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Plain & Simple

Microsoft Excel 2013



Curtis D. Frye

Learn the simplest ways to get things done with Microsoft Excel 2013!

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- Filter, sort, summarize, and crunch your numbers
- Use formulas and functions to do the heavy lifting
- Bring data to life with charts and graphics
- Share data between Microsoft Office documents
- Work as a team, online, and in the cloud

Here's HOW You'll Learn It

- Jump in wherever you need answers
- Follow easy *steps* and *screenshots* to see exactly what to do
- Get handy *tips* for new techniques and shortcuts
- Use *Try This!* exercises to apply what you learn right away

Microsoft Office/Microsoft Excel





Microsoft

Excel 2013 Plain & Simple

Curtis D. Frye

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Using formulas and functions

Microsoft Excel 2013 workbooks let you do much more than simply store and organize your data. One important task that you can perform in Excel is to summarize the values in related cells. Whether those cells represent the sales for a day at your store, the returns from your personal investments, or your times in bicycle races, you can find the total or average of the values, identify the minimum or maximum value in a group, or perform dozens of other calculations on your data. Many times you can't access the information that you want without referencing more than one cell; it's also often true that you'll use the data in the same group of cells in more than one calculation. Excel makes it easy to reference a number of cells at once, letting you build your calculations quickly.

6

In this section:

- Understanding formulas and cell references in Excel
- Creating and editing formulas
- Creating, editing, and deleting named ranges
- Using named ranges in formulas
- Summarizing the values in groups of cells
- Creating formulas that reference cells in other workbooks
- Analyzing data using the Quick Analysis Lens
- Summing with subtotals and grand totals
- Exploring the Excel function library
- Creating conditional functions
- Exploring new functions in Excel 2013

Creating simple cell formulas

Building calculations in Excel is pretty straightforward. If you want to find the sum of the values in two cells, you just type an equal sign (=), the reference of the first cell, a plus sign (+), and

the reference of the second cell. The formula that you enter appears on the formula bar, where you can examine and edit it.

Build a formula

- 1 Click the cell in which you want to enter a formula.
- 2 Type =.
- 3 Type the expression representing the calculation that you want to perform.
- 4 Press Enter.

	A	B	C	D	E	F	G	H
1								
2			January					
3			Hour					
4	Day		5:00 AM	6:00 AM	7:00 AM	8:00 AM		
5	1		2117	1989	1544	2408	=SUM(C5:F5)	
6	2		1128	1109	1354	1115		
7	3		1228	1350	1662	1758		
8	4		2295	2496	1964	1793		
9	5		1866	1631	1631	1136		
10	6		1234	1536	2348	1208		
11	7		1608	1825	1851	1037		
12								

Edit a formula

- 1 Click the cell that you want to edit.
- 2 Select the part of the formula that you want to edit in the formula bar.
- 3 Make any changes that you want.
- 4 Press Enter.

	A	B	C	D	E	F	G	H
1								
2			January					
3			Hour					
4	Day		5:00 AM	6:00 AM	7:00 AM	8:00 AM		
5	1		2117	1989	1544	2408	=SUM(C5:F5)	
6	2		1128	1109	1354	1115		
7	3		1228	1350	1662	1758		
8	4		2295	2496	1964	1793		
9	5		1866	1631	1631	1136		
10	6		1234	1536	2348	1208		
11	7		1608	1825	1851	1037		
12								



TRY THIS Click the Excel Help button. Then, in the Excel Help dialog box, type common formulas in the Search box, press Enter, and click Examples Of Commonly Used Formulas in the list of available topics. The Help file that appears has quite a few examples of formulas that you might want to create.



CAUTION Be sure that there's no space before the equal sign in your formula. If there is, Excel interprets the cell's contents as text, not as a formula.

Understanding formulas and cell references in Excel

When you build a formula, you need to identify the worksheet cells that provide the values for the formula and the operations that you want to perform on those values. To identify a cell, you give its cell a reference. The first cell in the first column is cell A1, meaning column A, row 1. If you examine a formula, you sometimes see a cell reference written as \$A\$1, rather than just A1. The difference is that cell references written with the dollar signs are absolute references, meaning that the reference doesn't change when the formula is copied to another cell. Cell references written without the dollar signs are relative references, which do change when the formula with the reference is copied to another cell.

The benefit of relative references is that you can write a formula once, copy it to as many other cells as you like, and have Excel update the formulas to reflect the new cells. For example, consider the worksheet in the following figure, which tracks the number of hourly package pickups for a month.

The cells in column P contain formulas that calculate the sum of the hourly pickup values in column C through column O. The formula in cell P5, =SUM(C5:O5), finds the sum of cells in row 5, corresponding to January 1. When you copy the formula from cell P5 to cell P6, the formula changes to =SUM(C6:O6). Excel notices that you copied the formula to a new row and assumes that you want the formula to work on that data. Had you written the formula as =SUM(\$C\$5:\$O\$5), however, Excel would notice that the formula used absolute references and would copy the formula as =SUM(\$C\$5:\$O\$5).

If you want to reference a value from a cell in another workbook, you can do that. Excel uses 3D references, which means

that any cell in any workbook can be described by three pieces of information: the name of the workbook, the name of the worksheet, and the cell reference.

Here's the reference for cell Q38 on the January worksheet in the Y2013ByMonth workbook:

[Y2013ByMonth.xlsx]January!\$Q\$38

The good news is that you don't need to remember how to create these references yourself. If you want to use a cell from another workbook in a formula, all that you need to do is click the cell where you want to use the value, start the formula, and then click the cell in the other workbook. Excel fills in the reference for you.

=SUM(C5:O5)									
	H	I	J	K	L	M	N	O	P
9 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	
1921	1505	1687	2391	1486	2075	1626	1326	1612	23,687
2277	1432	1559	2103	2493	1317	1519	1836	1439	20,681
1892	1710	1709	1889	1495	1405	1513	1493	1997	21,101
1138	1592	1811	1479	2339	1839	2416	1838	1403	24,403
1959	2275	2348	1355	1346	1947	2098	1163	1410	22,165
2109	2382	2487	2464	1755	2086	1261	1989	2338	25,197
2259	2091	2211	1195	1395	1727	1171	1753	1029	21,152
2243	1266	1746	2243	1385	1414	1675	2274	1765	22,662
1942	1639	2018	2468	2247	2493	1827	2261	1861	26,294
2278	1044	1936	1233	1677	1988	1690	1649	1784	21,266
2434	2181	1721	2235	1534	1407	1187	1581	2355	21,915
2426	1514	1526	1086	1478	1943	1028	1988	1892	22,061
1459	1703	1706	2083	2305	2348	1662	2218	2257	25,764
1164	2115	1469	1629	2398	1970	1665	1343	1471	22,357

