

What is Microsoft Excel?

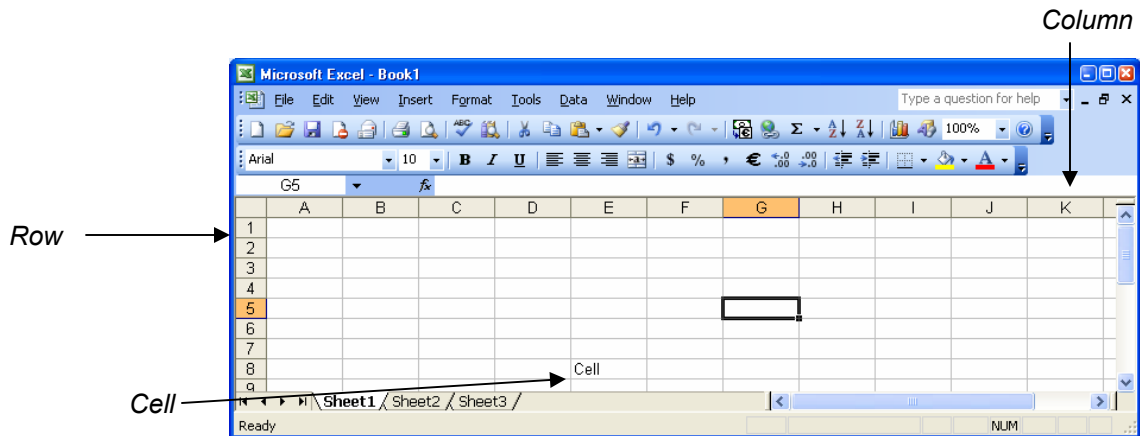
Microsoft Excel is a member of the spreadsheet family of software. Spreadsheets allow you to keep track of data, create charts based from data, and perform complex calculations. Just like a book ledger, spreadsheets store information in columns and rows. You can have up to 256 columns and 65,536 rows per worksheet.

Some of the projects that can be done in a spreadsheet include:

- budgeting displays
- checkbook registers
- enrollment records
- inventories
- coded surveys
- field and laboratory research data
- financial and accounting applications.

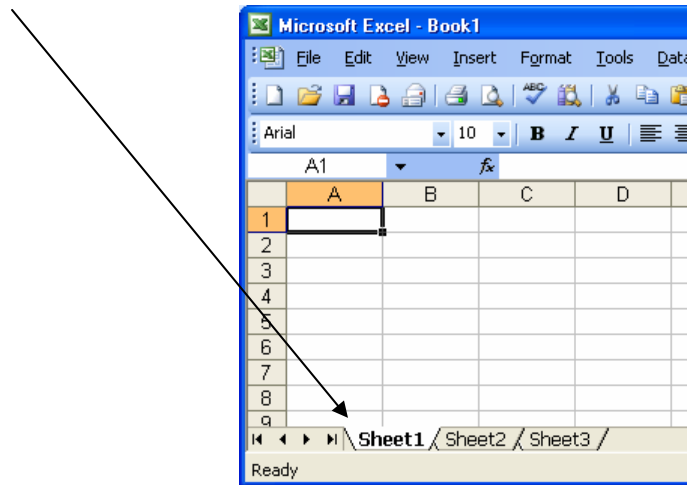
Some basic concepts and terminology

A **Cell** is an individual data box which will have a corresponding **Column** and **Row** heading. This gives the cell a name, referred to as the **Cell Reference**. When referencing a cell, the column heading comes before the row heading. For instance, the first cell is **A1** (Column A, Row 1).



The data in a spreadsheet are often referred to as **Values**.

Excel refers to each file as a **Workbook**. There can be multiple pages in each workbook. Each page, or sheet, is called a **Worksheet**. When you open a new Excel file, it automatically starts you with three worksheets, but you can add more.



Formula & Function Management

Formulas enable you to enter calculations in a worksheet. Using Excel for calculations gives you the ability to change the data (or values) of the cells, and have the program automatically update the recalculate the value of the output based on the new numbers.

To enter a formula, type the formula directly in the cell starting with a = (an equal sign tells Excel that you are not entering data). For instance, to add the value in cell A1 with the value in B1, you could click in cell C1 (where you want your calculated result to appear) and type `=A1+B1`. Press the Enter key to see the result.

