

Arithmetic Operators

Sample Excel formulas using arithmetic operators

Operation	Operator	Example	Description
Addition	+	=10+A5	Adds 10 to the value in cell A5
		=B1+B2+B3	Adds the values of cells B1, B2, and B3
Subtraction	-	=C9-B2	Subtracts the value in cell B2 from the value in cell C9
		=1-D2	Subtracts the value in cell D2 from 1
Multiplication	*	=C9*B9	Multiplies the value in cell C9 by the value in cell B9
		=E5*0.06	Multiplies the value in cell E5 by 0.06
Division	/	=C9/B9	Divides the value in cell C9 by the value in cell B9
		=D15/12	Divides the value in cell D15 by 12
Exponentiation	^	=B5^3	Raises the value in cell B5 to the third power
		=3^B5	Raises 3 to the power specified in cell B5

Order of Precedence Rules

Please Excuse My Dear Aunt Sally

- Parentheses, Exponents, Multiplication
- Division, Addition, Subtraction.

Figure 1-13 Examples illustrating order of precedence rules

Formula	Order of precedence rule	Result
(A1=50, B1=10, C1=5) =A1+B1*C1	Multiplication before addition	100
=(A1+B1)*C1	Expression inside parentheses executed before expression outside	300
=A1/B1-C1	Division before subtraction	0
=A1/(B1-C1)	Expression inside parentheses executed before expression outside	10
=A1/B1*C1	Two operators at same precedence level, leftmost operator evaluated first	25
=A1/(B1*C1)	Expression inside parentheses executed before expression outside	1

Calculation operators in formulas

Operators specify the type of calculation that you want to perform on the elements of a formula. Microsoft Excel includes four different types of calculation operators: arithmetic, comparison, text, and reference.

Arithmetic operators To perform basic mathematical operations such as addition, subtraction, or multiplication; combine numbers; and produce numeric results, use the following arithmetic operators.

Arithmetic operator	Meaning	Example
+ (plus sign)	Addition	3+3
- (minus sign)	Subtraction Negation	3-1 -1
* (asterisk)	Multiplication	3*3
/ (forward slash)	Division	3/3
% (percent sign)	Percent	20%
^ (caret)	Exponentiation	3^2 (the same as 3*3)

Comparison operators You can compare two values with the following operators. When two values are compared by using these operators, the result is a logical value, either TRUE or FALSE.

Comparison operator	Meaning	Example
= (equal sign)	Equal to	A1=B1
> (greater than sign)	Greater than	A1>B1
< (less than sign)	Less than	A1<B1
>= (greater than or equal to sign)	Greater than or equal to	A1>=B1
<= (less than or equal to sign)	Less than or equal to	A1<=B1
<> (not equal to sign)	Not equal to	A1<>B1

Text concatenation operator Use the ampersand (&) to join, or concatenate, one or more text strings to produce a single piece of text.

Text operator	Meaning	Example
& (ampersand)	Connects, or concatenates, two values to produce one continuous text value	"North" & "wind" produce "Northwind"

Reference operators Combine ranges of cells for calculations with the following operators.


Reference operator	Meaning	Example
: (colon)	Range operator, which produces one reference to all the cells between two references, including the two references	B5:B15
, (comma)	Union operator, which combines multiple references into one reference	SUM(B5:B15,D5:D15)

Fill in a series of numbers, dates, or other built-in series items

Using the fill handle, you can quickly fill cells in a range with a series of numbers or dates or with a built-in series for days, weekdays, months, or years.


1. Select the first cell in the range that you want to fill.
2. Type the starting value for the series.
3. Type a value in the next cell to establish a pattern.

For example, if you want the series 1, 2, 3, 4, 5..., type 1 and 2 in the first two cells. If you want the series 2, 4, 6, 8..., type 2 and 4. If you want the series 2, 2, 2, 2..., you can leave the second cell blank.

 More examples of series that you can fill

When you fill a series, the selections are extended as shown in the following table. Items separated by commas are in placed in individual adjacent cells.

Initial selection	Extended series
1, 2, 3	4, 5, 6,...
9:00	10:00, 11:00, 12:00,...
Mon	Tue, Wed, Thu,...
Monday	Tuesday, Wednesday, Thursday,...
Jan	Feb, Mar, Apr,...
Jan, Apr	Jul, Oct, Jan,...
Jan-99, Apr-99	Jul-99, Oct-99, Jan-00,...
15-Jan, 15-Apr	15-Jul, 15-Oct,...
1999, 2000	2001, 2002, 2003,...
1-Jan, 1-Mar	1-May, 1-Jul, 1-Sep,...
Qtr3 (or Q3 or Quarter3)	Qtr4, Qtr1, Qtr2,...
text1, textA	text2, textA, text3, textA,...
1st Period	2nd Period, 3rd Period,...
Product 1	Product 2, Product 3,...

4. Select the cell or cells that contain the starting values.
5. Drag the fill handle  across the range that you want to fill.

To fill in increasing order, drag down or to the right. To fill in decreasing order, drag up or to the left.