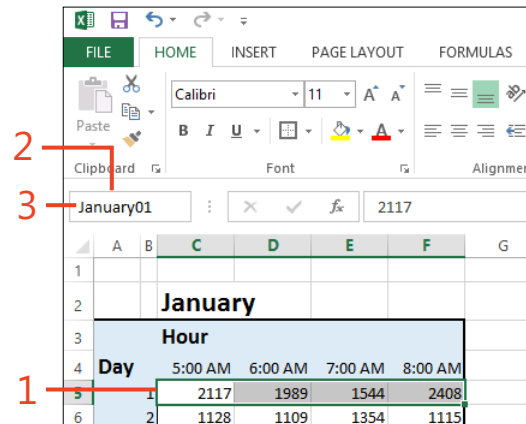
Assigning names to groups of cells

When you work with large amounts of data, it's easy to lose track of which cells contain which data. In addition, it can be difficult to locate data in workbooks that you didn't create. Although you might always store product prices in one worksheet column, there's no guarantee that your colleagues will follow the same pattern! One way to prevent confusion is to

define a named range for any cell group that holds specific information. For example, in a worksheet with customer order data, you can define the Totals named range to represent the cells in which the total for each order is stored. After you define the named range, you can display its contents, rename it, or delete it.

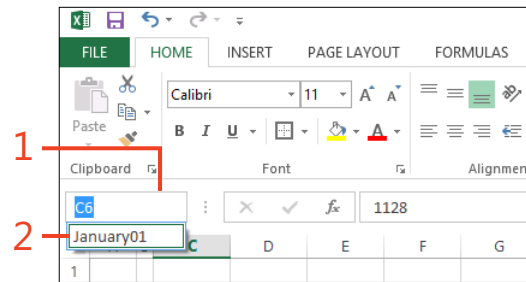
Create a named range

- 1 Select the cells that you want to name.
- 2 Click the Name Box on the formula bar.
- 3 Type the name that you want for the range.
- 4 Press Enter.



Go to a named range

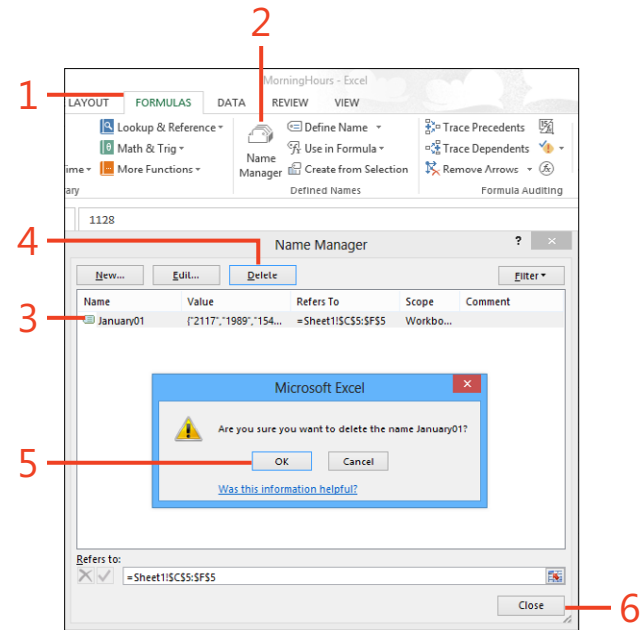
- 1 Click the Name Box down arrow.
- 2 Click the range to which you want to go.



SEE ALSO For information about selecting cells from several parts of the same worksheet, see "Select a noncontiguous group of cells" on page 40.

Delete a named range

- 1 Click the Formulas tab.
- 2 Click Name Manager.
- 3 Click the named range that you want to delete.
- 4 Click Delete.
- 5 Click OK to clear the confirmation dialog box that appears.
- 6 Click Close.

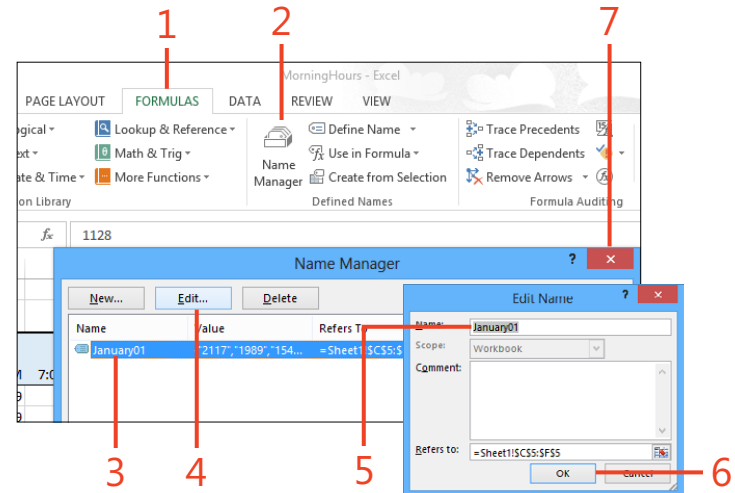


Rename a named range

- 1 Click the Formulas tab.
- 2 Click Name Manager.
- 3 Click the named range that you want to rename.
- 4 Click Edit.
- 5 Type a new name for the range.
- 6 Click OK.
- 7 Close the Name Manager dialog box.



CAUTION The name that you give your named range shouldn't duplicate a potential cell address. For example, typing DAY1 in a formula would reference cell DAY1. To avoid this problem, either ensure that your ranges have names that begin with at least four letters (the last column is XFD) or use an underscore to separate the letters from the rest of the name. The name DAY1 isn't valid, but the name DAY_1 is.



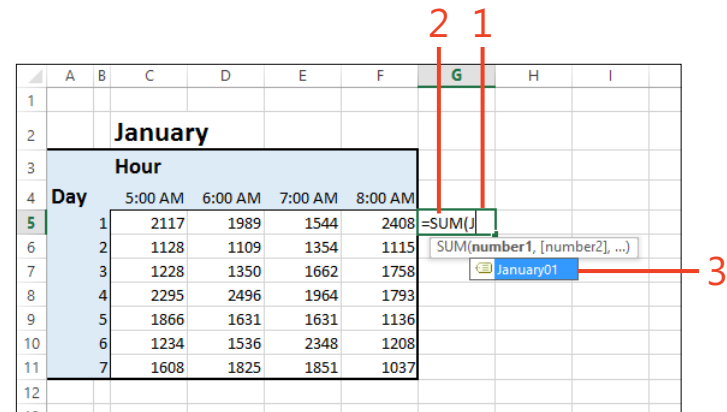
Using names in formulas

When you define a named range, you create a shortcut that you can use to refer to a group of cells. A great way to use named ranges is in formulas. Instead of entering the references of every cell that you want to use in your calculation, you can type the name of the range. When you reference named ranges in formulas, your formulas are shorter and easier to understand. Rather than seeing a series of cell references that you need to examine, you and your colleagues can rely on the named ranges to understand the goal of a calculation.

