

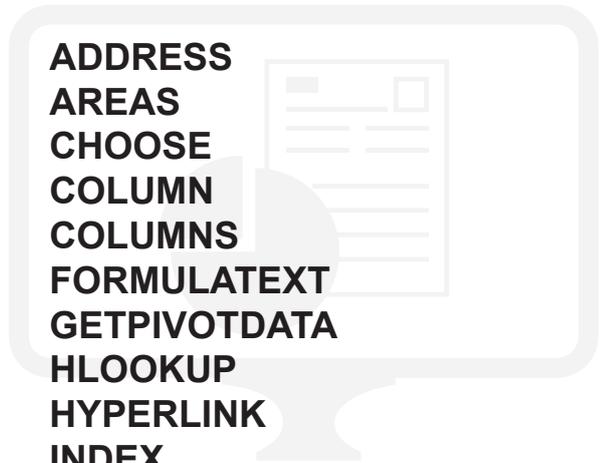
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Functions

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Using This Cheat Sheet

Function(required, optional) Sample Result Tip/Note

Description

Lookup and Reference Functions

ADDRESS(row_num, column_num, abs_num, a1, sheet_text)

A logical value that specifies the A1 or R1C1 reference style. In A1 style, columns are labeled alphabetically, and rows are labeled numerically. In R1C1 reference style, both columns and rows are labeled numerically. If the A1 argument is TRUE or omitted, the ADDRESS function returns an A1-style reference; if FALSE, the ADDRESS function returns an R1C1-style reference.

A numeric value that specifies the type of reference to return.

- 1 Absolute
- 2 Absolute row; relative column
- 3 Relative row; absolute column
- 4 Relative

A text value that specifies the name of the worksheet to be used as the external reference. For example, the formula =ADDRESS(1,1,1,,"Sheet2") returns, Sheet2!\$A\$1. If the sheet_text argument is omitted, no sheet name is used, and the address returned by the function refers to a cell on the current sheet.

A numeric value that specifies the column number to use in the cell reference.

A numeric value that specifies the row number to use in the cell reference.

=ADDRESS(4,5) → \$E\$4

=ADDRESS(4,5,2) → E\$4

=ADDRESS(4,5,2,FALSE) → R4C[5]

=ADDRESS(4,5,2,FALSE,"[Book1]Sheet1") → [Book1]Sheet1!R4C[5]

Returns a reference as text to a single cell in a worksheet. You can use the ADDRESS function to obtain the address of a cell in a worksheet, given specified row and column numbers.

AREAS(reference)

A reference to a cell or range of cells and can refer to multiple areas. If you want to specify several references as a single argument, then you must include extra sets of parentheses so that Microsoft Excel will not interpret the comma as a field separator.

=AREAS((C1:D4, C1)) → 2

=AREAS(C1:D4 C1) → 1

=AREAS((C1:D4,D3,E6:F9)) → 3

Returns the number of areas in a reference. An area is a range of contiguous cells or a single cell.

CHOOSE(index_num, value1, value2, ...)

Value 1 is required, subsequent values are optional. 1 to 254 value arguments from which CHOOSE selects a value or an action to perform based on index_num. The arguments can be numbers, cell references, defined names, formulas, functions, or text.

Specifies which value argument is selected. Index_num must be a number between 1 and 254, or a formula or reference to a cell containing a number between 1 and 254.

- If index_num is 1, CHOOSE returns value1; if it is 2, CHOOSE returns value2; and so on.
- If index_num is less than 1 or greater than the number of the last value in the list, CHOOSE returns the #VALUE! error value.
- If index_num is a fraction, it is truncated to the lowest integer before being used.

If index_num is an array, every value is evaluated when CHOOSE is evaluated.

The value arguments to CHOOSE can be range references as well as single values.

=CHOOSE(3,A1,A2,A3) → 15

=CHOOSE(2,B1,B2,B3) → Tuesday

=SUM(2,CHOOSE(1,A1,A2,A3)) → 7

	A	B
1	5	Monday
2	10	Tuesday
3	15	Wednesday

Use this function to select one of up to 254 values based on the index number.