Functions are predefined formulas that perform a specific operation, such as determining loan payments or calculating investment returns. Functions accept information, called arguments, and return a result. In most cases, the result is a calculation, but functions also return results that are text, references, logical values, arrays, or information about the worksheet.

Creating a Text String

At times, you may need to create a formula that joins the contents of two cells. Excel refers to this action as **concatenation**.

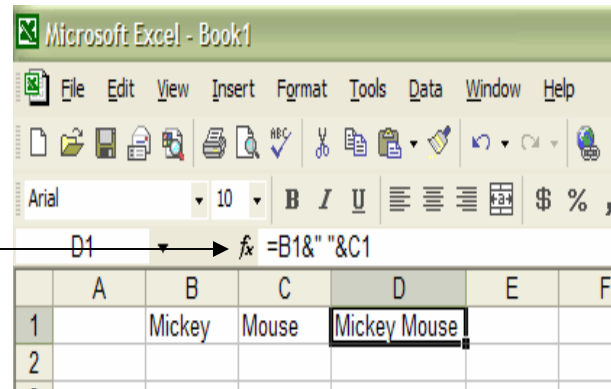
How Concatenation Works

If a worksheet includes first names in one column and last names in another column, for example, you can enter a formula in a third column that joins the first name with the last name. Suppose that the first names are located in column B and the last names are located in column C; row 1 is the first row in the list.

The ampersand (&) is the concatenation operator that joins text, numbers, and dates into one long text string.

Try This

1. Select the cell where you want the formula to appear, and type an equal sign (=) to start the formula.
2. Type or click the first cell reference or name in the formula.
3. Type the concatenation operator (&), then type or click the next cell reference or name.



Note: If you used the formula `=B1&C1` in this example, the first and last names would be joined together without a space. To separate first and last names with a space, use two quotation marks with a space between them (" ") to indicate that Excel should insert a space between the two text strings.

Displaying Formulas

You may want to evaluate the structure of a worksheet to see that the formulas are correct. To see the formulas in your worksheets (such as `=B1&"&C1`) rather than the results of the formulas (Mickey Mouse).

This helps you find incorrect cell references in displayed formulas that are causing inaccurate results (but not error values) in the worksheet.

Displaying all worksheet formulas also enables you to easily print all formulas used in the worksheet for purposes of documentation. This step is a good safeguard in case you accidentally delete or lose the worksheet or if the worksheet becomes damaged.

Try This

1. From anywhere in the worksheet, choose **Tools, Options**; then click the **View** tab.
2. Select the **Formulas** check box; then click **OK**.
3. To display the results again, choose **Tools, Options**; then clear the **Formulas** check box on the **View** tab.

OR

1. On the keyboard, press **CTRL + `** (grave accent).

Entering Functions

You can enter functions manually if you know the function name and what data to supply for the arguments in a function. In most cases, you will probably type only simple functions that require one argument, such as a range of data. For more complex functions that require multiple arguments, you can use the **Paste Function**.

Try This

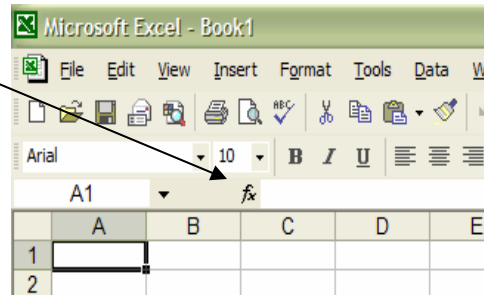
1. Select the cell where you want the function to appear, and type an equal sign (=) to start the function.
2. Type the function name (such as [AVERAGE](#)) and a left parenthesis.
3. Select the range of cells for the argument and press [Enter](#) on the keyboard. Excel automatically adds the closing parenthesis and enters the function.