Create a formula with a named range

- 1 Click the cell in which you want to enter a formula.
- 2 Type = followed by the formula that you want. When you want to use a range that has a name, start typing the name instead of the cell address.
- 3 Click the named range in the Formula AutoComplete list that appears.
- 4 Press Enter.

Excel 2013 further streamlines formula creation with Formula AutoComplete. Remember that when you start typing a value into a cell, Excel examines the previous values in that column and offers to let you complete the entry by pressing Tab or Enter. Now, when you start typing a named range's name into a formula, Excel recognizes that you might be entering a named range and displays a list of named ranges (as well as built-in functions) available in the active workbook. All you have to do is click the named range that you want, and it's included in the formula immediately.



TIP If you change the name of a range of cells, Excel automatically makes the name change in every one of your formulas.

Creating a formula that references values in an Excel table

In previous versions of Excel, it was a challenge to create named ranges that included an entire column in a data list. Suppose that you created a named range that encompassed the existing cells in a data column, such as the cell range A3:A44; if you added data to cell A45, you would need to change the cells in the named range's definition. Yes, there is a complicated way to

create a dynamic named range in Excel 2003 and earlier versions, but you don't have to worry about it in Excel 2013. All you need to do is create an Excel table (as shown in "Creating an Excel table" on page 52) and select the headers of the columns that contain the data that you want to summarize in your formulas.

Create a formula with an Excel table reference

- 1 Click the cell in which you want to create the formula.
- 2 Type =, followed by the function to include in the formula and a left parenthesis; for example, =SUM(would be a valid way to start.
- 3 Type the name of the Excel table.
- 4 Type a left square bracket.
- 5 Click the name of the table column.
- 6 Type a right square bracket, a right parenthesis, and press Enter.

	A	B	C	D	E	F
1						
2		Customer	Revenue			
3		Fabrikam	\$ 2,964,370			
4		Contoso	\$ 1,592,370			
5		Adventure Works	\$ 2,130,101			
6		Northwind Traders	\$ 17,611,434			
7						
8		Total	=SUM(RevenueSummary[
9						
10						
11						
12						
13						
14						
15						
16						



TIP To include more than one table column in a formula, either hold down the Shift key, select the column header of the first column to use in the formula, and then click another column to select everything in the span between the two columns, or hold down the Ctrl key and click the other column headers that you want to use. Excel includes the references in the formula.

Creating formulas that reference cells in other workbooks

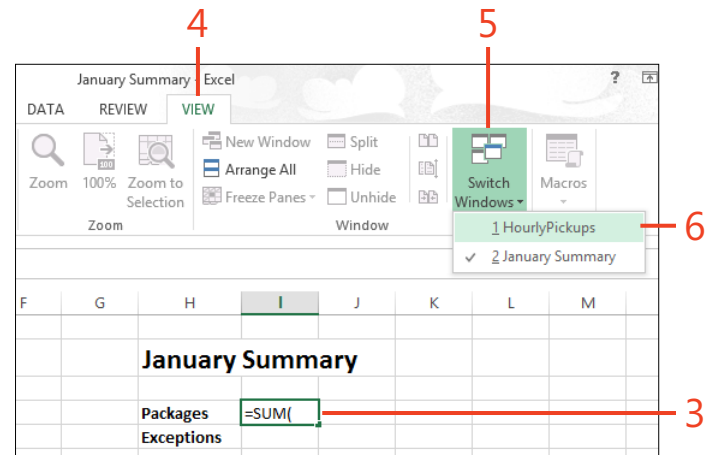
One of the strengths of Excel is that you aren't limited to using cells from the current workbook in your formulas. If you want, you can use data from any other workbook in your calculations. For example, you might have a workbook in which you track monthly advertising sales for your newsletter. If you want to create a new workbook to summarize all income and expenses for your publication, you can do so. By letting you create formulas that reference cells from more than one workbook, Excel makes it easy for you to organize your workbooks so that each

workbook holds data about a specific subject. Not only can you find the data easily, you can reference it anywhere else.

After you create links between workbooks, you can have Excel update your calculation if the data in the linked cell changes. You can also change the cell to which you linked, or if the workbook with the cell to which you linked has been moved or deleted, you can delete the link and have Excel store the last value from the calculation.

Use cells from other workbooks in a formula

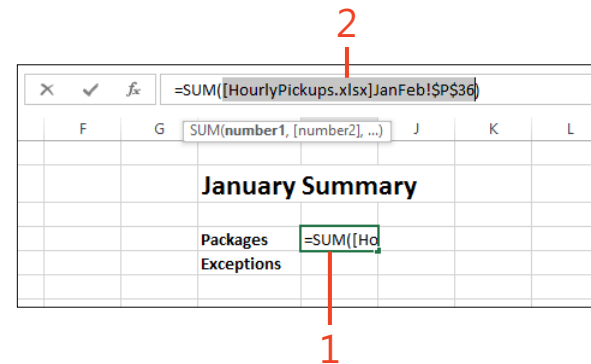
- 1 Open the workbook with the cell that you want to reference in your formula.
- 2 Display the workbook where you want to create the formula.
- 3 In the workbook cell where you want to create the formula, type = followed by the first part of the formula.
- 4 Click the View tab.
- 5 Click Switch Windows.
- 6 Click the name of the workbook with the cell that you want to include in the formula.
- 7 Select the cells with the values that you want to use in the formula.
- 8 Press Enter.



33	1495	1423	2190	2170	2282	1920	1743	24,118	
34	1581	1431	2024	1423	1972	1674	1700	21,501	
35	1845	2108	1597	1846	1737	2024	1914	22,809	
36								705,339	
37									

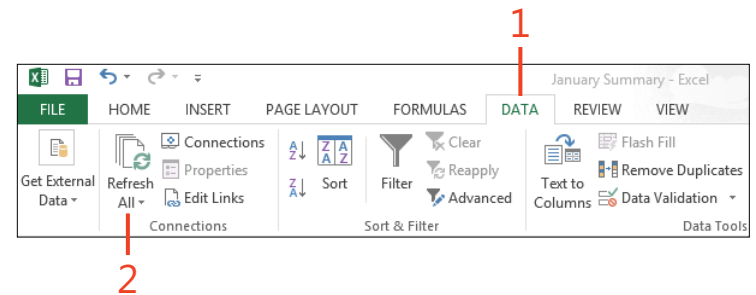
Break links to other workbooks and convert to values

- 1 Click the cell that contains the formula that you want to edit.
- 2 Select the part of the formula representing the link that you want to break.
- 3 Press F9.
- 4 Press Enter.



