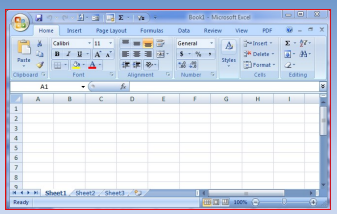
Microsoft EXCEL

An Electronic Spreadsheet Program

Introduction

Examples of popular spreadsheet software's are MS Excel, Gnumeric, KSpread, ZCubes-Calci , Lotus Symphony (2007) and Resolver One etc.



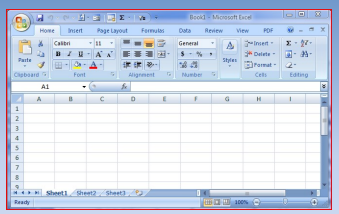
•It displays multiple cells that together make up a grid consisting of rows and columns, each cell containing either alphanumeric text or numeric values.

What is a Spreadsheet?

Spreadsheet programs are developed to automate tasks such as technical calculations, inferential statistics, analyzing data etc.

They also have a powerful program for graphical preparation of numerical data.

They are commonly used in Production, Planning, Personnel Management, Marketing, Payroll and Accounting.



A spreadsheet is a document that is entirely made up of rows and columns. It is used to list and analyze data.

Spreadsheet Applications

Budgets: Electronic spreadsheets are commonly used to develop and monitor *budgets.*

Inventory Management : Many small businesses use electronic spreadsheets to keep track of inventory.

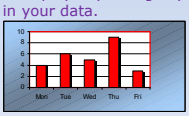
Portfolio Management : Electronic spreadsheets are used to keep track of investment portfolios.

Management Decision Support : Electronic spreadsheets are commonly used to wake projections of business conditions.

Spreadsheet Features

Editing and formatting – Excel works much like the tables in MS Word

Creating Charts and Graphs – You can create colorful charts and graphs from the data in your worksheet. Excel will automatically update the chart to display any changes you make in your data.



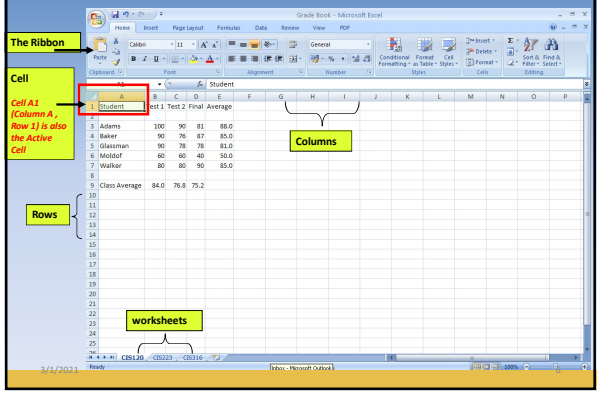
Formulas and functions – Excel allows you to perform calculations and analyze data. Common calculations include: finding the sum, average or total number of items in a

=sum(B6:B23)

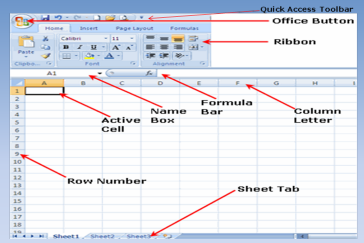
=AVERAGE(F4:F8)

=count(B2:B25)

Spreadsheet details

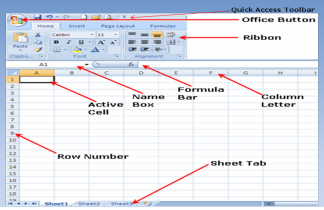


Spreadsheet details



Row number
Identifies a horizontal row in the worksheet. It appears on the left border of the worksheet.
Column letter
Identifies a vertical column in the worksheet. It appears on the top border of the worksheet. Columns are lettered AZ, then AAAZ, then BABZ, and so on to 16000 column.
Active Cell
In an Excel 2007 worksheet, the cell can be idendified with the black outline. Data is always entered into the active cell.

