

# LIBRE OFFICE CALC

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# Introduction To Calc

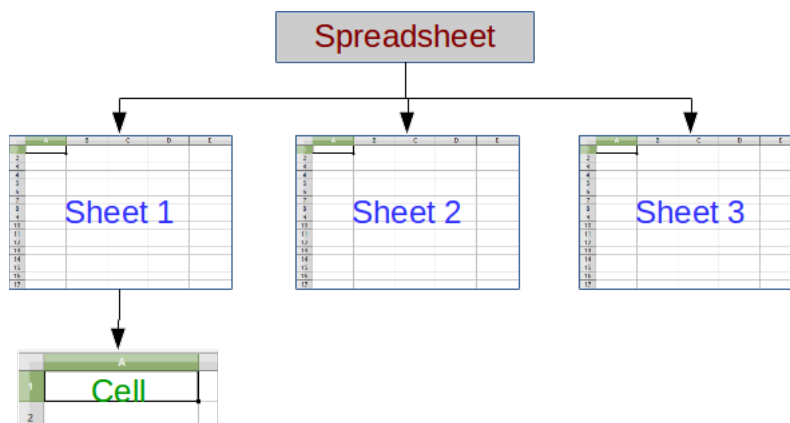
Calc is the spreadsheet component of LibreOffice. Spreadsheets allow us to organize, analyse and store data in tabular form. Furthermore in a spreadsheet we can manipulate this data to produce certain results. Other features provided by Calc include:

- Functions, which can be used to create formulas to perform complex calculations on data.
- Database functions to arrange, store, and filter data.
- Dynamic charts giving a wide range of 2D and 3D charts.
- Ability to open, edit, and save Microsoft Excel spreadsheets.

## Spreadsheets, Sheets, And Cells

In Calc you create files that are called **spreadsheets**. A spreadsheet consist of a number of individual **sheets**, each sheet containing **cells** arranged in rows and columns. A particular cell is identified by its row number and column letter (for example cell B8). Each cell can contain data in the form of text, numbers or formulas.

- **Maximum rows :-1,048,576**
- **Maximum columns.:-1024 (AMJ)**
- **Extension name:-.ods**
- **Minimum zooming range:-20%**
- **Maximum zooming range:- 400%**



## Create A New Spread Sheet

**step 1-** go to file menu-click on new – spread sheet

**or** you can use shortcut key CTRL+N

## Saving Spreadsheet

**step 1-** go to file menu- select 'save' or press shortcut key CTRL+S on click on save button from the standard tool baar.

**Step 2-** if you are saving the file for the 1<sup>st</sup> time the save as dialogue box will appea.

**Step 3-** you have to enter the name of the file and location where you want to save the click on save button.

## Saving Spreadsheet On Other Locations

you can use the save as command to save the data of the spreadsheet file to a different location or type format or different file name.

**Step** – go to file menu – save as or press shortcut key CTRL+SHIFT +S -the save as dialogue box will appear then select the file type and select location where you want to save , then click on save button.

## Opening And Closing Spreadsheet

### Opening:-

**step 1-**go to file menu- select 'open' orpress shortcut key CTRL+O.

**Step 2-**Click the open icon on standard tool bar.

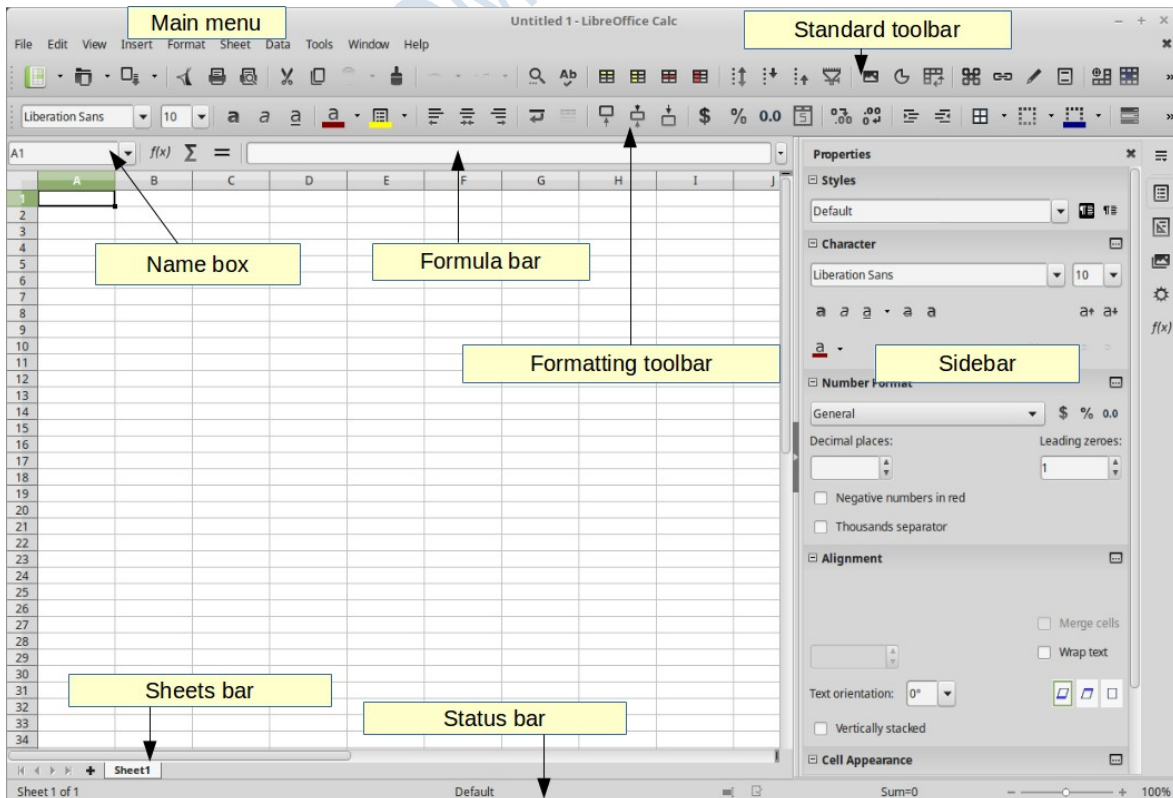
**Step 3-**A dialogue box will appear on your screen you can slect the desired spread sheet file you want to open and click on open button.