Refresh links

- 1 Click the Data tab.
- 2 In the Connections group, click Refresh All.



TIP You can use the techniques here to link to a cell on a different worksheet in the same workbook. Just create the formula, and when you want to put in the cell reference, move to the target worksheet and click the appropriate cell.

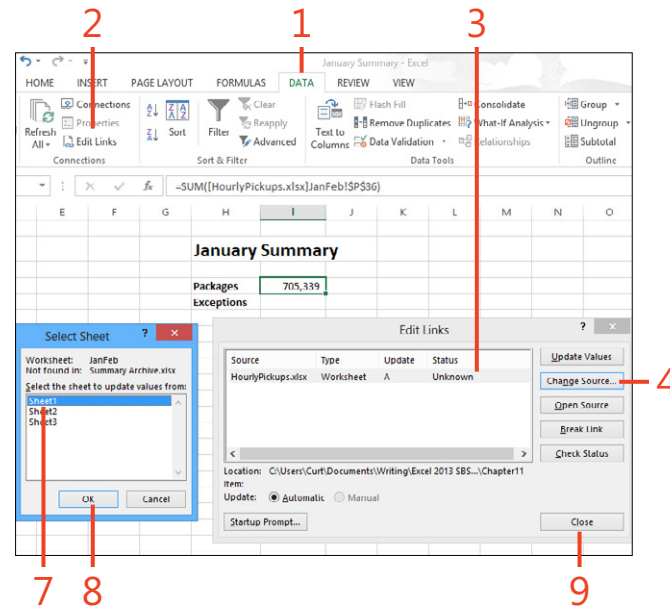
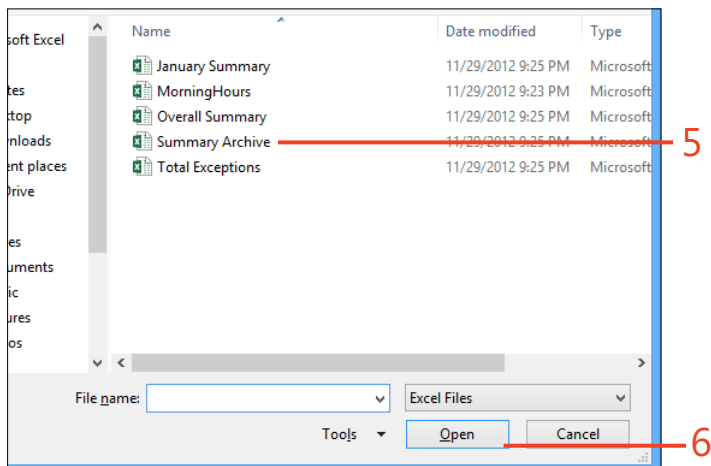
Changing links to different workbooks


If you create a link to a value in another workbook, you might find that the other workbook's structure changes. You can update the properties of a link by using the Edit Links dialog

box, which you can open using the controls on the Data tab of the ribbon.

Change links to different workbooks

- 1 Click the Data tab.
- 2 In the Connections group, click Edit Links.
- 3 Click the link that you want to change.
- 4 Click Change Source.
- 5 Click the workbook with the new cell to which you want to link.
- 6 Click Open.
- 7 Select the sheet from which to update values.
- 8 Click OK.
- 9 Click Close.



 **TIP** Under certain circumstances, such as when the new target workbook contains a single worksheet, the option to select a sheet might not appear.

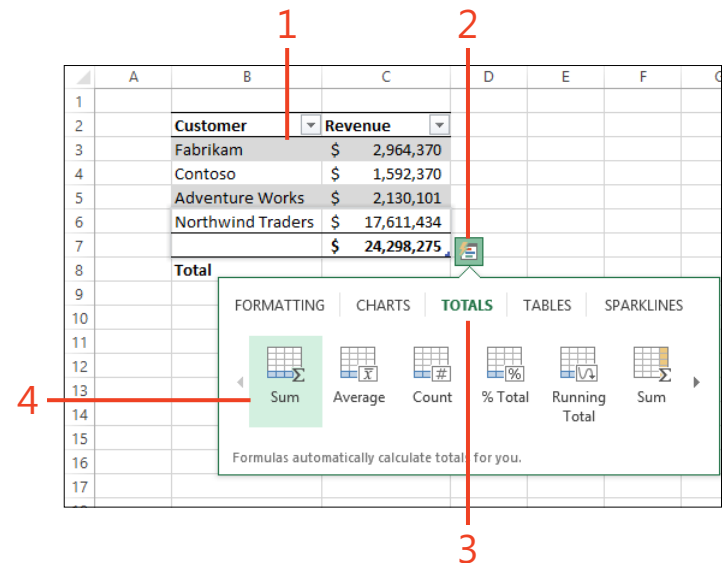
Analyzing data by using the Quick Analysis lens

One of the refinements in Excel 2013 is the Quick Analysis lens, which brings the most commonly used formatting, charting, and summary tools into one convenient location. You have a wide range of tools available to you, including the ability to create an Excel table or PivotTable, insert a chart, or add conditional

formatting. You can also add total columns and rows to your data range. For example, you can click Totals and then Running Total for columns, identified by the icon labeled Running Total and the yellow column at the right edge of the button, to add a column that calculates the running total for each row.

Summarize data by using Quick Analysis

- 1 Select the cell range that you want to summarize.
- 2 Click the Quick Analysis action button to display the Quick Analysis tools available to you.
- 3 Click the label representing the category of tools that you want to use.
- 4 Click the button representing the summary that you want to create.



TIP You can add one summary column and one summary row to each data range. If you select a new summary column or row when one exists, Excel displays a confirmation dialog box to verify that you want to replace the existing summary. When you click Yes, Excel makes the change.



SEE ALSO For information about creating a chart by using the Quick Analysis lens, see Section 12, "Summarizing data visually using charts."

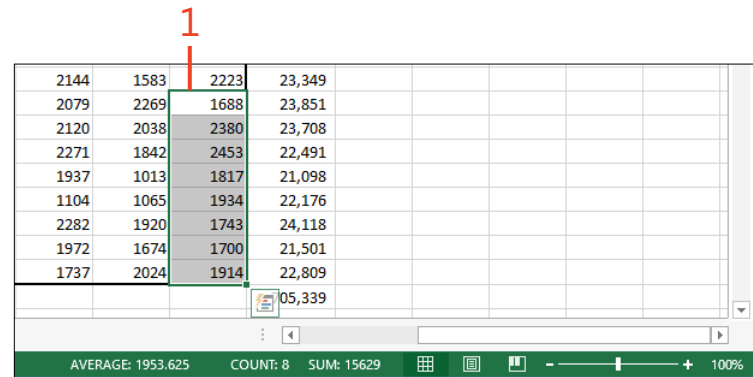
Summing a group of cells without using a formula

Sometimes, such as when you're entering data into a worksheet or you're curious to find out the sum or average of the values in a few cells, it's too much work to find a blank cell and write a formula to calculate the sum or average for the cells. Rather than make you create a separate formula, Excel counts the number of cells selected, calculates a running total and average

for the currently selected cells, and displays the results on the status bar. Finding the sum, average, and count of the values in the selected cells are the most commonly used operations, so Excel calculates those values by default. However, you can choose from several other operations, or you can even tell Excel not to calculate a running total for any selected cells.