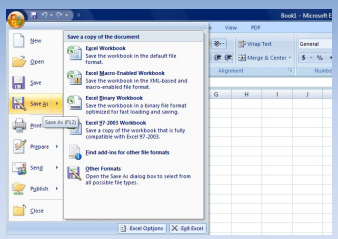
Spreadsheet details



Formula Bar
Located above the worksheet, this area displays the contents of the active cell. It can also be used for entering or editing data and formulas.
Name Box
Located next to the formula bar, the Name Box displays the cell reference or the name of the active cell.
Sheet Tab
Switching between worksheets in an Excel 2007 file is done by clicking on the sheet tab at the bottom of the screen.
Quick Access Toolbar
This customizable toolbar allows user to add frequently used commands. Click on the down arrow at the end of the toolbar to display the toolbar's options.

The Office button

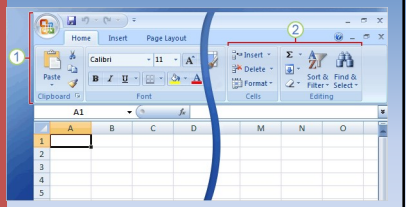
The **Office button** is located on the top-left of the window. Clicking on the **Office button** displays a drop down menu containing a number of commands.



The Ribbon

1. The band at the top of the Excel 2007 window is the **Ribbon**.

2. The **Ribbon** is made up of different **tabs**. Each tab is related to specific kinds of work that people do in Excel.



You click the tabs at the top of the **Ribbon** to see the different commands on each tab.

Columns, Rows, and Cells

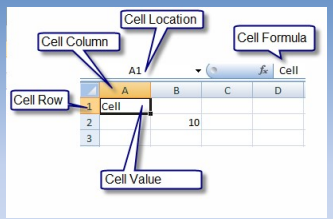
Worksheets are divided into columns, rows, and cells. That's the grid you see when you open up a workbook. **Columns** go from top to bottom on the worksheet, vertically. **Rows** go from left to right on the worksheet, horizontally. A **cell** is the space where one column and one row meet.

- Each column has an alphabetical heading at the top. The first 26 columns have the letters from A through Z. Each worksheet contains 16,384 columns in all, so after Z the letters begin again in pairs, AA through AZ.
- After AZ, the letter pairs start again with columns BA through BZ, and so on, until all 16,384 columns have alphabetical headings, ending at XFD.

Columns, Rows, and Cells

- Each row also has a heading. Row headings are numbers, from 1 through 1,048,576.
  The alphabetical headings on the columns and the numerical headings on the rows tell you where you are in a worksheet when you click a cell. The headings combine to form the cell address, also called the **cell reference**.

Cells



A cell may contain a value or a formula, or it may simply be left empty. By convention, formulas usually begin with = sign.

Values

A value can be entered from the computer keyboard by directly typing into the cell itself. Alternatively, a value can be based on a formula , which might perform a calculation, display the current date or time, or retrieve external data such as a stock quote or a database value.

Cells

	A	B	C
1	Value 1	Value 2	Total
2	10	20	=sum(A2..B2)
3	20	30	=sum(A3..B3)

Formula: A formula identifies the calculation needed to place the result in the cell it is contained within. A cell containing a formula therefore has two display components; the formula itself and the resulting value. The formula is normally only shown when the cell is selected by "clicking" the mouse over a particular cell; otherwise it contains the result of the calculation.

Formula

A formula assigns values to a cell or range of cells, and typically has the format:

= Expression
Example: =sum(A2..B2)

Where the expression consists of:
- values, such as 2, 9.14 or 6.67E-11;
- references to other cells, such as, e.g., A1 for a single cell or B1:B3 for a range;
- arithmetic operators, such as +, -, *, /, and others;
- relational operators, such as >=, <, and others; and,
- Functions, such as SUM(), AVG(), and many others.

Cell Reference

A cell on the same sheet is addressed as =A1

A cell on the different sheet of the same spreadsheet is usually addressed as =Sheet2!A1

A cell on the another spreadsheet on the same computer or a local network could be referred as

='C:\Documents and Settings\Username\My spreadsheets\[main sheet]Sheet1!A1

Features of MS-Excel 2007

The file format used by Microsoft Excel 2007 is an XML-based format.

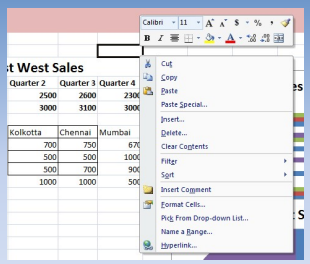
The new format provides less rigid standards for its files, making documents more accessible and easier to handle.