Inserting with the Paste Function

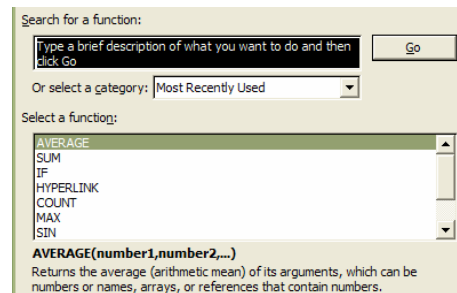
The [Paste Function](#) displays a list of functions from which you can choose the function you want, based on a description that appears when you select a function. The Paste Function also assists you in building the function and explains the purpose of each argument. Use the Paste Function if you want to enter a complex function that requires multiple arguments or if you are unsure of the syntax required for a specific function.

Try This

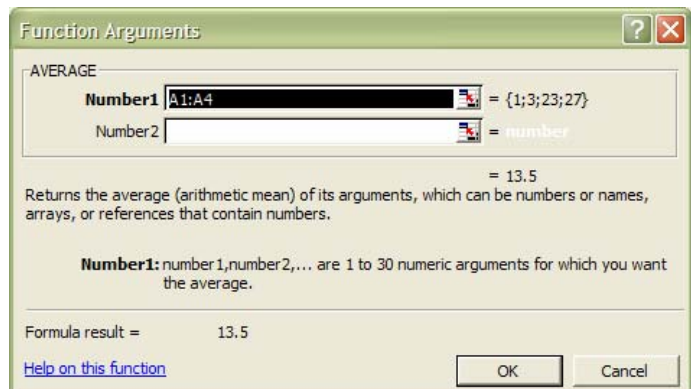
1. Select the cell where you want to enter the function; then click the [fx](#) button on the [Formula Bar](#).



2. Select the type of function you want from the [Category](#) list. If you are unsure of the category, select [Most Recently Used](#) or [All](#).
3. Select the specific function that you want from the [function name](#) list box. Read the description in the lower part of the dialog box to verify that this is the function you want; then click [OK](#).



4. A pop-up window, called [Function Arguments](#) appears under the formula bar. Enter the arguments in each argument text box. You can type the cell references or numbers, click directly on the cell you wish to reference, or highlight multiple cells to reference a group.
5. Click [OK](#) to complete the function and insert it in the cell.

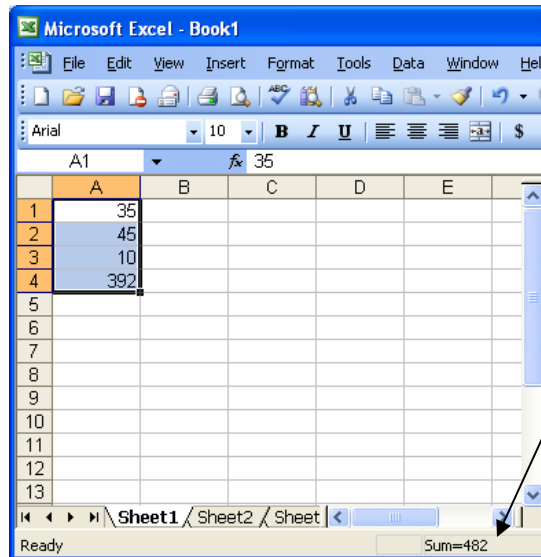


AutoCalculate

If you need to find a quick total, but you don't want or need to include that total in the worksheet, you can use the [AutoCalculate](#) feature. For example, you may want to sum a list and then use that sum in a formula. You could grab a calculator and add up the figures using the calculator, or you can use Excel's AutoCalculate feature!

Try This

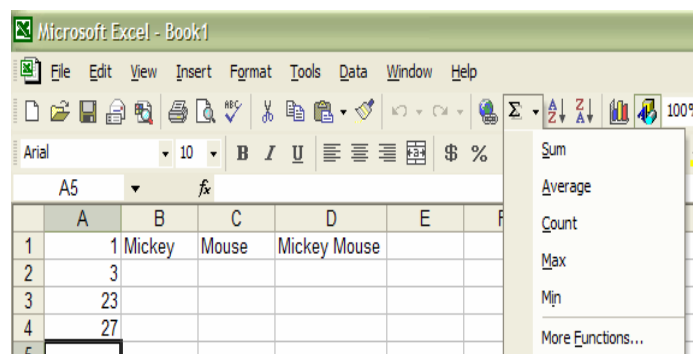
1. Select the range you want to perform addition on. The AutoCalculate button in the [status bar](#) automatically displays the sum of the selected range.