### Closing:-

go to file menu – select the close option.

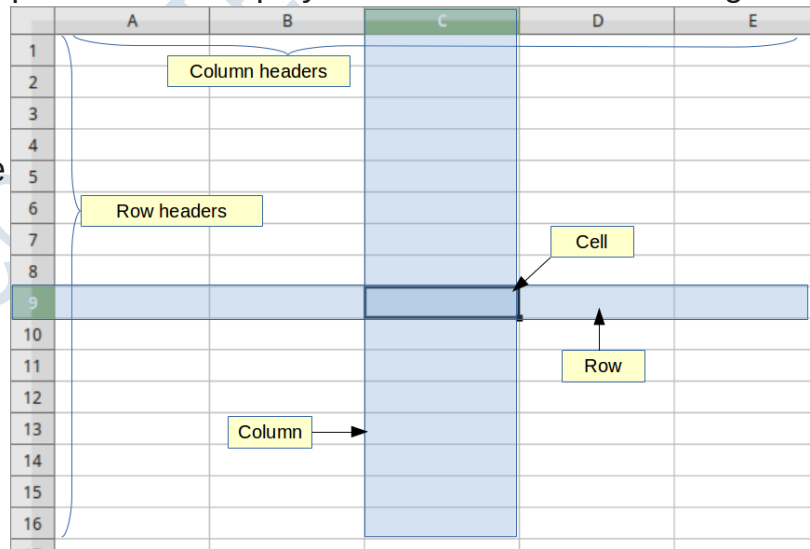
# Calc Main Window

When Calc is started, the main window opens and the various parts are shown in the image below. The Menu bar, toolbars, Sidebar and Status bar have similar functionality with other LibreOffice components.



## Spreadsheet Layout

The main section of the workspace in Calc displays the cells in the form of a grid. Each cell is defined by the intersection of one column and one row in the spreadsheet. At the top of the columns and the left end of the rows are a series of **header** boxes containing letters and numbers. The column headers use an alphabet character starting at A and go on to the right. The row headers use a numerical character starting at 1 and go down.



## Name Box And Formula Bar

The name of the active cell is displayed in the Name box. The name of each cell is formed by the letter of the column and its line number. The active cell is the one we have selected each time using the mouse or keyboard. Next to the Name Box is the Formula Bar that displays the formula or just the contents of a cell. In the Formula bar there are buttons for inserting functions into a cell. Formulas and functions allow us to enter calculations into a cell based on the values of other cells.



## Sheets Bar

In Calc you can have more than one sheet in a spreadsheet. At the bottom of the grid of cells in a spreadsheet the sheets bar is located, indicating how many sheets there are in your spreadsheet. Clicking on a sheet's tab enables access and displays to the workspace each individual sheet. An active sheet is indicated with a highlight color in the sheet's tab.



# Navigating

## Cell Navigation

You can navigate to any cell by clicking with the mouse, however you should learn the following navigation shortcuts keys to speed up data entry with Calc.

- Enter key moves the cell focus down the next row.
- Shift+Enter moves the focus up to the previous row.
- Tab moves the cell focus right the next column.
- Shift+Tab moves the focus left the next column.

	A	B	C	D	E
1					
2			Shift+Enter		
3					
4					
5					
6		Shift+TAB			TAB
7					
8					
9					
10			Enter		
11					

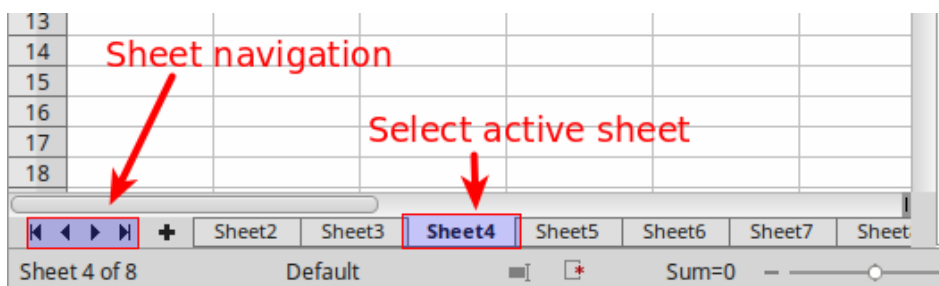
Alternatively you can navigate using the **arrow** keys on the keyboard or the Page Up, Page Down, Home and End keys.

## Sheet Navigation

Each sheet inside a spreadsheet file is independent of the other sheets, though you can refer to a cell from another sheet when using formulas. To navigate between different sheets in a spreadsheet:

- Click on one of the sheet tabs at the bottom of the spreadsheet or
- Use the Navigator tab in the Sidebar

If there are a lot of sheets in your spreadsheet, then some of the sheet tabs may be hidden behind the horizontal scroll bar at the bottom of the screen. In this case, use the four buttons to the left of the sheet tabs to move the tabs into view.