Executing Commands

Excel commands can be given in one of the following ways:

1. **Choosing an option form Office button**
2. **Choosing an option from the Shortcut Menu**
3. **Selecting a tools from the Ribbon**
4. **Using Shortcut key combinations**

Shortcut Menu



A shortcut menu is invoked by pressing the right mouse button

Keyboard Shortcuts

Desired Action	Keyboard Shortcut
Show a shortcut menu.	SHIFT+F10
Make the menu bar (ribbon, office button) active.	F10 or ALT
Show the program icon menu (on the program title bar).	ALT+SPACEBAR
Select the next or previous command on the office button submenu.	DOWN ARROW or UP ARROW
Select the menu to the left or right, or, with a submenu visible, switch between the main menu and the submenu.	LEFT ARROW or RIGHT ARROW
Select the first or last command on the menu or submenu.	HOME or END
Close the visible menu and submenu at the same time.	ALT
Close the visible menu, or, with a submenu visible, close the submenu only	ESC

Keyboard Shortcuts – Formatting keys

Alt + ‘	•Display the style dialog box
Ctrl + Shift + ~	•General Num. Format
Ctrl + Shift + $	•Currency format
Ctrl + Shift + %	•Percentage format
Ctrl + Shift + !	•Comma format
Ctrl + Shift + &	•Outline border
Ctrl + Shift + _	•Remove borders
Ctrl + b	•Bold

Keyboard Shortcuts – Formatting keys

Ctrl + i	•Italic
Ctrl + u	•Underline
Ctrl + 9	•Hide rows
Ctrl + Shift + 9	•Unhide rows
Ctrl + 0	•Hide columns
Ctrl + Shift + 0	•Unhide columns
Ctrl + 1	•Format Dialog Box
Ctrl + 5	•Strike Through
Shift + Space	•Select the entire row
Ctrl + Space	•Select the entire column

Keyboard Shortcuts – Formatting keys

Ctrl + a	•Select the entire worksheet
Ctrl + x/c/v	•Cut/copy/paste
Ctrl + d/r	•File cells down/right
CTRL+SHIFT+*	•Select the current region around the active cell (the current region is an area enclosed by blank rows and blank columns)
SHIFT+ arrow key	•Extend the selection by one cell
CTRL+SHIFT+ arrow key	•Extend the selection to the last nonblank cell in the same column or row as the active cell
SHIFT+HOME	•Extend the selection to the beginning of the row
CTRL+SHIFT+HOME	•Extend the selection to the beginning of the worksheet
CTRL+SHIFT+END	•Extend the selection to the last cell used on the worksheet (lower-right corner)

Keyboard Shortcuts – Auditing keys

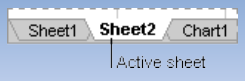
Ctrl + ‘ (~)	•Toggle formula display
Ctrl + [	•Selects cells directly referred to by formulas (Precedent Cells)
Ctrl + Shift + {	•Selects directly and indirectly referred to cells
Ctrl +]	•Selects only cells with formulas that refer directly to the active cell (Dependent Cells)
Ctrl + Shift + }	•Selects all cells within formulas that directly or indirectly refer to the active cells
F9	•Calculate all worksheets
Shift + F9	•Calculate worksheet
F2	•Toggle cell edit mode

Keyboard Shortcuts – Window keys

Ctrl + F4	•Closes workbook window
Alt + F4	•Closes Excel
Ctrl + F10	•Maximizes the workbook
Ctrl + F9	•Minimizes the workbook
Ctrl + F5	•Restore window size
F6	•Next pane
Shift + F6	•Previous pane
Ctrl + F6	•Next window
Ctrl + Tab	•Next window
Shift + F11	•Inserts a new sheet
F11	•Create a Quick Chart Sheet
Ctrl + s	•Saves the workbook
F12	•Saves As
Ctrl + o	•Opens a workbook
Ctrl + n	•Creates a new workbook
Alt + F8	•Macros Dialog Box
Alt + F11	•Visual Basic Editor

Using Sheets in Workbook

A] Rename a Worksheet

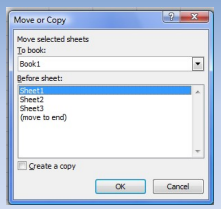


•On the Sheet tab bar, right-click the sheet tab to rename, and then click Rename.

•Select the current name, and then type the new name.