2. Right-click on the status bar area where the sum is displayed and you will be given other AutoCalculate choices.
3. The result of the function you selected appears in the status bar. If you select additional ranges, Excel uses the most recent function you selected on the AutoCalculate button.

AutoSum

The [SUM](#) function totals the numeric value of all cells in the range(s) it references. The [AutoSum](#) button appears on the [Standard toolbar](#). You can use it to sum adjacent columns or rows automatically. In addition to entering the SUM function automatically, the AutoSum button selects the cells in the column above or in the row to the left of the current cell.



Try This

1. Select a cell below or to the right of the values you want to sum.
2. Click the [AutoSum](#) button on the [Standard toolbar](#).
3. To accept the formula that AutoSum supplies, press [Enter](#). Or, if the formula is incorrect, select a different range to sum and then press Enter.

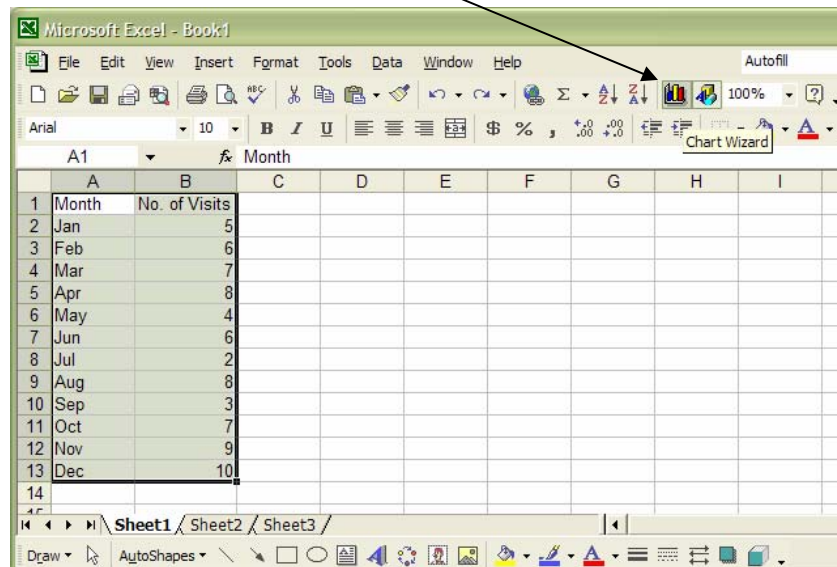
Fill Data within a Row or Column

1. Select the cells you want to copy.
2. Drag the [fill handle](#) across the cells you want to fill, and then release the mouse button. (The fill handle is the small black square in the lower-right corner of the selection. When you point to the fill handle, the pointer changes to a black cross.)
3. To fill in the active cell with the contents of the cell above it (fill downward), press [CTRL+D](#). To fill in with contents of the cell to the left (fill to the right), press [CTRL+R](#).

Creating Charts

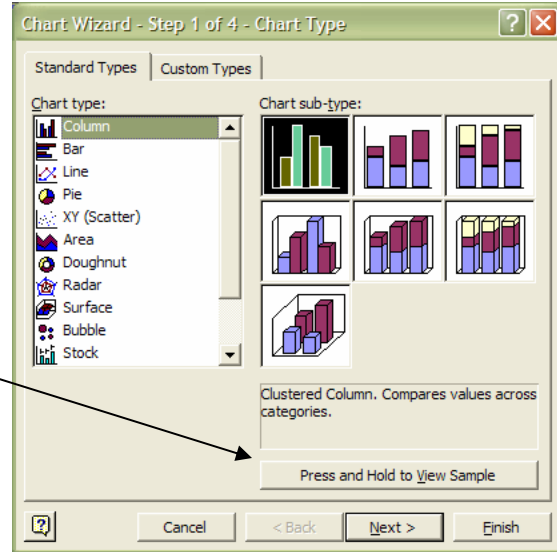
You can create a chart on its own sheet or as an embedded object on a worksheet.

To create a chart, you must first enter the data for the chart on the worksheet, then select the cells and use the [Chart Wizard](#).

