

New Edition

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Computer

World

Preface

Computer education is an essential part of educational curriculum today. Computer have become an important source of information and are being used for studying other subjects as well.

The present series of books 'Computer World' starts from class 1 to 8. The books describe this electronic device in detail, step by step. The young learners will find it easy to study and understand these books. The books have been made attractive by the introduction of coloured illustrations and diagrams related to a computer, and also to make it easy for the child to understand the subject.

The concept of the computer system has been selected very carefully. To test the child's skill after every few chapters, well designed exercises have been provided. Suggestions to improve the series in the interest of the children will be gratefully accepted and acknowledged. Feel free to send your suggestions.

—Author



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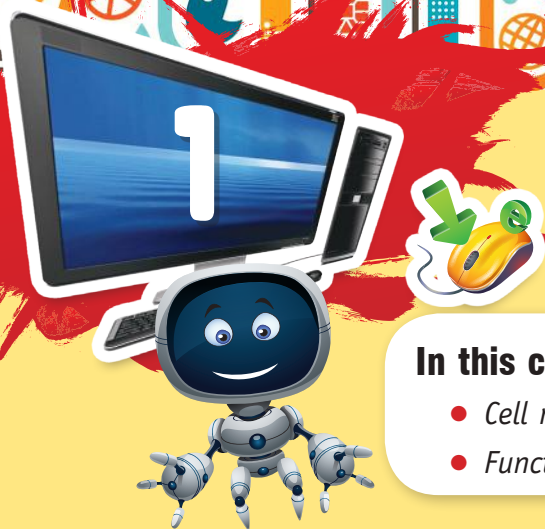


Computer

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MS Excel 2010 : Formulas and Functions



In this chapter, you will learn about :

- Cell references
- Using formulae
- Functions
- Function library
- AutoSum feature

Formulas and functions are one of the most useful features of MS Excel program. A formula can be used for simple calculations like adding two numbers or for complex calculations needed for accountancy, business mathematics, etc. Once you learn the basic format of creating a formula, Excel does all the calculations for you. A formula in MS Excel starts with an (=) sign. It is a sequence of values, cell references, functions, and/or operators contained in a cell. It produces new values from existing values.

CELL REFERENCES

A **cell's** location in a spreadsheet is referred to as its cell reference. To find a cell reference, simply look at its column and row positions in the spreadsheet. It is a combination of the column letter and row number such as A1, B3, or D15. While writing a cell reference, it is noticed that the column letter always comes first.

Know More

When you click on a cell containing a formula in Microsoft Excel, the formula always appears in the formula bar located above the column letters.

USING FORMULAS

Formulas can be entered in the formula bar or inside a cell. The various steps to write a formula are :

- Select the **cell** in which you want the result to be displayed.
- Type the (=) sign in the formula bar. It will automatically appear in the selected cell.
- Type the reference of the cell whose result is to be calculated and the operator sign (+).
- Press the **Enter** key.
- The result will appear in the selected cell.

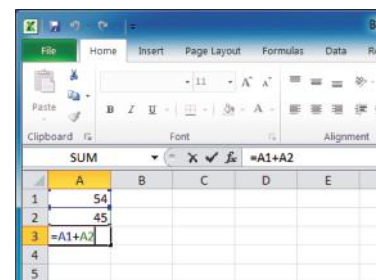
Know More

To enter or edit a formula in a cell, you can also press F2 after selecting the cell instead of double-clicking on it.



Example

Suppose, you have to calculate the value of $54+45$. 54 is placed in A1 cell and 45 is typed in the A2 cell. Then, the formula for this calculation would be $= A1+A2$, which you can type in the Formula bar and press Enter key to get the result (99).



The following arithmetic operations are used in a formula :

Operators	Operations	Formulas for (A1) and (A2)	Result (If A1 = 10 and A2 = 2)
^	Exponent	$= A1 \wedge A2$	$10^2 = 100$
*	Multiplication	$= A1 * A2$	$10 \times 2 = 20$
/	Division	$= A1 / A2$	$10/2 = 05$
+	Addition	$= A1 + A2$	$10 + 2 = 12$
-	Subtraction	$= A1 - A2$	$10 - 2 = 08$

Error Results

Sometimes a formula displays a result such as #VALUE! rather than the result it was intended to display. #VALUE! is a type of error displayed by MS Excel. Some other errors that MS Excel returns are :

Errors	Possible reasons
####	The column is not wide enough to display the numbers.
#DIV/0!	The formula contains an invalid operation– Division by 0
#N/A	Data are not available

FUNCTIONS

A **function** is a built-in formula in MS Excel that is used to carry out common mathematical calculations. Functions save us from writing lengthy formulas. Excel can be used to perform tasks such as finding average or sum for a range of numbers.