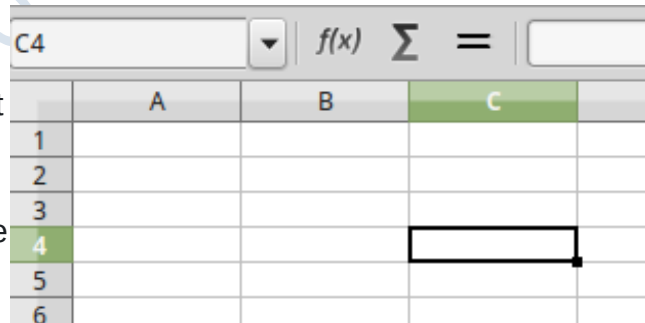
# Selecting

## Selecting Cells

### Single cell

To select a cell using the mouse, place the mouse pointer over the cell and click the left mouse button. When a cell is selected or in focus, the cell borders are emphasized.

The **cell reference name** is displayed in the Name Box in the Formula bar.

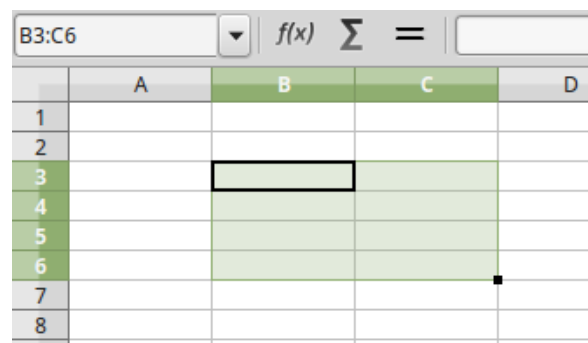


## Range Of Contiguous Cells

A range of cells can be selected using the keyboard or the mouse. The **cells range name** is displayed in the Name Box in the Formula bar. A cell range has the following syntax

<upper left cell name>:<lower right cell name>

In the example below the selected cell range is named B3:C6



a) To select a range of cells using the **mouse**:

1. Select the upper left cell.
2. Press and hold down the left mouse button.
3. Move the mouse cursor to the lower right cell and release the left mouse button.

b) To select a range of cells using the **SHIFT** key:

1. Select the upper left cell
2. Hold down the SHIFT key.
3. Select the lower right cell.

c) You can also **directly** select a range of cells using the Name Box. Click into the Name Box on the Formula Bar and type the cells range name.

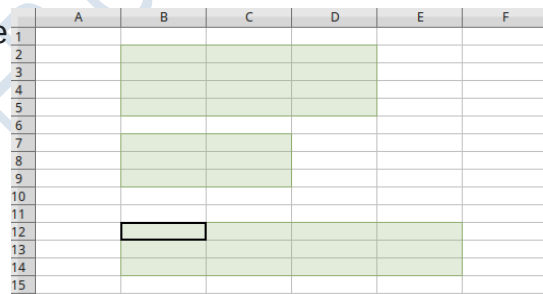
## Range Of Non-Contiguous Cells

1. Select the cell or range of cells using one of the methods above.

2. Hold down the CTRL key

3. Using the mouse move and select the next cell or range of cells.

4. Repeat the above step for all required selections.

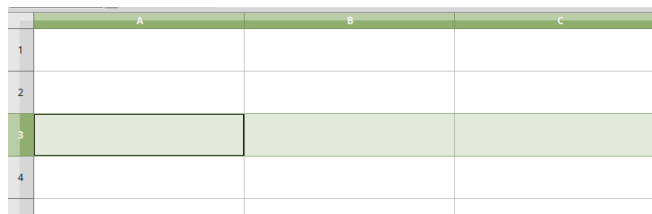


An Excel spreadsheet with columns A through F and rows 1 through 15. The following cells are selected and highlighted in light green: B2, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12, B13, B14, B15; C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15; D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15; E2, E3, E4, E5, E6, E7, E8, E9, E10, E11, E12, E13, E14, E15; and F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, F13, F14, F15. A black border is visible around cell B12.

## Selecting Columns And Rows

### Single Column Or Row

To select a single column or row, click on the column or row **header**.



An Excel spreadsheet with columns A, B, and C and rows 1 through 4. The column headers A, B, and C are highlighted in light green. The row headers 1, 2, 3, and 4 are also highlighted in light green. A black border is visible around cell B3.

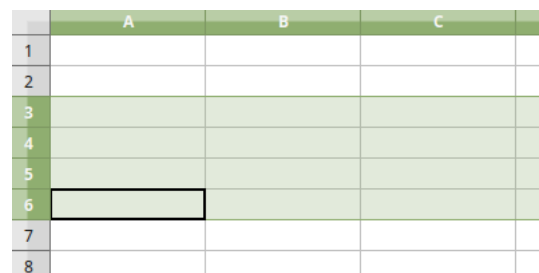
### Multiple Columns Or Rows

To select multiple columns or rows that are **contiguous**:

1. Click on the first column or row in the group.

2. Hold down the SHIFT key.

3. Click the last column or row in the group.



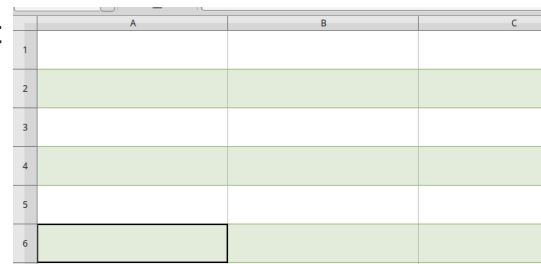
An Excel spreadsheet with columns A, B, and C and rows 1 through 8. The column headers A, B, and C are highlighted in light green. The row headers 1, 2, 3, 4, 5, 6, 7, and 8 are also highlighted in light green. A black border is visible around cell B6.

To select multiple columns or rows that are **not contiguous**:

1. Click on the first column or row in the group.

2. Hold down the CTRL key.

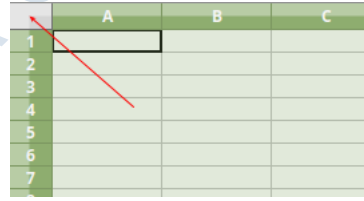
3. Click on all of the subsequent columns or rows while holding down the CTRL key.