Copying or Moving Worksheet

B] Copying or Moving the Worksheet

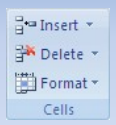


1. On the **Sheet tab** bar, right-click the sheet tab and then click move or copy.
2. To create a copy of the sheet, select the create a copy button or the sheet would be moved.

Using Sheets in Workbook

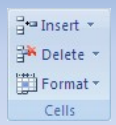
C] Inserting additional Worksheet

1. To quickly insert a new worksheet at the end of the existing worksheets, click the Insert Worksheet tab at the bottom of the screen.
2. To insert a new worksheet before an existing worksheet, select that worksheet, and then on the Home tab, in the Cells group, click Insert, and then click Insert Sheet.



Using Sheets in Workbook

D] Deleting Worksheet



On the Home tab, in the Cells group, click the arrow next to Delete, and then click Delete Sheet.

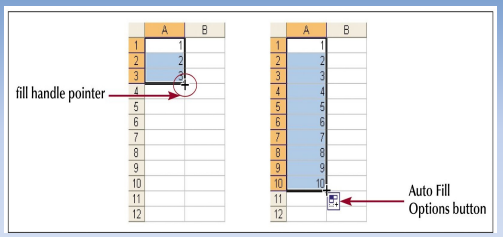
Entering data

You can enter two basic kinds of data into worksheet cells:

•numbers

•text.

Auto Fill

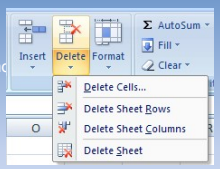


Navigating in the Worksheet

TO MOVE	PRESS KEY
Left one column	Left arrow
Right one column	Right arrow
Up one row	Up arrow
Down one row	Down arrow
To the first cell of a row	Home
To cell A1	Ctrl+Home
To the last cell containing data	Ctrl+End
Up one window	Page Up
Down one window	Page Down

Delete Cells

Now you will see this dialogue box. Choose the correct option. This will depend on where you want to put the new cells.

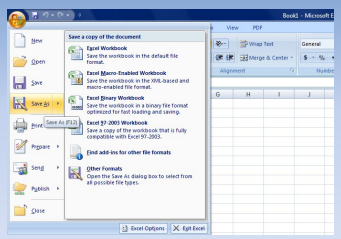


To Delete cells, rows, or columns

1. Select the cells, rows, or columns that user wants to delete.
2. On the **Home** tab, in the **Cells** group, do one of the following:
   - To delete selected cells, click the arrow next to **Delete**, and then click **Delete Cells**.
   - To delete selected rows, click the arrow next to **Delete**, and then click **Delete Sheet Rows**.
   - To delete selected columns, click the arrow next to **Delete**, and then click **Delete Sheet Columns**.

Saving a Workbook

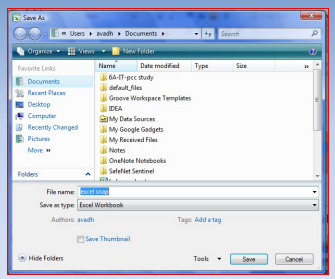
When we open a workbook in Excel, by default, the name of the workbook is called "Book" followed by a number (For example, "Book2"). The workbook will keep that name until you save the workbook



Saving a Workbook

The first time a workbook is saved, the user must decide three things:

- **File Location**
- **File Name**
- **File Type**



Exercise

In this exercise, you will be required to use an Excel spreadsheet to answer the following questions:

1. The table shows the quarterly expenditure of five people in a household.

2. Load Excel application and enter the data on a worksheet as shown ->

3. Insert another column after March and name it "**Total**" and calculate the Total Quarterly expenditure for each person in the household.

4. Save the document under the name of **Expenditure** and Print.

Name	Jan	Feb	March
Amar	310.56	403.10	384.10
James	431.72	342.00	344.00
Samuel	600.00	299.18	402.17
Lydia	456.07	466.00	610.00
Tina	201.10	342.19	334.04

Cell References

Cell references	Refer to values in
A10	the cell in column A and row 10
A10,A20	cell A10 and cell A20
A10:A20	the range of cells in column A and rows 10 through 20
B15:E15	the range of cells in row 15 and columns B through E
A10:E20	the range of cells in columns A through E and rows 10 through 20

Cell references can indicate particular cells or cell ranges in columns and rows.

Cell Referencing

A reference identifies a cell or a range of cells on a worksheet and tells Microsoft Excel where to look for the values or data you want to use in a formula.