COLUMN(reference)

The cell or range of cells for which you want to return the column number.

If the reference argument is omitted or refers to a range of cells, and if the COLUMN function is entered as a horizontal array formula, the COLUMN function returns the column numbers of reference as a horizontal array.

If the reference argument is a range of cells, and if the COLUMN function is not entered as a horizontal array formula, the COLUMN function returns the number of the leftmost column.

If the reference argument is omitted, it is assumed to be the reference of the cell in which the COLUMN function appears.

Column in which the formula appears

=COLUMN() → 2

=COLUMN(C18) → 3

=COLUMN(D4:E10) → 4

Third column

Leftmost column

Returns the column number of the given cell reference.

COLUMNS(array)

An array or array formula, or a reference to a range of cells for which you want the number of columns.

=COLUMNS(C2:E5) → 3

Number of columns in the reference C2:E5

Returns the number of columns in an array or reference.

FORMULATEXT(reference)

Excel 2013

A reference to a cell or range of cells.

- The FORMULATEXT function returns what is displayed in the formula bar if you select the referenced cell.
- The Reference argument can be to another worksheet or workbook.
- If the Reference argument is to another workbook that is not open, FORMULATEXT returns the #N/A error value.
- If the Reference argument is to an entire row or column, or to a range or defined name containing more than one cell, FORMULATEXT returns the value in the upper leftmost cell of the row, column, or range.
- In the following cases, FORMULATEXT returns the #N/A error value:
 - The cell used as the Reference argument does not contain a formula.
 - The formula in the cell is longer than 8192 characters.
 - The formula can't be displayed in the worksheet; for example, due to worksheet protection.
 - An external workbook that contains the formula is not open in Excel.

=FORMULATEXT(A1) → =TODAY()

	A
1	5/22/2019

=TODAY()

Returns the formula at the given reference as text

GETPIVOTDATA(data_field, pivot_table, field1, item1, field2, item2, ...)

1 to 126 pairs of field names and item names that describe the data that you want to retrieve. The pairs can be in any order. Field names and names for items other than dates and numbers are enclosed in quotation marks. For OLAP PivotTables, items can contain the source name of the dimension and also the source name of the item.

A reference to any cell, range of cells, or named range of cells in a PivotTable. This information is used to determine which PivotTable contains the data that you want to retrieve.

The name, enclosed in quotation marks, for the data field that contains the data that you want to retrieve.

You can quickly enter a simple GETPIVOTDATA formula by typing = (the equal sign) in the cell you want to return the value to and then clicking the cell in the PivotTable that contains the data you want to return.

- Calculated fields or items and custom calculations are included in GETPIVOTDATA calculations.
 - If pivot_table is a range that includes two or more PivotTables, data will be retrieved from whichever report was created most recently in the range.
 - If the field and item arguments describe a single cell, the value of that cell is returned regardless of whether it is a string, number, error, and so on.
 - If an item contains a date, the value must be expressed as a serial number or populated by using the DATE function so that the value will be retained if the worksheet is opened in a different locale. Times can be entered as decimal values or by using the TIME function.
 - If pivot_table is not a range in which a PivotTable is found, GETPIVOTDATA returns #REF!.
 - If the arguments do not describe a visible field, or if they include a report filter in which the filtered data is not displayed, GETPIVOTDATA returns the #REF! error value.

	A	B	C	D	E
1					
2					
3	Sum of Sales		Product		
4	Month	Salesperson	Beverages	Produce	Grand Total
5	June	John	\$3,522	\$10,201	\$3,723
6		Jane	\$8,725	\$7,889	\$16,614
7	June Total		\$12,247	\$18,090	\$30,337
8	July	John	\$5,594	\$7,265	\$12,859
9		Jane	\$5,461	\$668	\$6,129
10	July Total		\$11,055	\$7,933	\$18,988
11	Grand Total		\$23,302	\$26,023	\$49,325

=GETPIVOTDATA("Sales", \$A\$3) → \$49,325

The field name can be entered exactly as it looks on the sheet, or as its root (without "Sum of," "Count of," and so on).