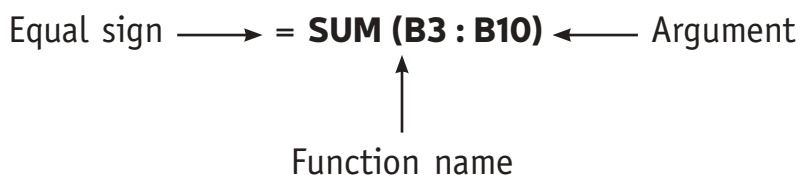
In Excel, we should write each function in a specific order called syntax.

Functions should begin with the (=) or @ sign followed by the function name. SUM or AVG is a function name.

The third part is arguments. It can be numbers, text or cell reference. Arguments are enclosed within parentheses (). When there is more than one argument, each is separated by a comma.

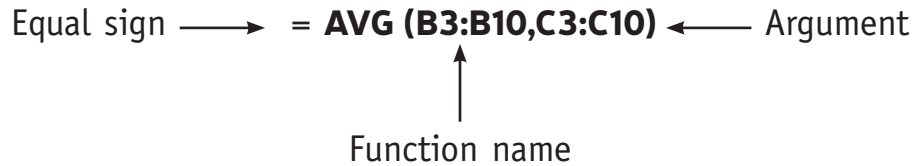
Know More

Formulas & functions follow BODMAS rule for arithmetic calculations.





This is an example of a function with one argument.



This is an example of a function with more than one argument.

Performing Functions

There are various predefined functions in MS Excel which we can use. Some of them are given below :

Sum : Adds all cells in the argument.

Average : Calculates the average of the cells in the argument.

Max : Finds the maximum value.

Count : Finds the number of cells that contain a numerical value within a range of the argument.

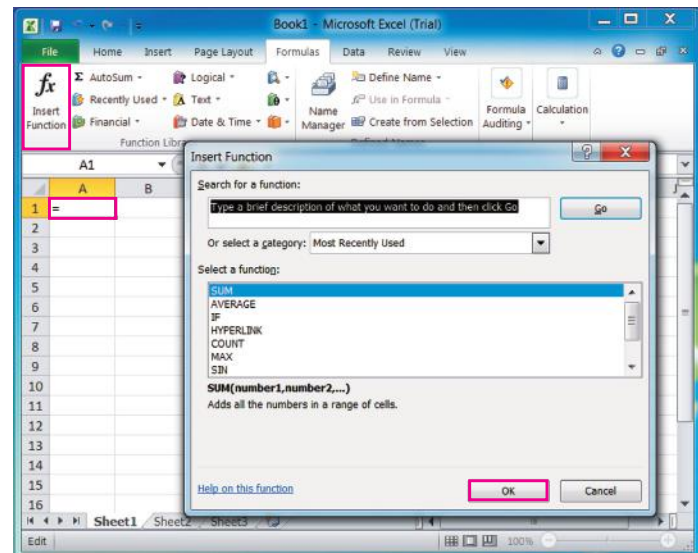
	A	B	C	D	E
1	Marks obtained by Apoorv in the Examination				
2	Maths	80			
3	English	60			
4	Science	75			
5	Hindi	65			
6	Sum	280			
7	Average	70			
8					

The various steps to use a function are :

Step 1: Click on the **cell** where you want to apply a function.

Step 2: Click on the **Insert Function** button from the Function Library group of the Formulas tab of the Ribbon.

Step 3: An **Insert Function** dialogue box appears.