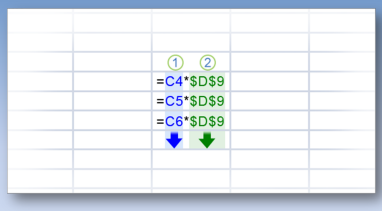
With references, the user can use data contained in different parts of a worksheet in one formula or use the value from one cell in several formulas.

The user can also refer to cells on other sheets in the same workbook, and to other workbooks. References to cells in other workbooks are called links.

Reference types

Relative references change as they are copied.

Absolute references stay the same as they are copied.



Relative Reference

- **Relative** Every relative cell reference in a formula automatically changes when the formula is copied down a column or across a row. This is why in the first lesson you could copy the January formula to add up February expenses. As the example, when the formula =C4*D9 is copied from row to row, the relative cell references change from C4 to C5 to C6.

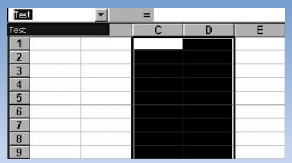
Absolute Reference

- **Absolute** An absolute cell reference is fixed. Absolute references don't change if you copy a formula from one cell to another. Absolute references have dollar signs ($) like this: D9. As the art shows, when the formula =C4*D9 is copied from row to row, the absolute cell reference remains as D9.

Mixed Reference

- **Mixed** A mixed cell reference has either an absolute column and a relative row, or an absolute row and a relative column. For example, $A1 is an absolute reference to column A and a relative reference to row 1. As a mixed reference is copied from one cell to another, the absolute reference stays the same but the relative reference changes.

Ranges



A range is a rectangular group of cells. The smallest range is a single cell and the largest range includes all the cells in the worksheet. A range can include cells from same sheet or cells from adjacent sheets. Ranges are defined by the addresses of two opposite or diagonally paired corner cells separated by a colon or two dots.

Naming Ranges

You can apply a name to refer to a cell or a range of cells, rather than using cell addresses as references. Names provide multiple benefits:

1. Names are more descriptive and easier to remember than cell addresses.
2. When a cell moves, the name moves with it.
3. You can use a name in place of a cell or range address in a formula or function argument, just like a row or column label.
4. When you copy a formula that uses a name, the effect is the same as using an absolute cell reference.

Rules for Range Names

1. Names can be tip to 255 characters long and can include letters, numbers, underscores, or periods.
2. The name must begin with either a letter or the underscore character. You cannot use spaces, commas, exclamation points, or other special characters.
3. Names cannot be valid cell addresses: F1998 cannot be used as a name.
4. Names are not case sensitive.

Using Range Names in Formula

		Delhi	Kolkotta	Chennai	Mumbai
17	Quarter 1	780	700	750	670
18	Quarter 2	1000	500	500	1000
19	Quarter 3	1000	500	700	900
20	Quarter 4	500	1000	1000	500
21	**Total**				

1. Start Excel.
2. Create the above worksheet:
3. Highlight the figures in the Delhi column.
4. Click in the name box at the top of the spreadsheet. The name box normally contains the address of the current cell.
5. Type Delhi in the name box and press Enter. The range of numbers is now identified by the name Delhi.
6. Click in the Totals cell for Delhi to select it.
7. Type: =SUM(Delhi)

Using Range Names in Formula

You can also use names in formulas. For example:

=SUM(JanSales)

=TotalSales * TaxRate

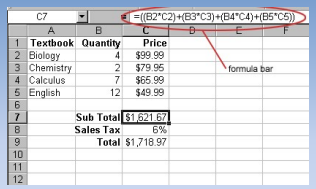
Using Range Names in Formula

Exercise:

You can assign any name you want as follows:
Select one or more cells and choose **Insert > Names > Define**.
Type the name, click **Add**, and click **OK**.
Then you can create formulas like this.