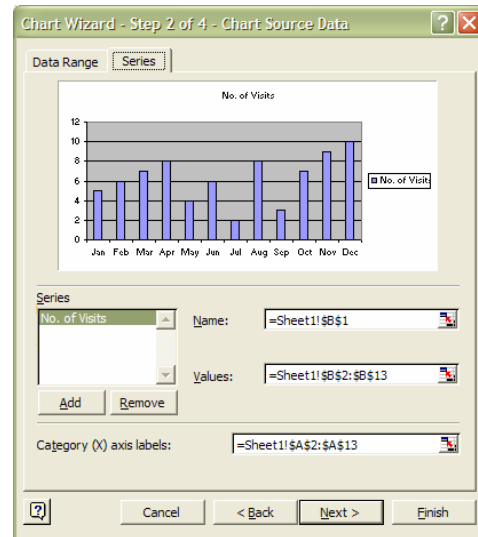
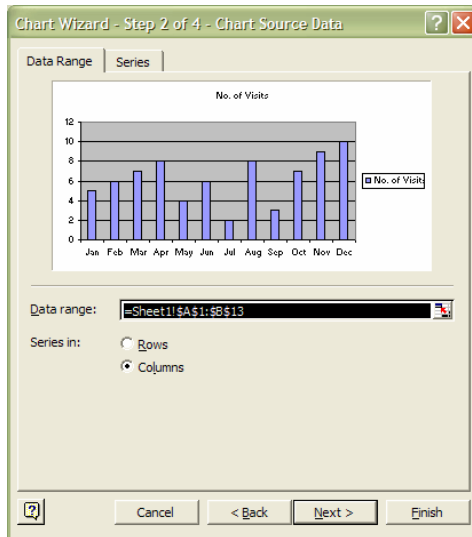


Try This

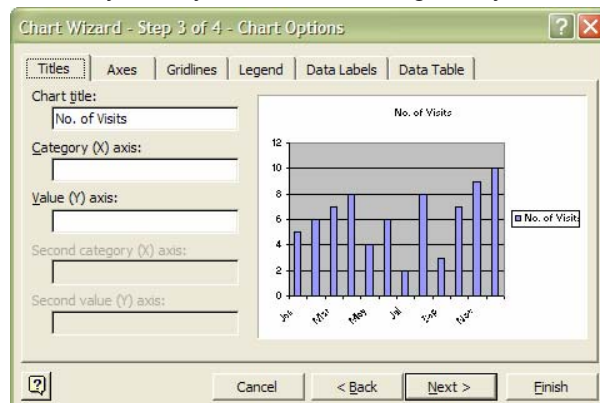
1. Select the type of chart you wish to create using the Chart Wizard. You can preview how the chart will look by moving the mouse pointer to the **Press and Hold to View Sample** button.



2. Click **Next** and continue with the wizard. You will see the **Data Range** tab displayed on step 2 of 4. Excel should automatically detect how your series is laid out, however, you can change this if it determines incorrectly by clicking the radio button for the **Series in:** option yourself.
3. If you click on the **Series** tab, you'll be given the opportunity to change some of the labels used, or pull them from another place on the spreadsheet.

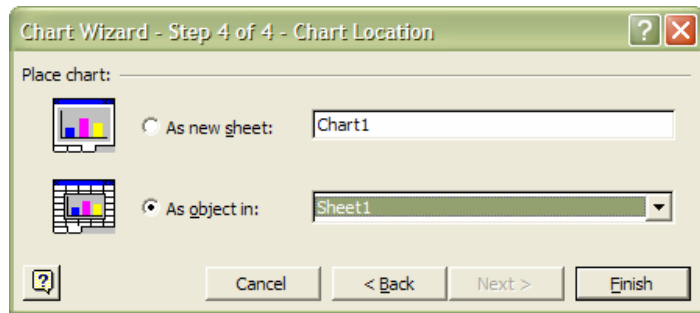


4. By clicking **Next**, you move on Step 3 where you may make other changes to your chart through the use of various tabs.



5. Clicking **Next** again will give you the final step, the option to choose where the chart is placed:

- **As New Sheet:** (Give the Sheet a Name)
- **As Object In:** Select Sheet



This is an example of a chart that was created as an object in the open sheet following the steps above.