=GETPIVOTDATA("Sum of Sales", \$A\$3) → \$49,325

=GETPIVOTDATA("Sales", \$A\$3, "Month", "June") → \$30,337

Returns the grand total for June

Returns data stored in a PivotTable. You can use GETPIVOTDATA to retrieve summary data from a PivotTable, provided the summary data is visible in the report.

HLOOKUP(lookup_value, table_array, row_index_num, range_lookup)

A table of information in which data is looked up. Use a reference to a range or a range name.

The row number in table_array from which the matching value will be returned. A row_index_num of 1 returns the first row value in table_array, a row_index_num of 2 returns the second row value in table_array, and so on.

A logical value that specifies whether you want HLOOKUP to find an exact match or an approximate match.

If TRUE or omitted, an approximate match is returned. In other words, if an exact match is not found, the next largest value that is less than lookup_value is returned. If FALSE, HLOOKUP will find an exact match. If one is not found, the error value #N/A is returned.

The value to be found in the first row of the table. Lookup_value can be a value, a reference, or a text string.

	A	B	C
1	Sales	Day	Name
2	10	Tuesday	Jane
3	15	Wednesday	George
4	20	Thursday	John

=HLOOKUP("Sales", A1:C4, 2, FALSE) → 10

Looks up "Sales" in row 1, and returns the value from row 2 that's in the same column (column A).

	A	B	C
1	Sales	Day	Name
2	10	Tuesday	Jane
3	15	Wednesday	George
4	20	Thursday	John

=HLOOKUP("Name", A1:C4, 4, FALSE) → John

Looks up "Name" in row 1, and returns the value from row 4 that's in the same column (column C).

Searches for a value in the top row of a table or an array of values, and then returns a value in the same column from a row you specify in the table or array. Use HLOOKUP when your comparison values are located in a row across the top of a table of data, and you want to look down a specified number of rows. Use VLOOKUP when your comparison values are located in a column to the left of the data you want to find.

HYPERLINK(link_location, friendly_name)

The jump text or numeric value that is displayed in the cell. Friendly_name is displayed in blue and is underlined. If friendly_name is omitted, the cell displays the link_location as the jump text.

The path and file name to the document to be opened. Link_location can refer to a place in a document — such as a specific cell or named range in an Excel worksheet or workbook, or to a bookmark in a Microsoft Word document. The path can be to a file that is stored on a hard disk drive. The path can also be a universal naming convention (UNC) path on a server (in Microsoft Excel for Windows) or a Uniform Resource Locator (URL) path on the Internet or an intranet.

Excel Online the HYPERLINK function is valid for web addresses (URLs) only. Link_location can be a text string enclosed in quotation marks or a reference to a cell that contains the link as a text string.

In the Excel desktop application, to select a cell that contains a hyperlink without jumping to the hyperlink destination, click the cell and hold the mouse button until the pointer becomes a cross Excel selection cursor, then release the mouse button. In Excel Online, select a cell by clicking it when the pointer is an arrow; jump to the hyperlink destination by clicking when the pointer is a pointing hand.

=HYPERLINK("http://www.cheaterjohn.com", "Click for CJ")

	A
1	Click for CJ

=HYPERLINK("\\Books\Excel\download.xlsx", "Open Report")

	A
1	Open Report

The HYPERLINK function creates a shortcut that jumps to another location in the current workbook, or opens a document stored on a network server, an intranet, or the Internet. When you click a cell that contains a HYPERLINK function, Excel jumps to the location listed, or opens the document you specified.

INDEX(array, row_num, column_num) Array Form

Selects the column in array from which to return a value. If column_num is omitted, row_num is required.

Selects the row in array from which to return a value. If row_num is omitted, column_num is required.