An Excel spreadsheet with columns A, B, and C and rows 1 through 6. The column headers A, B, and C are highlighted in light green. The row headers 1, 2, 3, 4, 5, and 6 are also highlighted in light green. A black border is visible around cell B6.

## Entire Sheet

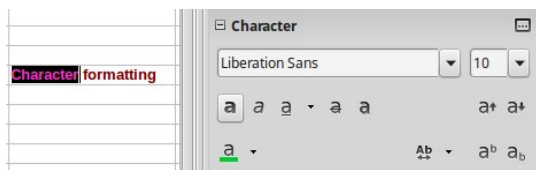
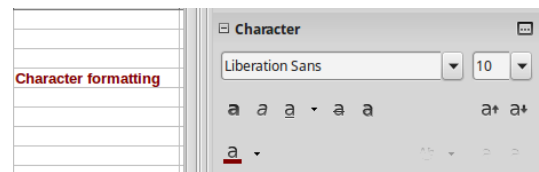
To select the entire sheet, click on the small box between the column headers and the row headers, or use the key combination CTRL+A to select the entire sheet.



## Formatting Cells

### Formating Characters

When you click on a cell or a group of cells you can apply character formatting using the toolbar or the Sidebar. This formatting applies to all contents of the cell or cells.

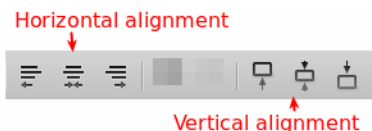


To format **part** of a text in a cell double click inside the cell, select the text and the apply the formatting.

## Cell Alignment

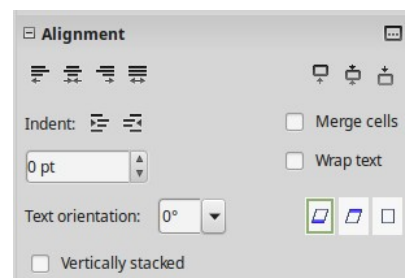
You can align the contents of a cell both vertically and horizontally. The results of each alignment type are shown in the table below.

	Left	Center	Right
Top	<i>text</i>	<i>text</i>	<i>text</i>
Center	<i>text</i>	<i>text</i>	<i>text</i>
Bottom	<i>text</i>	<i>text</i>	<i>text</i>



To align cells use the alignments buttons on the Formatting toolbar.

Or you can use the Alignment Section on the Sidebar.



## Text Wrapping

Text entered into a cell does not wrap around cell borders. To change this behaviour you must enable Text Wrapping on a cell or group of cells. To enable Text Wrapping use **Format > Cells... > tab Alignment > Properties** "Wrap text automatically".

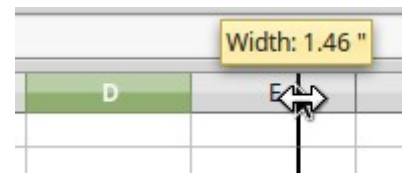
C	D
This text is NOT Waped	
This text is Waped	

## Resizing

You can resize the **width** of a column or the **height** of a row with one of the following ways:

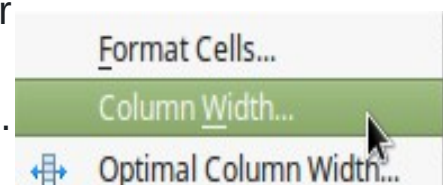
### A) Dragging

Place the mouse cursor on the edge of a column or row header and when the resize mouse icon appears drag to resize.

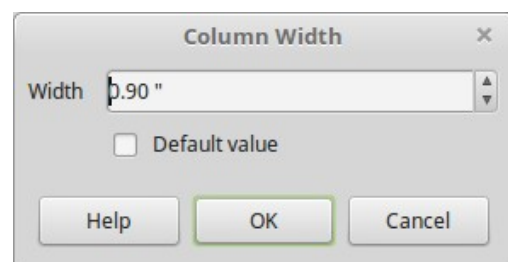


### B) Using The Context Menu

In this way you can resize multiple columns or rows at once. Select one or more columns or rows and right click to bring the context menu. Select the Column Width (or Row Height) command to bring the window to set the new size.



Type the value for the column width (or row height).



## Optimal Column Width Or Row Height.

To quickly change the width of a column or height of a row place the mouse cursor on the **edge** of a column or row header and double click. The width or height will adjust to the optimal size.

B	C
<b>No optimal Size</b>	<b>Optimal Size</b>
Elen	Elen
Teo	Teo
Mary	Mary
John	John
Vagelis	Vagelis

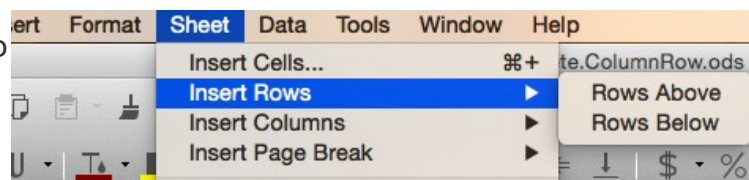
## Add And Delete Rows And Columns In Calc

It covers the following:

- Inserting Rows
- Deleting Rows
- Inserting Columns
- Deleting Columns

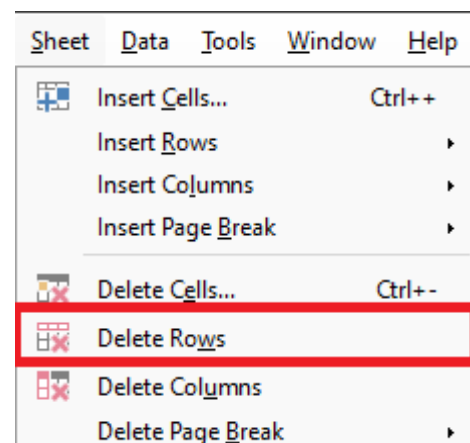
### Inserting Rows

1. Click a cell in a row that you want to insert a row above or below.
2. Click the Sheet menu.
3. Highlight the Insert Rows sub-menu.
4. Choose either Rows Above or Rows Below.