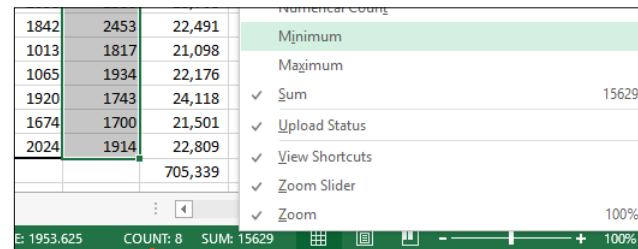
Summarize data in a group of cells

- 1 Select the cells that you want to summarize to have the summary appear on the status bar.



Find the total, average, or other values of cell data

- 1 Right-click the status bar, and choose the summary operations that you want from the shortcut menu.



TIP Active summary operations are checked on the shortcut menu. Clicking a checked summary operation turns off that operation.

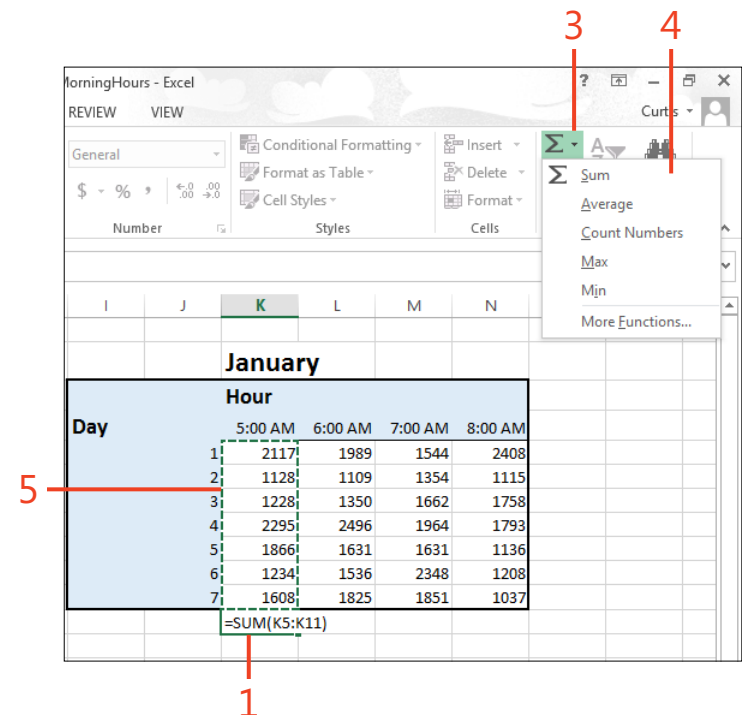
Creating a summary formula

After you enter data into a worksheet, you can create formulas to summarize the values and display the result of the calculation. You can summarize the values in a group of cells in many ways: You can find the total or average of the cell values, identify the maximum or minimum value in the group, or simply count the number of cells containing values. You can create these formulas by clicking the cell below or to the right of the

cells that you want to summarize, displaying either the Home tab or the Formulas tab, and clicking the AutoSum button. (The button appears on both tabs.) Clicking the AutoSum button creates a SUM formula, which finds the arithmetic sum of the values, but you can choose other calculations by clicking the AutoSum button's down arrow. After you create the formula that you want, you can use the result in other calculations.

Create an AutoSum formula

- 1 Click the cell where you want the summary value to appear.
- 2 Click the Home tab.
- 3 Click the AutoSum down arrow.
- 4 Click the AutoSum function that you want to use.
- 5 If necessary, select the cells with the data that you want to summarize.
- 6 Press Enter.



SEE ALSO For information about finding a running total for a group of cells without creating a formula, see "Summing a group of cells without using a formula" on the previous page.

Summing with subtotals and grand totals

You frequently need to organize the data in an Excel worksheet by one or more criteria. For example, you might have a worksheet in which you list yearly sales for each product that you offer, with the products broken down by category. If your data is organized this way, you can have Excel calculate a subtotal

for each category of products. When you create a subtotal, you identify the cells with the values to be calculated and the cells that identify the change from one category to the next. Excel updates the subtotal and grand total for you if the value of any cell changes.

Create a subtotal

- 1 Click any cell in the range that you want to subtotal.
- 2 Click the Data tab.
- 3 In the Outline group, click Subtotal.
- 4 Click the At Each Change In down arrow.
- 5 Click the value on which you want to base the subtotals.
- 6 Click the Use Function down arrow.
- 7 Click the subtotal function that you want to use.
- 8 Select which columns should have subtotals calculated.
- 9 Click OK.

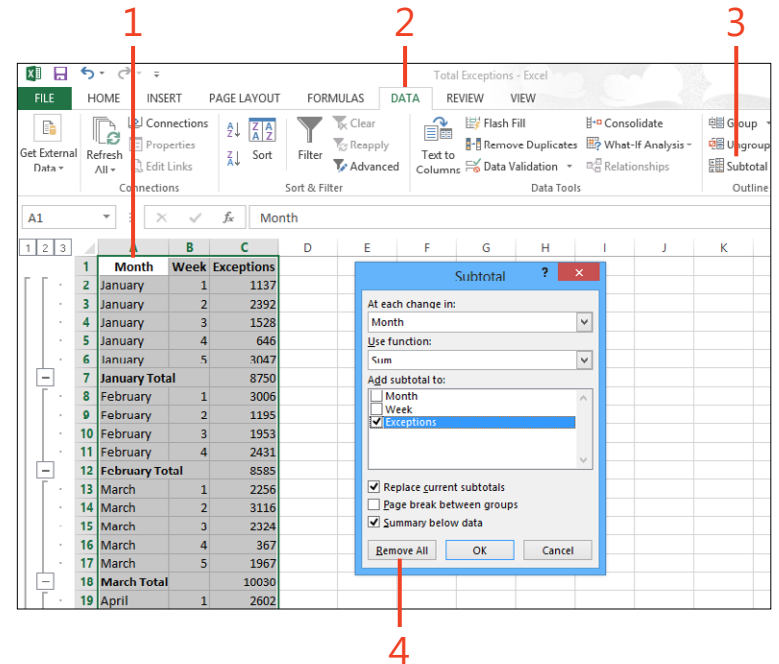
The screenshot shows the Excel interface with the 'Subtotal' dialog box open. The worksheet data is as follows:

Month	Week	Exceptions
January	1	1137
January	2	2392
January	3	1528
January	4	646
January	5	3047
February	1	3006
February	2	1195
February	3	1953
February	4	2431
March	1	2256
March	2	3116
March	3	2324
March	4	367
March	5	1967

The 'Subtotal' dialog box is configured with 'Month' as the change criterion, 'Sum' as the function, and 'Exceptions' as the column to subtotal. The 'Replace current subtotals' and 'Summary below data' options are checked.