A range of cells or an array constant.

- If array contains only one row or column, the corresponding row_num or column_num argument is optional.
- If array has more than one row and more than one column, and only row_num or column_num is used, INDEX returns an array of the entire row or column in array.

Row Column
 =INDEX(A1:B2, 2, 1) → 10
 =INDEX(A1:B2, 2, 2) → Tuesday

	A	B
1	5	Monday
2	10	Tuesday

Returns the value of an element in a table or an array, selected by the row and column number indexes. Use the array form if the first argument to INDEX is an array constant.

INDEX(reference, row_num, column_num, area_num) Reference Form

The number of the row in reference from which to return a reference.

The number of the column in reference from which to return a reference.

Selects a range in reference from which to return the intersection of row_num and column_num. The first area selected or entered is numbered 1, the second is 2, and so on. If area_num is omitted, INDEX uses area 1.

A reference to one or more cell ranges.

- If you are entering a nonadjacent range for the reference, enclose reference in parentheses.
- If each area in reference contains only one row or column, the row_num or column_num argument, respectively, is optional. For example, for a single row reference, use INDEX(reference, column_num).

Row Column Area
 =INDEX((A1:B2, A2:B3), 2, 2, 2) → Mike

	A	B
1	5	John
2	10	Jane
3	15	Mike

Returns the reference of the cell at the intersection of a particular row and column. If the reference is made up of nonadjacent selections, you can pick the selection to look in.

INDIRECT(ref_text,a1)

A logical value that specifies what type of reference is contained in the cell ref_text.

- If a1 is TRUE or omitted, ref_text is interpreted as an A1-style reference.
- If a1 is FALSE, ref_text is interpreted as an R1C1-style reference.

A reference to a cell that contains an A1-style reference, an R1C1-style reference, a name defined as a reference, or a reference to a cell as a text string.

`=INDIRECT("B"&A2)` → Wednesday

	A	B
1	2	Monday
2	3	Tuesday
3	4	Wednesday

`=INDIRECT(A2&A3)` → Tuesday

	A	B
1	C	Monday
2	B	Tuesday
3	2	Wednesday

Returns the reference specified by a text string. References are immediately evaluated to display their contents. Use INDIRECT when you want to change the reference to a cell within a formula without changing the formula itself.

LOOKUP(lookup_value,lookup_vector,result_vector)

Vector Form

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.

A range that contains only one row or one column. The result_vector argument must be the same size as lookup_vector. It has to be the same size.

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

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.

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.

Looks up 15 in column A, and returns the value from column B that is in the same row.

	A	B
1	5	Monday
2	10	Tuesday
3	15	Wednesday
4	20	Thursday

`=LOOKUP(15,A1:A4,B1:B4)` → Wednesday

Use this form of LOOKUP to search one row or one column for a value. Use the vector form when you want to specify the range that contains the values that you want to match.

LOOKUP(lookup_value,array)

Array Form

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.

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.

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.

It is strongly recommended to use VLOOKUP or HLOOKUP instead of the array form. The array form is provided for compatibility with other spreadsheet programs, but its functionality is limited.

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.

MATCH(lookup_value,lookup_array,match_type)

The range of cells being searched.

The number -1, 0, or 1. The match_type argument specifies how Excel matches lookup_value with values in lookup_array. The default value for this argument is 1.

1 / 0 MATCH finds the largest value that is less than or equal to lookup_value. The values in the lookup_array argument must be placed in ascending order, for example: ...-2, -1, 0, 1, 2, ..., A-Z, FALSE, TRUE.

0 MATCH finds the first value that is exactly equal to lookup_value. The values in the lookup_array argument can be in any order.

-1 MATCH finds the smallest value that is greater than or equal to lookup_value. The values in the lookup_array argument must be placed in descending order, for example: TRUE, FALSE, Z-A, ...2, 1, 0, -1, -2, ..., and so on.