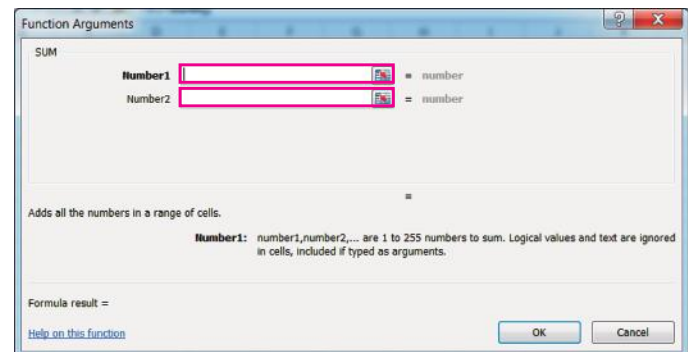
Choose the function and Click **OK**.

A Function Argument box appears on the screen.

Fill in the Number 1 box for the first cell in the range that you want to calculate.

Fill in the Number 2 box with the last cell in the range that you want to calculate.

The result will appear in the selected cell.



FUNCTION LIBRARY

The **Function Library** is a large group of functions on the Formula tab of the Ribbon. These functions are available under the following categories :

AutoSum : It calculates the sum of a range of numbers.

Recently used : All recently used functions are included.



Financial : It is a list of financial functions such as accrued interest, cash flow return rates, additional financial function and others.

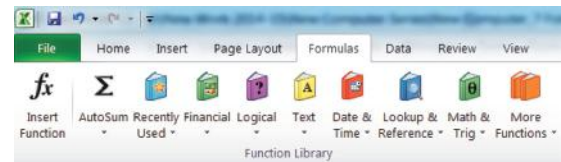
Logical : It is a list of logical functions.

Text : It includes text based functions.

Date & Time : It includes functions to calculate date and time.

Math & Trig : It is a list of mathematical and trigonometric functions.

And there are other more functions available in the group.



AUTOSUM FEATURE

The **AutoSum** is a short-cut feature for using MS Excel's SUM function. It provides a quick way of adding up columns or rows of numbers in a spreadsheet.

The various steps to apply AutoSum feature are :

Step 1: Enter the following data into cells **C1** to **C6**: 11, 12, 13, 14, 15, 16.

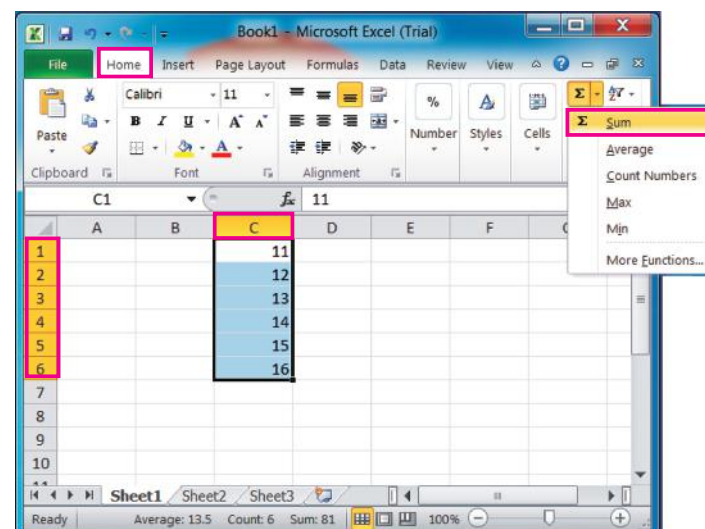
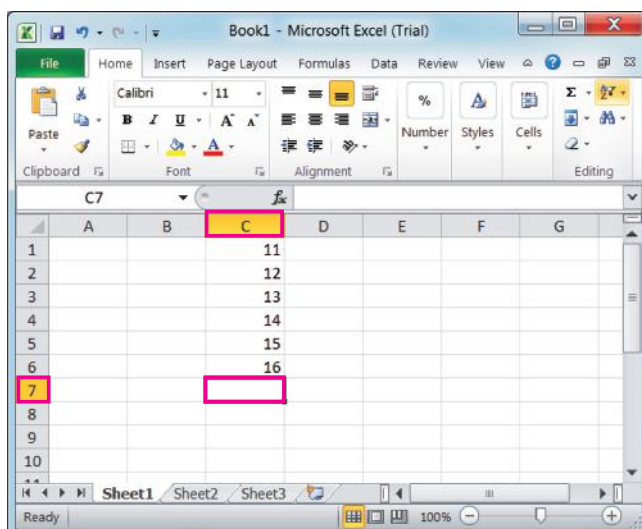
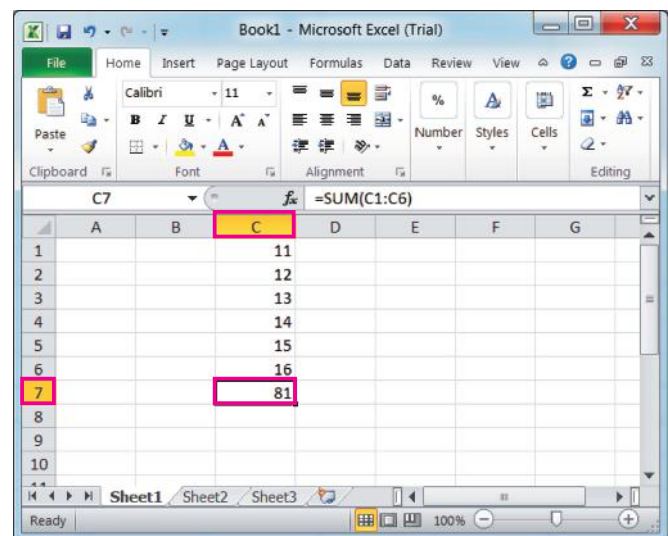
Step 2: Make sure that the cell **C7**, the location where the result will be displayed is blank.