Remove a subtotal

- 1 Click any cell in the subtotaled range.
- 2 Click the Data tab.
- 3 Click Subtotal.
- 4 Click Remove All.



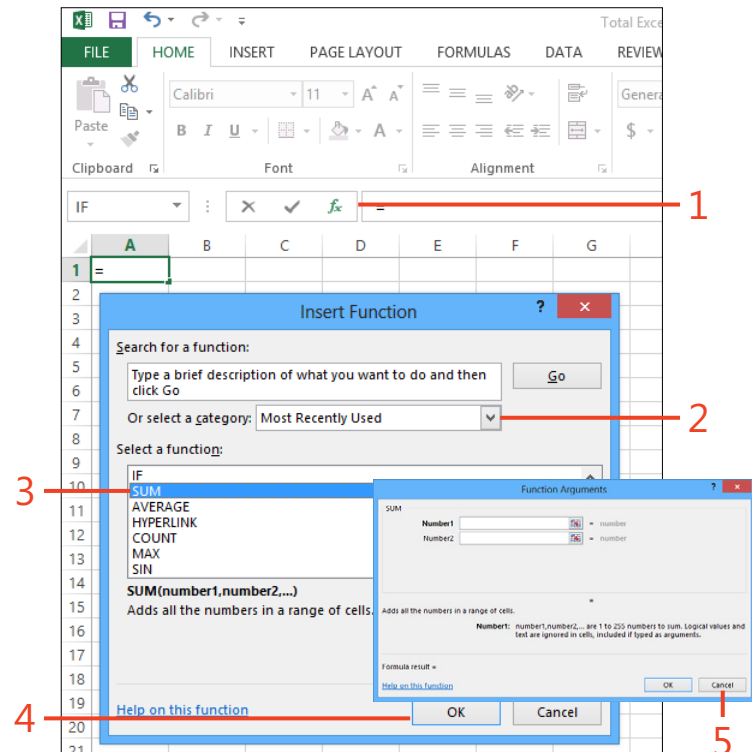
Exploring the Excel function library

You can create dozens of different functions in Excel. You can use Excel functions to determine mortgage payments, perform scientific calculations, or find the square root of a number. The best way to become familiar with the formulas available in Excel is to display the Insert Function dialog box and move through the listed functions, clicking the ones that look interesting. When you click a function, its description appears at the bottom of the dialog box.

List functions available from the Excel library

- 1 Click the Insert Function button on the formula bar.
- 2 Display the drop-down list, and click the function category that you want to view.
- 3 Click the function that you want to examine.
- 4 Click OK.
- 5 Click Cancel to close the Function Arguments dialog box.

Another way to get information about a function is to view the ScreenTip that appears next to the function. If you double-click a cell with a function, a ScreenTip with the function's structure and expected values appears below it. Clicking an element of the structure points to the cell or cells providing that value.



Use function ScreenTips

- 1 Double-click a cell that contains a formula.
- 2 In the ScreenTip, click the function name to open the Help file entry for the function.
- 3 Click the Close button to close the Help window.
- 4 Click an argument to select the cells to which it refers.

The screenshot shows an Excel spreadsheet with the following data:

Month	Exceptions
January	14,794
February	17,775
March	17,155
April	14,678
May	16,006
June	17,940
July	15,579
August	16,437
September	14,193
October	13,320
November	17,410
December	13,114
Total	=SUM(B2:B13)

The function screen tip for the SUM function is displayed, showing the following content:

Excel Help

SUM function

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

Description

The SUM function adds all the numbers that you specify as arguments. Each argument can be a range, a cell reference, an array, a constant, a formula, or the result from another function. For example, SUM(A1:A5) adds all the numbers that are contained in cells A1 through A5. For another example, SUM(A1, A3, A5) adds the numbers that are contained in cells A1, A3, and A5.

Syntax

SUM(number1, [number2], ...)

Red arrows and numbers 1 through 4 indicate the steps: 1 points to the formula cell, 2 points to the SUM function name in the screen tip, 3 points to the close button in the screen tip, and 4 points to the first argument 'number1' in the syntax.

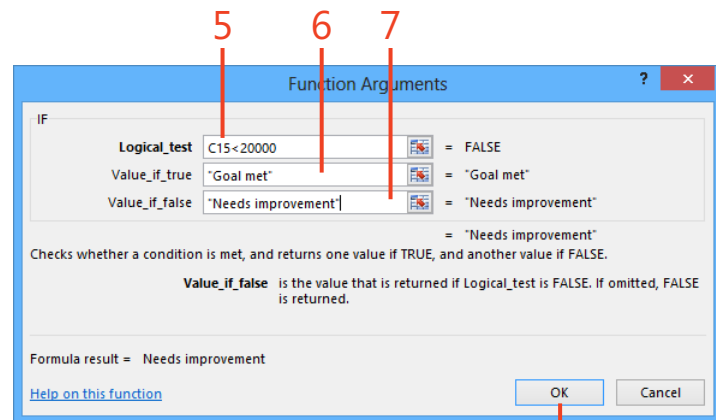
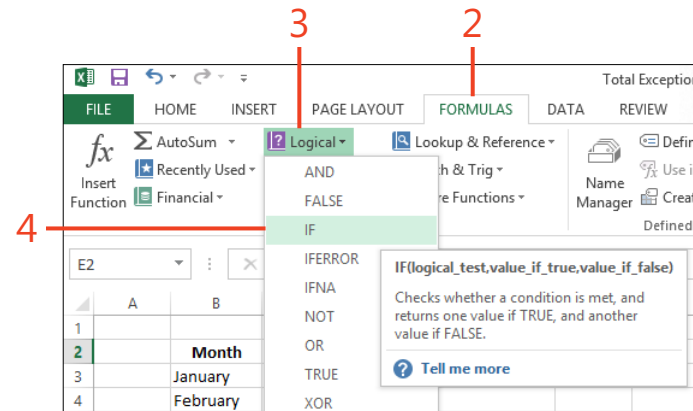
Using the IF function

In addition to calculating values based on the contents of other cells, you can have Excel take different actions based on the contents of those other cells by using the IF function. For example, if you create a workbook to track the times of riders in a bicycle racing club, you can create a formula to compare

Create an IF function

- 1 Click the cell in which you want to enter an IF function.
- 2 Click the Formulas tab.
- 3 Click Logical.
- 4 Click IF.
- 5 Type a conditional statement that evaluates to true or false.
- 6 Type the text that you want to appear if the condition is true.
- 7 Type the text that you want to appear if the condition is false.
- 8 Click OK.

each rider's time to their previous times. When someone's most recent time is the lowest time in the group, you can have Excel display Personal Best in the cell with the formula, alerting you to congratulate the rider in your next club newsletter.