	A	B	C	D	E
4	**Travel Expenses**			**Prepaid Amounts**	
5	Item	Amount		Item	Amount
6	Ticket	$300.00		Per Diem	$200.00
7	Parking	$120.00		$500 Prepaid Credit Card	$500.00
8	Rental car	$220.00			
9	Hotel	$190.00			
10	Food while traveling to	$59.00			
11				Total	=SUM(Prepaid)
12					
13	Total	=SUM(Travel)			
14					
15	**Entertainment Expenses**			**Admission Expenses**	
16	Item	Amount		Item	Amount
17	Evening with clients Monday	$212.00		Seminar Tuition	$1,200.00
18	Drinks with clients Tuesday	$48.00		Meals on Site	$250.00
19					
20					
21					
22	Total	=SUM(Ement)		Total	=SUM(Admit)
23					
24	**Total Expenses**			**Total Due**	

Formulas



	A	B	C	D	E	F
1	Textbook	Quantity	Price			
2	Biology	4	$99.99			
3	Chemistry	2	$79.95			
4	Calculus	7	$65.99			
5	English	12	$49.99			
6						
7		Sub Total	$1,621.67			
8		Sales Tax	6%			
9		Total	$1,718.97			
10						
11						
12						

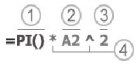
A formula always begins with an equal sign (=) followed by some combination of numbers, text, cell references, and operators. If a formula is entered incorrectly, an **ERROR IN FORMULA** message will appear.

Formulas Operators

TABLE 1. Logical Operators		TABLE 2. Arithmetic Operators	
=	Equal	+	Addition
>	Greater than	-	Subtraction
<	Less than	/	Division
>=	Greater than or equal to	*	Multiplication
<=	Less than or equal to	%	Percent
<>	Not equal to	^	Exponentiation

- To do more than add, use other math operators as you type formulas into worksheet cells. Use a minus sign (-) to subtract, an asterisk (*) to multiply, and a forward slash (/) to divide. Remember to always start each formula with an equal sign.

Parts of a formula



Parts of a formula

1. Functions: The PI() function returns the value of pi: 3.142...
2. References: A2 returns the value in cell A2.
3. Constants: Numbers or text values entered directly into a formula, such as 2.
4. Operators: The ^ (caret) operator raises a number to a power, and the * (asterisk) operator multiplies

How to enter a formula

1. Click a **cell** where you want to enter a formula.
2. Type **=** (equal sign) to begin the formula.
3. Type the **first argument.** Remember, an argument can be a number or a cell reference. You can type in the number or if referencing a cell, you can single click on the cell location to have the cell reference automatically included in your formula.
4. Next, type an **arithmetic operator**.
5. Next, enter the **next argument**.
6. Steps 4 and 5 can be repeated as many times as needed to add to the formula.
7. Last, tap the **ENTER** key. The result of the formula appears in the cell while the formula itself appears in the Formula Bar.

Point and Click formula

Instead of entering a formula by typing it out letter by letter, Excel lets you create formulas by clicking the cells you want to use.

For example, consider this simple formula that totals the numbers in two cells: =A1+A2

To build this formula by clicking, just follow these steps:
1. Move to the cell where you want to enter the formula. This cell's where the result of your formula's calculation will appear. While you can pick any cell on the worksheet, A3 works nicely because it's directly below the two cells you're adding.
2. Press the equal sign (=) key. The equal sign tells Excel you're going to enter a formula.

Point and Click formula

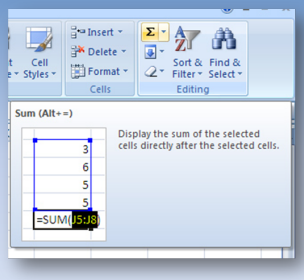
3. Move to the first cell you want to use in your formula (in this case, A1). You can move to this first cell by pressing the up arrow key twice, or by clicking it with the mouse.

4. Press the + key.
Excel adds the + sign to your formula so that it now reads =A1+.

5. Finish the formula by moving to cell A2 and pressing Enter.

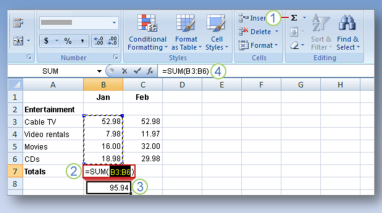
Auto Sum

To quickly add a column of data together, use the SUM button. To use this feature, select the numbers you want to add together by clicking and dragging, then click on the SUM symbol.



Sum button

click in cell B7, and then:
On the **Home** tab, click the **Sum** button in the **Editing** group.
A color marquee surrounds the cells in the formula, and the formula appears in cell B7.
Press ENTER to display the result in cell B7.
Click in cell B7 to display the formula in the formula bar.



Query Session

Ignite your mind to Excel