Step 3: Click on the **Home** tab to select the **AutoSum** button from the Editing group on the Ribbon to enter the SUM function into cell **C7**.

Step 4: **Drag** the mouse to select cells **C1** to **C6** in the spreadsheet.

Step 5: Press the **Enter** key to get the result. The answer 81 appears in the cell **C7**.

Step 6: Click on cell **C7** and the complete function = **SUM (C1: C6)** appears in the formula bar above the worksheet.



Points to Remember

- A formula in MS Excel starts with (=) sign.
- Formulas can be entered in the formula bar or inside a cell.
- A formula involves the use of various arithmetic operators.
- A formula may give an error result.
- Functions should begin with the (=) or @ sign followed by the function name.
- There are various pre-defined functions in MS Excel.
- The function library is a large group of functions.
- AutoSum feature is present on the Home tab of the ribbon.

EXERCISE




A. Tick (✓) the correct option :

1. A formula is _____.
(a) a sequence of values, cell references, functions, and/or operators contained in a cell
(b) used to carry out common mathematical calculations
(c) defined as a group of symbols
2. A cell reference is _____.
(a) its location in the spreadsheet
(b) the name of a cell in MS Excel
(c) a group of cells in a spreadsheet
3. AutoSum feature is used to _____.
(a) add numbers in the selected cells
(b) subtract numbers in a given cell
(c) perform logical functions
4. _____ error indicates that the column is wide enough to display the numbers.
(a) ##### (b) ### (c) none of these
5. _____ is a kind of error.
(a) #N/A (b) %%% (c) XXX
6. _____ tab contains the AutoSum feature of MS Excel.
(a) Home (b) Layout (c) Insert

B. Fill in the blanks :

1. When the column is not wide enough, the error message displayed is _____.
2. AutoSum feature is present on _____ tab.
3. _____ error indicates that data are not available.

- 
- The function library is on the _____ tab.
 - _____ save us from writing lengthy formulas.

C. Write (T) for true and (F) for false statements :

- Formulas can be entered in the formula bar or inside a cell.
- A formula may not give an error result.
- The AutoSum is a short-cut feature.
- The function library is a large group of functions.
- A formula in MS Excel starts with (=) sign.

D. Find the errors (if any) in the following formulas/functions. Then, write the correct formula/function :

- @SUM(B1 :: B5) _____
- =AVG(D2 + D4) _____
- =C1 + E2 × D3 _____
- @D2 – D3 _____
- =E5/E6 _____

E. Answer the following Questions :

- Define functions.
- Explain the concept of AutoSum feature in MS Excel.
- Describe the functions present in the Functions Library on the Formula tab of the Ribbon.
- Describe the pre-defined functions which we can use.
- What is a formula?
- Name any two error results displayed in MS Excel and state their possible reasons.
- Write the formula to calculate the average of three numbers stored in cells A1, A2 and A3.
- How do the function begin?



ACTIVITY

- Mohan's teacher wants him to calculate the total marks obtained by a student in the following subjects : English-86, Maths-93, Hindi-70, Science-85, Social Studies-78, Computer Science-95. Help him by writing a formula for calculating the same in MS Excel.