CAUTION The text message must be enclosed in quotation marks.



TIP You can also create an expression in the Value_If_True and Value_If_False boxes. Excel displays the result of the expression in the appropriate box.

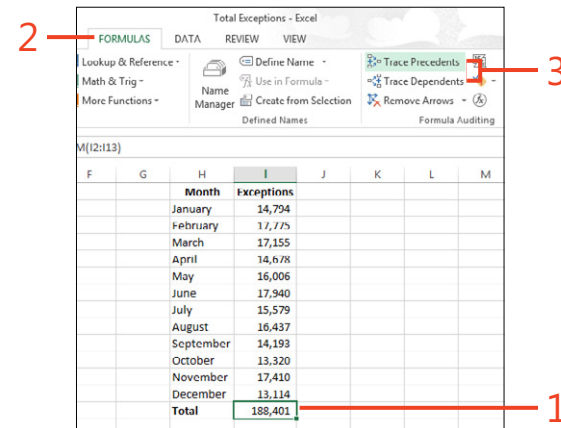
Checking formula references

When you create a formula that draws values from several different places in your workbook—or from other workbooks—it can be difficult to see what’s going wrong if your formula isn’t producing the expected results. Excel helps you locate a cell’s precedents (the cells that the formula uses in its calculation) and

dependents (the cells that depend on the current cell to calculate their own values). To help you find what you need to check your formulas, Excel groups all the tools that you need on the Formula Auditing group on the Formulas tab.

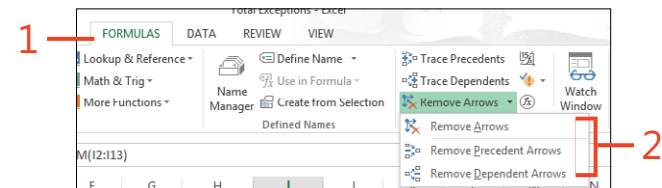
Find cell precedents and dependents

- 1 Click the cell that you want to examine.
- 2 Click the Formulas tab.
- 3 Using the controls in the Formula Auditing group, follow either of these steps:
 - a Click Trace Precedents.
 - b Click Trace Dependents.



Remove tracer arrows

- 1 Click the Formulas tab.
- 2 Click the Remove Arrows down arrow, and follow any of these steps:
 - a Click Remove Arrows to remove all arrows.
 - b Click Remove Precedent Arrows to remove the precedent arrows.
 - c Click Remove Dependent Arrows to remove the dependent arrows.



TIP Tracer arrows are particularly effective when they’re used to examine formulas that include named ranges. When you refer to a named range, you know what the indicated cells are supposed to represent.

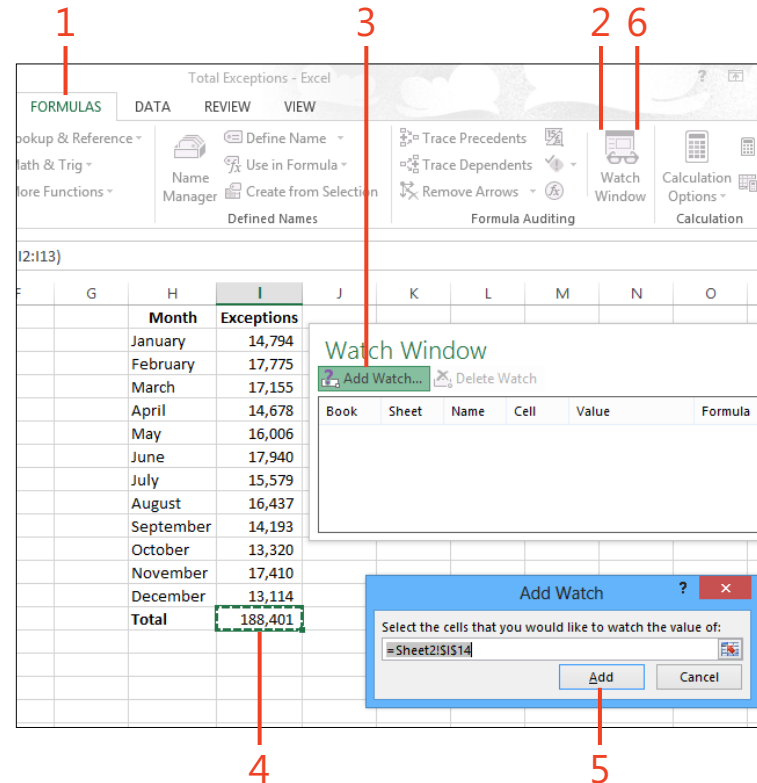
Debugging your formulas

When you share a workbook with your colleagues, some of the values in that workbook might change rapidly as new data is entered. For example, workbook data probably will change quickly if you are evaluating stock prices. Stock market values change frequently, so your data will as well. You can monitor the value in a cell even while you're using another workbook by setting a watch. When you set a watch, the values of the cells you're monitoring appear in the Watch Window.

Monitor a formula for changes

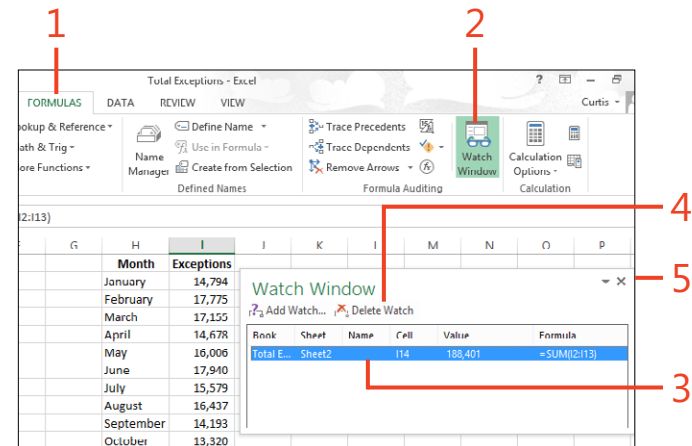
- 1 Click the Formulas tab.
- 2 Click Watch Window.
- 3 Click Add Watch.
- 4 Select the cells that you want to watch.
- 5 Click Add.
- 6 Click Watch Window.