### Delete Rows

1. Click a cell in the row you wish to delete.
2. Click the Sheet menu.
3. Click the Delete Rows item.



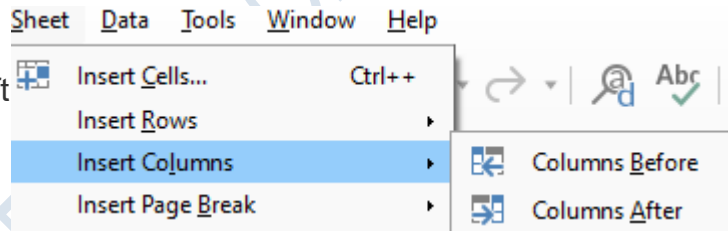
## Insert Columns

1. Click on a cell in the column you want to insert a new column to the left or right of.

2. Click the Sheet menu.

3. Highlight the Insert Columns sub-menu.

4. Click either Columns Left or Columns Right.

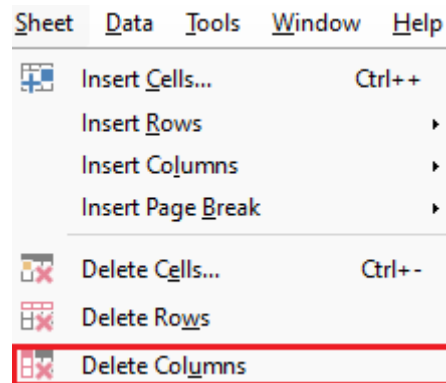


## Delete Columns

1. Click a cell in the column you wish to delete.

2. Click the Sheet menu.

3. Click the Delete Columns item.



## Merging And Splitting Cells

You can **merge** two or more cells and combine them to one. To merge select the cells and click on the merge button. Calc will ask you if you want to move the contents of the second cell to the first. To **split** the cells back select the cells and click again on the merge button.

Before merge	Cell 1	Cell 2	
After merge	Cell 1 Cell 2		

## Cell Borders And Background

Using borders and background color you can format the cells in a spreadsheet in order to change the visual display of the data. An example of border formatting and background color is shown in the figure below.

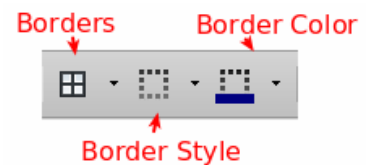
Data 1	Data 2	Data 3
5	100	195
10	101	196
15	102	197
20	103	198
25	104	199
30	105	200
35	106	201

## Background Color

To apply background color to a cell or a group of cells, select and then click on the background color button on the Formatting toolbar. When you click on the arrow in this button you can select another color. Using the same button you can change the color or remove the background color (No Fill option).

## Borders

To quickly set and style the borders around cells use the buttons from the Formatting toolbar. You can set the border type, line style and color.



Alternatively you can use the Cell Appearance section in the Sidebar



## Operators In Formulas

Formulas in Calc are like mathematical equations. You can use a combination of numbers, cell references and operators to perform from simple to complex calculations. Here we list the basic operator types supported in LibreOffice Calc.

### Arithmetic

Operator	Name	Example
+	Addition	= 1 + 1
-	Subtraction	= 5 - 2
-	Negation	= -12
*	Multiplication	= 5 * 3
/	Division	= 6 / 2
%	Percent	15%
^	Exponentiation	2^3

# Functions

## Function Syntax

The basic syntax to create a formula with a function is:

=SUM(A1:A10)

1. Insert an equals sign (=), **Equal sign**
2. Insert the function name (SUM, for example is the function name for addition), **Function name**
3. A function normally accepts one or more **arguments**. Arguments contain the data on which the function will calculate the result. In most cases, the arguments are references to cell areas or individual cells. **Argument**

## Application Of Functions

**Text function:** This section contains descriptions of the Text functions.

## CONCATENATE

Combines several text strings into one string.

### Syntax

=Concatenate(Text1,Text2,....,Text3)

### INPUT

	A	B	C	D
1	TEXT 1	TEXT 2	TEXT 3	CONCATENATE
2	A	B	C	=CONCATENATE(A2,B2,C2)

### OUTPUT

	A	B	C	D
1	TEXT 1	TEXT 2	TEXT 3	CONCATENATE
2	A	B	C	ABC



## LEFT

Returns the first character from the left side.

### Syntax

**=Left("Text"; Number)**

**Text** is the text where the initial partial words are to be determined.

**Number** (optional) specifies the number of characters for the start text. If this parameter is not defined, one character is returned.

### INPUT

	A	B	C
1	TEXT	NUMBER	LEFT
2	EDUCATION	3	=LEFT(A2,B2)

### OUTPUT

	A	B	C
1	TEXT	NUMBER	LEFT
2	EDUCATION	3	EDU

## RIGHT

Returns the character from the right side.

### Syntax

**=Right("Text"; Number)**

**Text** is the text where the initial partial words are to be determined.

**Number** (optional) specifies the number of characters for the start text. If this parameter is not defined, one character is returned.

### INPUT

	A	B	C
1	TEXT	NUMBER	RIGHT
2	EDUCATION	3	=RIGHT(A2,B2)

OUTPUT

	A	B	C
1	TEXT	NUMBER	RIGHT
2	EDUCATION	3	ION

LEN

Returns the length of a string including spaces.

Syntax

=Len("Text")

**Text** is the text whose length is to be determined.

INPUT

	A	B
1	TEXT	LEN
2	EDUCATION	=LEN(A2)

OUTPUT

	A	B
1	TEXT	LEN
2	EDUCATION	9

## LOWER

Converts all uppercase letters in a text string to lowercase.