The value that you want to match in lookup_array. For example, when you look up someone's number in a telephone book, you are using the person's name as the lookup value, but the telephone number is the value you want.

The lookup_value argument can be a value (number, text, or logical value) or a cell reference to a number, text, or logical value.

	A	B	C
1	5	Monday	John
2	10	Tuesday	Jane
3	15	Wednesday	George
4	20	Thursday	Robert

`=MATCH("Robert",C1:C4)` → 4

`=MATCH("Robert",C1:C4,-1)` → #N/A

Returns an error because the values in the range C1:C4 are not in descending order.

Use MATCH instead of one of the LOOKUP functions when you need the position of an item in a range instead of the item itself. For example, you might use the MATCH function to provide a value for the row_num argument of the INDEX function.

MATCH returns the position of the matched value within lookup_array, not the value itself. For example, MATCH("b",{"a","b","c"},0) returns 2, which is the relative position of "b" within the array {"a","b","c"}.

MATCH does not distinguish between uppercase and lowercase letters when matching text values.

If MATCH is unsuccessful in finding a match, it returns the #N/A error value.

If match_type is 0 and lookup_value is a text string, you can use the wildcard characters — the question mark (?) and asterisk (*) — in the lookup_value argument. A question mark matches any single character; an asterisk matches any sequence of characters. If you want to find an actual question mark or asterisk, type a tilde (~) before the character.

Use this function to search for an item in a range of cells, and then return the relative position of that item in the range.

OFFSET(reference,rows,cols,height,width)

The height, in number of rows, that you want the returned reference to be. Height must be a positive number.

The width, in number of columns, that you want the returned reference to be. Width must be a positive number.

The number of columns, to the left or right, that you want the upper-left cell of the result to refer to. Using 5 as the cols argument specifies that the upper-left cell in the reference is five columns to the right of reference. Cols can be positive (which means to the right of the starting reference) or negative (which means to the left of the starting reference).

The number of rows, up or down, that you want the upper-left cell to refer to. Using 5 as the rows argument specifies that the upper-left cell in the reference is five rows below reference. Rows can be positive (which means below the starting reference) or negative (which means above the starting reference).

The reference from which you want to base the offset. Reference must refer to a cell or range of adjacent cells; otherwise, OFFSET returns the #VALUE! error value.

If height or width is omitted, it is assumed to be the same height or width as reference.

`=OFFSET(B3,-1,-1)` → 10

`=OFFSET(B3,1,-1)` → 20

	A	B	C
1	5	John	ZZ
2	10	Jane	YY
3	15	Mike	XX
4	20	Don	QQ

Returns a reference to a range that is a specified number of rows and columns from a cell or range of cells. The reference that is returned can be a single cell or a range of cells. You can specify the number of rows and the number of columns to be returned.

ROW(reference)

The cell or range of cells for which you want the row number.

- If reference is omitted, it is assumed to be the reference of the cell in which the ROW function appears.
- If reference is a range of cells, and if ROW is entered as a vertical array, ROW returns the row numbers of reference as a vertical array.
- Reference cannot refer to multiple areas.

=ROW(G8) → 8
=ROW(A5) → 5

	A	B
1		
2		2

=ROW()

Returns the row number of a reference.

ROWS(array)

An array, an array formula, or a reference to a range of cells for which you want the number of rows.

=ROWS(A1:B4) → 4
=ROWS(C4:D9) → 6

A	B	C	D

Returns the row number of a reference.

RTD(ProgID,server,topic1,topic2,...)

1 to 253 parameters that together represent a unique piece of real-time data.

Name of the server where the add-in should be run. If there is no server, and the program is run locally, leave the argument blank. Otherwise, enter quotation marks (") around the server name. When using RTD within Visual Basic for Applications (VBA), double quotation marks or the VBA NullString property are required for the server, even if the server is running locally.

The name of the ProgID of a registered COM automation add-in that has been installed on the local computer. Enclose the name in quotation marks.