Another way that you can monitor your data is to check the result of part of a calculation by using the Evaluate Formula dialog box. When you click the Evaluate Formula button, Excel displays the formula in the active cell and the subtotal for part of the calculation. You can move through the formula bit by bit, with Excel showing you the result of each piece of the formula.



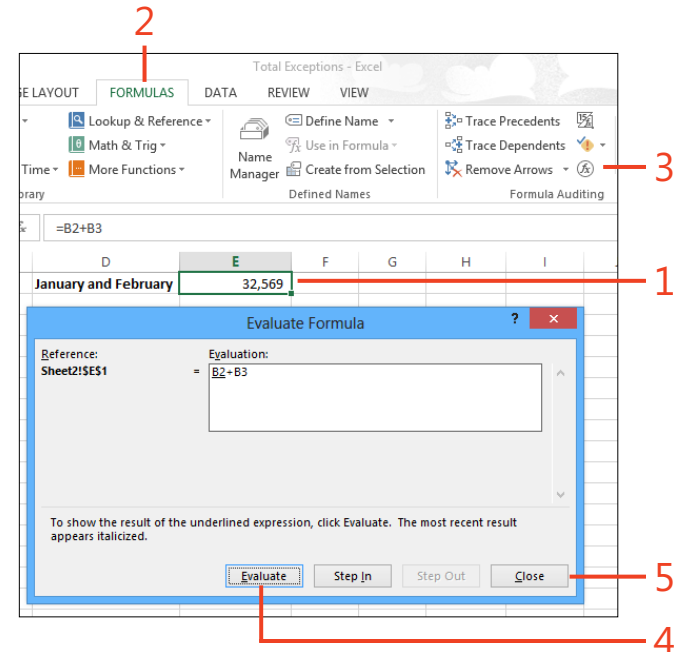
Delete a watch

- 1 Click the Formulas tab.
- 2 Click Watch Window.
- 3 Click the watch that you want to delete.
- 4 Click Delete Watch.
- 5 Click the Close button.



Evaluate parts of a formula

- 1 Click the cell with the formula that you want to evaluate.
- 2 Click the Formulas tab.
- 3 Click Evaluate Formula.
- 4 Click Evaluate (one or more times) to move through the formula's elements.
- 5 Click Close.



New functions in Excel 2013

Excel 2013 includes 51 new functions that you can use for dates, statistics, engineering, and even web data.

Table 6-1 lists all of the functions and describes what they do.

Table 6-1 New functions in Excel 2013

Category	Function Name	Description
Date and Time	DAYS	Calculates the number of days between two dates.
Date and Time	ISOWEEKNUM	Returns the number of the ISO week number of the year for a given date.
Engineering	BITAND	Returns a bitwise AND of two numbers.
Engineering	BITLSHIFT	Returns a number generated by shifting the bits in a number to the left by a specified number of places.
Engineering	BITOR	Returns a bitwise OR of two numbers.
Engineering	BITRSHIFT	Returns a number generated by shifting the bits in a number to the right by a specified number of places.
Engineering	BITXOR	Returns a bitwise XOR of two numbers.
Engineering	IMCOSH	Returns the hyperbolic cosine of a complex number.
Engineering	IMCOT	Returns the cotangent of a complex number.
Engineering	IMCSC	Returns the cosecant of a complex number.
Engineering	IMCSCH	Returns the hyperbolic cosecant of a complex number.
Engineering	IMSEC	Returns the secant of a complex number.
Engineering	IMSECH	Returns the hyperbolic secant of a complex number.
Engineering	IMSINH	Returns the hyperbolic sine of a complex number.
Engineering	IMTAN	Returns the tangent of a complex number.

Category	Function Name	Description
Financial	PDURATION	Calculates the number of periods that an investment will take to reach a value.
Financial	RRI	Calculates the equivalent interest rate for the growth of an investment.
Information	ISFORMULA	Returns TRUE if a cell contains a formula.
Information	SHEET	Returns the sheet number of a sheet.
Information	SHEETS	Returns the number of sheets in a reference.
Logical	IFNA	Returns a value that you specify if an expression results in an #N/A error; otherwise, it returns the value of the expression.
Logical	XOR	Returns the logical exclusive OR of all arguments (that is, it returns TRUE if exactly one argument is true).
Lookup and Reference	FORMULATEXT	Returns the formula in the referenced cell as text.
Math and Trigonometry	ACOT	Returns the arccotangent of a number.
Math and Trigonometry	ACOTH	Returns the hyperbolic arccotangent of a number.
Math and Trigonometry	ARABIC	Converts a number written as a Roman numeral into an Arabic number.
Math and Trigonometry	BASE	Converts a number into a text representation of the number in a given base.
Math and Trigonometry	CEILING.MATH	Rounds a number up to the nearest integer or to the nearest significant multiple.
Math and Trigonometry	COT	Returns the hyperbolic cosine of a number.
Math and Trigonometry	COTH	Returns the cotangent of an angle.
Math and Trigonometry	CSC	Returns the cosecant of an angle.
Math and Trigonometry	CSCH	Returns the hyperbolic cosecant of an angle.
Math and Trigonometry	DECIMAL	Converts a text representation of a number in a given base to a decimal number.
Math and Trigonometry	FLOOR.MATH	Rounds a number down to the nearest integer or to the nearest significant multiple.

6: USING FORMULAS AND FUNCTIONS

Category	Function Name	Description
Math and Trigonometry	ISO.CEILING	Returns a number that is rounded up to the nearest integer or to the nearest significant multiple.
Math and Trigonometry	MUNIT	Returns the unit matrix of the specified dimension.
Math and Trigonometry	SEC	Returns the secant of an angle.
Math and Trigonometry	SECH	Returns the hyperbolic secant of an angle.
Statistical	BINOM.DIST.RANGE	Calculates the probability of a result using the binomial distribution.
Statistical	COMBINA	Returns the number of combinations for a given number of items, allowing replacement.
Statistical	GAMMA	Returns the Gamma function value.
Statistical	GAUSS	Returns 0.5 less than the standard normal cumulative distribution.
Statistical	PERMUTATIONA	Returns the number of permutations for a given number of items, allowing replacement.
Statistical	PHI	Returns the value of the density function for a standard normal distribution.
Statistical	SKEW.P	Returns the skewness of a distribution based on the population instead of a sample from the population.
Text	NUMBERVALUE	Converts text to a number.
Text	UNICHAR	Returns the Unicode character referenced by a number.
Text	UNICODE	Returns the Unicode number of the first character of a text string.
Web	ENCODEURL	Returns a URL-encoded string.
Web	FILTERXML	Returns specific data from XML content using a user-supplied xpath value.
Web	WEBSERVICE	Returns data from a web service.

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