Tips

- You can also specify the type of series by using the right mouse button to drag the fill handle over the range and then clicking the appropriate command on the shortcut menu. For example, if the starting value is the date JAN-2002, click **Fill Months** for the series FEB-2002, MAR-2002, and so on; or click **Fill Years** for the series JAN-2003, JAN-2004, and so on.
- If the selection contains numbers, you can control the type of series that you want to create. On the **Edit** menu, point to **Fill**, and then click **Series**. Under **Type**, specify the options that you want to use. A **Linear** series is calculated by adding the value in the **Step Value** box to each cell value in turn. A **Growth** series is calculated by multiplying the value in the **Step Value** box by each cell value in turn. A **Date** series fills date values incrementally by the value in the **Step value** box and dependent on the unit specified under **Date unit**. An **Auto Fill** series produces the same results as dragging the fill handle.
- You can suppress **Auto Fill** by holding down CTRL while you drag the fill handle. The selected values are then copied to the adjacent cells, and Excel does not extend a series.


Fill data by using a custom fill series

To make entering a particular sequence of data (such as a list of names or sales regions) easier, you can create a custom fill series. A custom fill series can be based on a list of existing items on a worksheet, or you can type the list from scratch.

Use a custom fill series based on an existing list of items

1. On the worksheet, select the list of items that you want to use in the fill series.
2. On the **Tools** menu, click **Options**, and then click the **Custom Lists** tab.
3. Verify that the list of items that you selected is displayed in the **Import list from cells** box, and then click **Import**.


The items in the list that you selected are added to the **Custom lists** box.

4. On the worksheet, click a cell, and then type the item in the custom fill series that you want to use to start the list.
5. Drag the fill handle  across the cells that you want to fill.

Use a custom fill series based on a new list of items

1. On the **Tools** menu, click **Options**, and then click the **Custom Lists** tab.
2. In the **Custom lists** box, click **New list**, and then type the entries in the **List entries** box, beginning with the first entry.

Press ENTER after each entry.

3. When the list is complete, click **Add**.
4. On the worksheet, click a cell, and then type the item in the custom fill series that you want to use to start the list.
5. Drag the fill handle  across the cells that you want to fill.


Notes

- A custom list can contain text or text mixed with numbers. To create a custom list that contains only numbers, such as 0 through 100, first select enough empty cells to contain the list. On the **Format** menu, click **Cells**, and then click the **Number** tab. Apply the **Text** format to empty cells, and then type the list of numbers in the formatted cells. Select the list and then import the list.
- You cannot edit or delete a built-in fill series (such as a fill series for months and days), but you can edit or delete a custom fill series. On the **Tools** menu, click **Options**, and then click the **Custom Lists** tab. In the **Custom lists** box, select the list that you want to edit or delete. To edit the fill series, make the changes that you want in the **List entries** box, and then click **Add**. To delete the fill series, click **Delete**.

The fill handle is displayed by default, but you can hide it.



1. On the **Tools** menu, click **Options**.
2. On the **Edit** tab, do one of the following:
 - To hide the fill handle, clear the **Allow cell drag and drop** check box.
 - To display the fill handle, select the **Allow cell drag and drop** check box.

To avoid replacing existing data when you drag the fill handle, make sure that the **Alert before overwriting cells** check box is selected. If you don't want to get a message about overwriting nonblank cells, you can clear this check box.

Note After you drag the fill handle, the **Auto Fill Options** button  appears so that you can choose how the selection is filled. For example, you can choose to fill just cell formats by clicking **Fill Formatting Only**, or you can choose to fill just the contents of a cell by clicking **Fill Without Formatting**. If you don't want to display the **Auto Fill Options** button every time you drag the fill handle, you can turn it off. On the **Tools** menu, click **Options**, click the **Edit** tab, and then clear the **Show Paste Options buttons** check box.

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Fill data into adjacent cells



1. Select the cells that contain the data that you want to fill into adjacent cells.
2. Drag the fill handle  across the cells that you want to fill.
3. You can use the **Auto Fill Options** button , which appears after you drag the fill handle, to choose how to fill the selection. For example, you can choose **Fill Formatting Only** or **Fill Without Formatting**.

Notes

- You can also fill the active cell with the contents of the cell above it. Point to **Fill** on the **Edit** menu, and then click **Down** (or press CTRL+D). To fill the active cell with contents of the cell to the left, point to **Fill** on the **Edit** menu, and then click **Right** (or press CTRL+R).
- If you drag the fill handle up or to the left of a selection and stop in the selected cells without going past the first column or the top row in the selection, Excel deletes the data within the selection. You must drag the fill handle out of the selected area before releasing the mouse button.

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Fill formulas into adjacent cells

1. Select the cell that contains the formula that you want to fill into adjacent cells.
2. Drag the fill handle  across the cells that you want to fill.
3. You can use the **Auto Fill Options** button , which appears after you drag the fill handle, to choose how to fill the selection. For example, you can choose **Fill Formatting Only** or **Fill Without Formatting**.

Note You can also fill the active cell with the contents of the cell above it. Point to **Fill** on the **Edit** menu, and then click **Down** (or press CTRL+D). To fill the active cell with the contents of the cell to the left, point to **Fill** on the **Edit** menu, and then click **Right** (or press CTRL+R).

Tip You can automatically fill a formula downward, for all adjacent cells that it applies to, by double-clicking the fill handle of the first cell that contains the formula. For example, you have numbers in cells A1:A15 and B1:B15, and you type the formula =A1+B1 into cell C1. To copy that formula into cells C2:C15, select cell C1 and double-click the fill handle.

ABSOLUTE and RELATIVE VALUES

\$B\$4 Locks in Column and Row.

B4 is relative

\$B4 Locks in column and makes row relative.

\$B4 Locks in column makes row relative.

B\$4 Makes column relative and row absolute.