### Syntax

=Lower("Text")

**Text** refers to the text to be converted.

### INPUT

	A	B
1	TEXT	LOWER
2	EDUCATION	=LOWER(A2)

### OUTPUT

	A	B
1	TEXT	LOWER
2	EDUCATION	education

## UPPER

Converts the string specified in the **text** field to uppercase.

### Syntax

=Upper("Text")

**Text** refers to the lower case letters you want to convert to upper case.

### INPUT

	A	B
1	TEXT	UPPER
2	education	=UPPER(A2)

### OUTPUT

	A	B
1	TEXT	UPPER
2	education	EDUCATION

## MID

Returns a text string of a text. The parameters specify the starting position and the number of characters.

### Syntax

**=Mid("Text"; Start; Number)**

**Text** is the text containing the characters to extract.

**Start** is the position of the first character in the text to extract.

**Number** specifies the number of characters in the part of the text.

### INPUT

	A	B	C	D
1	TEXT	START	NUMBER	MID
2	education	3	6	=MID(A2,B2,C2)

### OUTPUT

	A	B	C	D
1	TEXT	START	NUMBER	MID
2	education	3	6	ucatio

## PROPER

Capitalizes the first letter in all words of a text string.

### Syntax

**=Proper("Text")**

**Text** refers to the text to be converted.

### INPUT

	A	B
1	TEXT	PROPER
2	education	=PROPER(A2)

### OUTPUT

	A	B
1	TEXT	PROPER
2	education	Education

## SUBSTITUTE

Substitutes new text for old text in a string.

### Syntax

=Substitute("Text"; "Searchtext"; "Newtext")

**Text** is the text in which text segments are to be exchanged.

**SearchText** is the text segment that is to be replaced (a number of times).

**NewText** is the text that is to replace the text segment.

### INPUT

	A	B	C	D
1	TEXT	SEARCH TEXT	NEW TEXT	SUBSTITUTE
2	123123	2	AB	=SUBSTITUTE(A2,B2,C2)

### OUTPUT

	A	B	C	D
1	TEXT	SEARCH TEXT	NEW TEXT	SUBSTITUTE
2	123123	2	AB	1AB31AB3

## REPEAT

It repeats any alphanumeric text or symbol upto a number of times.

### Syntax

=Rept(Text,Number)

### Input

	A	B	C
1	TEXT	NUMBER	REPEAT
2	a	4	=REPT(A2,B2)

### output

	A	B	C
1	TEXT	NUMBER	REPEAT
2	a	4	aaaa

## POWER

Returns a number raised to a power.

### Syntax:

=Power(Number; Power)

### INPUT

	A	B	C
1	<b>BASE</b>	<b>EXPONENT</b>	<b>POWER</b>
2	4	3	=POWER(A2,B2)

### OUTPUT

	A	B	C
1	<b>BASE</b>	<b>EXPONENT</b>	<b>POWER</b>
2	4	3	64

## PRODUCT

Multiplies all the numbers given as arguments and returns the product.

### Syntax:

=Product(Number1; Number2; ... )

### INPUT

	A	B	C
1	<b>NUMBER 1</b>	<b>NUMBER 2</b>	<b>PRODUCT</b>
2	4	3	=PRODUCT(A2,B2)

### OUTPUT

	A	B	C
1	<b>NUMBER 1</b>	<b>NUMBER 2</b>	<b>PRODUCT</b>
2	4	3	12

## MOD

Returns the integer remainder of a division.

### Syntax:

=Mod(Dividend,Divisor)

### INPUT

	A	B	C
1	NUMBER 1	NUMBER 2	MOD
2	4	3	=MOD(A2,B2)

### OUTPUT

	A	B	C
1	NUMBER 1	NUMBER 2	MOD
2	4	3	1

## MAX

Returns the maximum of a list of arguments, ignoring text entries.

### Syntax:

=Max(Number1; Number2; ... Number30)

### INPUT

	A	B	C
1	NUMBER 1	NUMBER 2	MAX
2	4	3	=MAX(A2,B2)

### OUTPUT

	A	B	C
1	NUMBER 1	NUMBER 2	MAX
2	4	3	4

## MIN

Returns the minimum of a list of arguments, ignoring text entries.

### Syntax:

=Min(Number1; Number2; ... )

### INPUT

	A	B	C
1	NUMBER 1	NUMBER 2	MIN
2	4	3	=MIN(A2,B2)

### OUTPUT

	A	B	C
1	NUMBER 1	NUMBER 2	MIN
2	4	3	3

## AVERAGE

Returns the average of the arguments, ignoring text.

### Syntax:

=Average(Number1; Number2; ...)

### INPUT

	A	B	C	D
1	NUMBER 1	NUMBER 2	NUMBER 3	AVERAGE
2	4	3	2	=AVERAGE(A2,B2,C2)

### OUTPUT

	A	B	C	D
1	NUMBER 1	NUMBER 2	NUMBER 3	AVERAGE
2	4	3	2	=AVERAGE(A2,B2,C2)



## SUM

Adds all the numbers in a range of cells.

### Syntax:

=Sum(Number1; Number2;...)

### INPUT

	A	B	C
1		Jan	
2	<b>Entertainment</b>		
3	Cable TV	52.98	
4	Video Rentals	7.98	
5	Movies	16.00	
6	CDs	18.99	
7	Totals	=SUM(B3:B6)	
8			

### OUTPUT

B7    X ✓ fx    =SUM(B3:B6)			
	A	B	C
1		Jan	
2	<b>Entertainment</b>		
3	Cable TV	52.98	
4	Video Rentals	7.98	
5	Movies	16.00	
6	CDs	18.99	
7	Totals	95.95	
8			

# SUMIF

## Syntax:

That allows you to add up the values in a range of cells that meet specific criteria. The function takes three arguments:

Range: The range of cells that you want to evaluate.