The RTD COM automation add-in must be created and registered on a local computer. If you haven't installed a real-time data server, you will get an error message in a cell when you try to use the RTD function.

When the server has been programmed to continually update results, unlike other functions, RTD formulas will change when Microsoft Excel is in automatic calculation mode.

The RTD COM automation add-in must be created and registered on a local computer. If you haven't installed a real-time data server, the RTD function returns the #NAME? error message in a cell when you try to use the RTD function.

=RTD("extremesheets.rtd","Cheater_John","Excel") → #NAME?

Retrieves real-time data from a program that supports COM automation.

TRANSPOSE(array)

An array or range of cells on a worksheet that you want to transpose. The transpose of an array is created by using the first row of the array as the first column of the new array, the second row of the array as the second column of the new array, and so on.

In Excel Online, you can view array formulas if the workbook you open already has them. But you won't be able to create an array formula in this version of Excel by pressing Ctrl+Shift+Enter, which inserts the formula between a pair of opening and closing braces {}. Manually entering these braces won't turn the formula into an array formula either.

	A	B	C	D
1	5	Mon		
2	10	Tue		
3	15	Wed		
4				
5	=TRANSPOSE(A1:B3)			
6				

Don't press Enter
Press Ctrl + Shift + Enter

=TRANSPOSE(A1:B3) [Ctrl] [Shift] [Enter]

	A	B	C	D
1	5	Mon		
2	10	Tue		
3	15	Wed		
4				
5	5	10	15	
6	Mon	Tue	Wed	

Result

You don't have to type the range by hand. After typing =TRANSPOSE(you can use your mouse to select the range. Just click and drag from the beginning of the range to the end. But remember: press CTRL+SHIFT+ENTER when you are done, not ENTER by itself.

Need text and cell formatting to be transposed as well? Try copying, pasting, and using the Transpose option. But keep in mind that this creates duplicates. So if your original cells change, the copies will not get updated.

The TRANSPOSE function returns a vertical range of cells as a horizontal range, or vice versa. The TRANSPOSE function must be entered as an array formula in a range that has the same number of rows and columns, respectively, as the source range has columns and rows. Use TRANSPOSE to shift the vertical and horizontal orientation of an array or range on a worksheet.

Returns the transpose of an array. Sometimes you need to switch or rotate cells. You can do this by copying, pasting, and using the Transpose option. But doing that creates duplicated data. If you don't want that, you can type a formula instead using the TRANSPOSE function.

VLOOKUP(lookup_value,table_array,col_index_num,range_lookup)

The range of cells in which the VLOOKUP will search for the lookup_value and the return value.

The column number (starting with 1 for the left-most column of table-array) that contains the return value.

A logical value that specifies whether you want VLOOKUP to find an approximate or an exact match:

- TRUE assumes the first column in the table is sorted either numerically or alphabetically, and will then search for the closest value. This is the default method if you don't specify one.
- FALSE searches for the exact value in the first column.

The value you want to look up. The value you want to look up must be in the first column of the range of cells you specify in table-array.

For example, if table-array spans cells B2:D7, then your lookup_value must be in column B.

	A	B	C
1	5	Monday	John
2	10	Tuesday	Jane
3	15	Wednesday	George
4	20	Thursday	Robert

=VLOOKUP(10,A1:C4,3,FALSE) → Jane

Looks for an exact match (FALSE) of the name for 10 (lookup_value) in the third column (column C) in the A1:C4 range, and returns Jane.

	A	B	C
1	5	Monday	John
2	10	Tuesday	Jane
3	15	Wednesday	George
4	20	Thursday	Robert

=IF(VLOOKUP(5,A1:C4,3,FALSE)="John","OK","NOT OK") → OK

IF checks to see if VLOOKUP returns "John" corresponding to 5 (lookup_value) in the third column (column C) in the A1:C4 range. Because it is "John", the IF condition is true, and "OK" is displayed.

Use VLOOKUP, one of the lookup and reference functions, when you need to find things in a table or a range by row.



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