of the **LOOKUP** function when you want to specify the range that contains the values that you want to match. The other form of **LOOKUP** automatically looks in the first column or row.

SYNTAX

```
LOOKUP(lookup_value,  lookup_vector,  [result_vector])
```

The **LOOKUP** function vector form syntax has the following arguments:

- **lookup_value** Required. A value that **LOOKUP** searches for in the first vector. *Lookup_value* can be a number, text, a logical value, or a name or reference that refers to a value.

- **lookup_vector** Required. A range that contains only one row or one column. The values in *lookup_vector* can be text, numbers, or logical values.

  IMPORTANT   The values in *lookup_vector* must be placed in ascending order: ..., -2, -1, 0, 1, 2, ..., A-Z, FALSE, TRUE; otherwise, **LOOKUP** might not return the correct value. Uppercase and lowercase text are equivalent.

- **result_vector** Optional. A range that contains only one row or column. The *result_vector* argument must be the same size as *lookup_vector*.

REMARKS

- If the **LOOKUP** function can't find the *lookup_value*, the function matches the largest value in *lookup_vector* that is less than or equal to *lookup_value*.

- If *lookup_value* is smaller than the smallest value in *lookup_vector*, **LOOKUP** returns the #N/A error value.

EXAMPLE

The example may be easier to understand if you copy it to a blank worksheet.

⊞ How do I copy an example?

	A	B	C
1	**Frequency**	**Color**	
2	4.14	red	
3	4.19	orange	
4	5.17	yellow	
5	5.77	green	
6	6.39	blue	
7	**Formula**	**Description**	**Result**
8	=LOOKUP(4.19, A2:A6, B2:B6)	Looks up 4.19 in column A, and returns the value from column B that is in the same row.	orange
9	=LOOKUP(5.00, A2:A6, B2:B6)	Looks up 5.00 in column A, matches the next smallest value (4.19), and returns the value from column B that is in the same row.	orange
10	=LOOKUP(7.66, A2:A6, B2:B6)	Looks up 7.66 in column A, matches the next smallest value (6.39), and returns the value from column B that is in the same row.	blue
11	=LOOKUP(0, A2:A6, B2:B6)	Looks up 0 in column A, and returns an error because 0 is less than the smallest value in the lookup_vector A2:A7.	#N/A

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Array form

The array form of **LOOKUP** looks in the first row or column of an array for the specified value and returns a value from the same position in the last row or column of the array. Use this form of **LOOKUP** when the values that you want to match are in the first row or column of the array. Use the other form of **LOOKUP** when you want to specify the location of the column or row.

TIP   In general, it's best to use the **HLOOKUP** or **VLOOKUP** function instead of the array form of **LOOKUP**. This form of **LOOKUP** is provided for compatibility with other spreadsheet programs.

SYNTAX

```
LOOKUP(lookup_value,  array)
```

The **LOOKUP** function array form syntax has these arguments:

- **lookup_value** Required. A value that **LOOKUP** searches for in an array. The *lookup_value* argument can be a number, text, a logical value, or a name or reference that refers to a value.

  - If **LOOKUP** can't find the value of *lookup_value*, it uses the largest value in the array that is less than or equal to *lookup_value*.

  - If the value of *lookup_value* is smaller than the smallest value in the first row or column (depending on the array dimensions), **LOOKUP** returns the #N/A error value.

- **array** Required. A range of cells that contains text, numbers, or logical values that you want to compare with lookup_value.

  The array form of **LOOKUP** is very similar to the **HLOOKUP** and **VLOOKUP** functions. The difference is that **HLOOKUP** searches for the value of *lookup_value* in the first row, **VLOOKUP** searches in the first column, and **LOOKUP** searches according to the dimensions of array.

    - If array covers an area that is wider than it is tall (more columns than rows), **LOOKUP** searches for the value of *lookup_value* in the first row.

    - If an array is square or is taller than it is wide (more rows than columns), **LOOKUP** searches in the first column.

    - With the **HLOOKUP** and **VLOOKUP** functions, you can index down or across, but **LOOKUP** always selects the last value in the row or column.

  IMPORTANT   The values in array must be placed in ascending order: ..., -2, -1, 0, 1, 2, ..., A-Z, FALSE, TRUE; otherwise, **LOOKUP** might not return the correct value. Uppercase and lowercase text are

equivalent.

EXAMPLES

Example 1

The example may be easier to understand if you copy it to a blank worksheet.

⊞ How do I copy an example?

	A	B	C
1	**Formula**	**Description**	**Result**
	=LOOKUP("C", {"a", "b", "c", "d";1, 2, 3, 4})	Looks up "C" in the first row of the array, finds the largest value that is less than or equal to it ("c"), and then returns the value in the last row that is in the same column.	3
2	=LOOKUP("bump", {"a", 1;"b", 2;"c", 3})	Looks up "bump" in the first row of the array, finds the largest value that is less than or equal to it ("b"), and then returns the value in the last column that is in the same row.	2
3			

Example 2

The following example uses an array of numbers to assign a letter grade to a test score.

The example may be easier to understand if you copy it to a blank worksheet.

⊞ How do I copy an example?

	A	B	C
1	**Score**		
2	45		
3	90		
4	78		
5	**Formula**	**Description**	**Result**
	=LOOKUP(A2, {0, 60, 70, 80, 90}, {"F", "D", "C", "B", "A"})	Looks up the value in A2 (45) in the first row of the array, finds the largest value that is less than or equal to it (0), and then returns the value in the last row of the array that is in the same column.	F
6	=LOOKUP(A3, {0, 60, 70, 80, 90}, {"F", "D", "C", "B", "A"})	Looks up the value in A3 (90) in the first row of the array, finds the largest value that is less than or equal to it (90), and then returns the value in the last row of the array that is in the same column.	A

7	=LOOKUP(A4, {0, 60, 70, 80, 90}, {"F", "D", "C", "B", "A"})	Looks up the value in A4 (78) in the first row of the array, finds the largest value that is less than or equal to it (70), and then returns the value in the last row of the array that is in the same column.	C
8	=LOOKUP(A2, {0, 60, 63, 67, 70, 73, 77, 80, 83, 87, 90, 93, 97}, {"F", "D-", "D", "D+", "C-", "C", "C+", "B-", "B", "B+", "A-", "A", "A+"})	Looks up the value in A2 (45) in the first row of the array, finds the largest value that is less than or equal to it (0), and then returns the value in the last row of the array that is in the same column.	F
	=LOOKUP(A3, {0, 60, 63, 67, 70, 73, 77, 80, 83, 87, 90, 93, 97}, {"F", "D-", "D", "D+", "C-", "C", "C+", "B-", "B", "B+", "A-", "A", "A+"})	Looks up the value in A3 (90) in the first row of the array, finds the largest value that is less than or equal to it (90), and then returns the value in the last row that is in the same column.	A-
9	=LOOKUP(A4, {0, 60, 63, 67, 70, 73, 77, 80, 83, 87, 90, 93, 97}, {"F", "D-", "D", "D+", "C-", "C", "C+", "B-", "B", "B+", "A-", "A", "A+"})	Looks up the value in A4 (78) in the first row of the array, finds the largest value that is less than or equal to it (77), and then returns the value in the last row that is in the same column.	C+
10			
11			

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See Also

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