Criteria: The condition that cells must meet to be included in the calculation.

Sum\_range: The range of cells whose values you want to add up.

**=Sumif(Range, Criteria , Sum Range)**

## INPUT

	A	B	C	D	E	F	G
1	Name	Type 1	Total				
2	Bulbasaur	Grass	318		Type	Total Sum	
3	Ivysaur	Grass	405		Grass	=SUMIF(B2:B10; E3; C2:C10)	
4	Venusaur	Grass	525		Fire	=SUMIF(B2:B10; E4; C2:C10)	
5	Charmander	Fire	309		Water	=SUMIF(B2:B10; E5; C2:C10)	
6	Charmeleon	Fire	405				
7	Charizard	Fire	534				
8	Squirtle	Water	314				
9	Wartortle	Water	405				
10	Blastoise	Water	530				
11							

## OUTPUT

	A	B	C	D	E	F	G
1	Name	Type 1	Total				
2	Bulbasaur	Grass	318		Type	Total Sum	
3	Ivysaur	Grass	405		Grass	1248	
4	Venusaur	Grass	525		Fire	1248	
5	Charmander	Fire	309		Water	1249	
6	Charmeleon	Fire	405				
7	Charizard	Fire	534				
8	Squirtle	Water	314				
9	Wartortle	Water	405				
10	Blastoise	Water	530				

# SUMIFS

## Syntax

that allows you to add up the values in a range of cells that meet multiple criteria.

The function takes multiple arguments:

1. Sum\_range: The range of cells whose values you want to add up.
2. Criteria\_range1: The first range of cells that you want to evaluate.
3. Criteria1: The condition that cells in the first criteria range must meet to be included in the calculation.
4. Criteria\_range2: The second range of cells that you want to evaluate.
5. Criteria2: The condition that cells in the second criteria range must meet to be included in the calculation.

You can specify up to 127 pairs of criteria range and criteria.

**=Sumifs(Sum\_Range, Criteria\_Range1, Criteria1, [Criteria\_Range2, Criteria2], ...)**

## INPUT

	A	B	C	D	E	F	G	H
1	MONTH	PRODUCT	COUNTRY	SALES				
2	JAN	CAR	INDIA	1				
3	MAR	GLASS	UK	2				
4	MAR	PEN	USA	3				
5	FEB	PEN	INDIA	4				
6	JAN	CAR	UK	5				
7	MAR	GLASS	USA	6				
8	FEB	CAR	INDIA	7				
9	FEB	GLASS	UK	8				
10	MAR	PEN	USA	9				
11	JAN	PEN	INDIA	10				
12								
13	MONTH	PRODUCT	COUNTRY	SALES				
14				=SUMIFS(D2:D11,A2:A11,A14,B2:B11,B14,C2:C11,C14)				

## OUTPUT

	A	B	C	D
1	MONTH	PRODUCT	COUNTRY	SALES
2	JAN	CAR	INDIA	1
3	MAR	GLASS	UK	2
4	MAR	PEN	USA	3
5	FEB	PEN	INDIA	4
6	JAN	CAR	UK	5
7	MAR	GLASS	USA	6
8	FEB	CAR	INDIA	7
9	FEB	GLASS	UK	8
10	MAR	PEN	USA	9
11	JAN	PEN	INDIA	10
12				
13	MONTH	PRODUCT	COUNTRY	SALES
14	JAN	CAR	INDIA	1

# COUNT

## Syntax

=Count(Value1,Value2.....)

- Blank cell = ✗
- Alphabet = ✗
- Number = ✓

## Input

	A	B
1	COUNT	
2	1	
3	2	
4		
5	a	
6	5	
7		
8	b	
9		
10	9	
11	10	
12	=COUNT(A2:A11)	

## output

	A
1	COUNT
2	1
3	2
4	
5	a
6	5
7	
8	b
9	
10	9
11	10
12	5

# COUNTA

## Syntax

=Counta(Value1,Value2.....)

- Blank cell = ✗
- Alphabet = ✓
- Number = ✓

## Input

	A	B
1	COUNTA	
2	1	
3	2	
4		
5	a	
6	5	
7		
8	b	
9		
10	9	
11	10	
12	=COUNTA(A2:A11)	

## output

	A
1	COUNTA
2	1
3	2
4	
5	a
6	5
7	
8	b
9	
10	9
11	10
12	7

# COUNTBLANK

## Syntax

=Countblank(Value1,Value2.....)

- Blank cell = ✓
- Alphabet = ✗
- Number = ✗

## Input

	A
1	COUNT BLANK
2	1
3	2
4	
5	a
6	5
7	
8	b
9	
10	9
11	10
12	=COUNTBLANK(A2:A11)

## output

	A
1	COUNT BLANK
2	1
3	2
4	
5	a
6	5
7	
8	b
9	
10	9
11	10
12	3

# COUNTIF

## Syntax

**=Countif(Range,Criteria)**

COUNTIF is a function in spreadsheet software, such as LibreOffice Calc, that allows you to count the number of cells in a range that meet a specific condition.

The function takes two arguments:

Range: The range of cells that you want to evaluate.

Criteria: The condition that cells must meet to be counted.

## INPUT

	A	B	C	D
1	<b>COUNTIF</b>			
2	ONE			
3	TWO		<b>ONE/TWO</b>	<b>COUNTIF</b>
4	ONE		ONE	=COUNTIF(A2:A11,C4)
5	ONE		TWO	=COUNTIF(A2:A11,C5)
6	TWO			
7	ONE			
8	ONE			
9	TWO			
10	TWO			
11	ONE			

## OUTPUT

	A	B	C	D
1	<b>COUNTIF</b>			
2	ONE			
3	TWO		<b>ONE/TWO</b>	<b>COUNTIF</b>
4	ONE		ONE	6
5	ONE		TWO	4
6	TWO			
7	ONE			
8	ONE			
9	TWO			
10	TWO			
11	ONE			

# COUNTIFS

## Syntax

**=Countifs(Range1, Criteria1, Range 2, Criteria2 .....**)

COUNTIFS is a function in spreadsheet software, such as LibreOffice Calc, that allows you to count the number of cells in a range that meet multiple criteria.

The function takes multiple arguments:

1. Range1: The first range of cells that you want to evaluate.
2. Criteria1: The condition that cells in the first criteria range must meet to be counted.
3. Range2: The second range of cells that you want to evaluate.
4. Criteria2: The condition that cells in the second criteria range must meet to be counted.

You can specify up to 64 pairs of range and criteria.

## INPUT

	A	B	C	D	E	F
1	STUDENT	DIVISION				
2	MALE	FIRST				
3	FEMALE	FIRST				
4	MALE	SECOND				
5	MALE	SECOND				
6	MALE	FIRST				
7	FEMALE	SECOND				
8						
9	STUDENT	DIVISION	COUNTIFS			
10			=COUNTIFS(A2:A7,A10,B2:B7,B10)			
11			=COUNTIFS(A3:A8,A11,B3:B8,B11)			

## OUTPUT

	A	B	C
1	STUDENT	DIVISION	
2	MALE	FIRST	
3	FEMALE	FIRST	
4	MALE	SECOND	
5	MALE	SECOND	
6	MALE	FIRST	
7	FEMALE	SECOND	
8			
9	STUDENT	DIVISION	COUNTIFS
10	MALE	FIRST	2
11	FEMALE	SECOND	1

## ROUND

4	3	2	7	.	2	5	4	5	NUMBER
-4	-3	-2	-1	0	1	2	3	4	COUNT

### Syntax

**=Round(Number, Count)**

the ROUND function is a built-in mathematical function that is used to round a numeric value to a specified number of digits. The function takes two arguments: the number to be rounded, and the number of digits to which the number should be rounded.

### INPUT

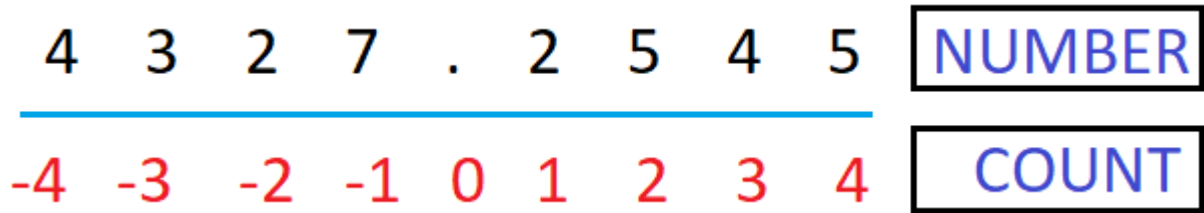
	A	B	C
1	Number	Count	Round
2	4327.2545	0	=ROUND(A2,B2)
3	4327.2545	1	=ROUND(A3,B3)
4	4327.2545	2	=ROUND(A4,B4)
5	4327.2545	3	=ROUND(A5,B5)
6	4327.2545	-3	=ROUND(A6,B6)
7	4327.2545	-2	=ROUND(A7,B7)
8	4327.2545	-1	=ROUND(A8,B8)

### OUTPUT

	A	B	C
1	Number	Count	Round
2	4327.2545	0	4327
3	4327.2545	1	4327.3
4	4327.2545	2	4327.25
5	4327.2545	3	4327.255
6	4327.2545	-3	4000
7	4327.2545	-2	4300
8	4327.2545	-1	4330



## ROUND UP



### Syntax

**=Roundup(Number, Count)**

In LibreOffice Calc, the ROUNDUP function is a built-in mathematical function that is used to round a numeric value up to a specified number of decimal places. The function takes two arguments: the number to be rounded, and the number of decimal places to which the number should be rounded up.

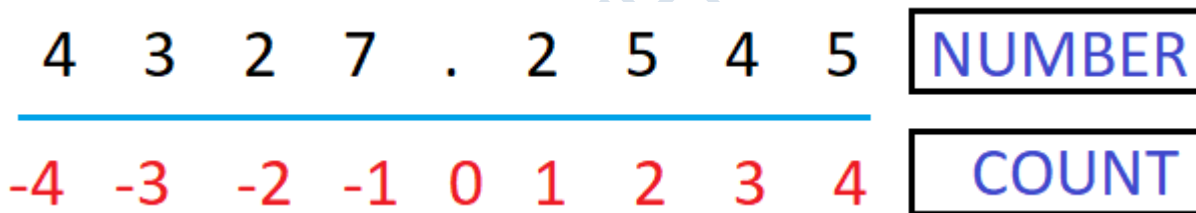
### INPUT

	A	B	C
1	Number	Count	Round-UP
2	4327.2545	0	=ROUNDUP(A2,B2)
3	4327.2545	1	=ROUNDUP(A3,B3)
4	4327.2545	2	=ROUNDUP(A4,B4)
5	4327.2545	3	=ROUNDUP(A5,B5)
6	4327.2545	-3	=ROUNDUP(A6,B6)
7	4327.2545	-2	=ROUNDUP(A7,B7)
8	4327.2545	-1	=ROUNDUP(A8,B8)

### OUTPUT

	A	B	C
1	Number	Count	Round-UP
2	4327.2545	0	4328
3	4327.2545	1	4327.3
4	4327.2545	2	4327.26
5	4327.2545	3	4327.255
6	4327.2545	-3	5000
7	4327.2545	-2	4400
8	4327.2545	-1	4330

## ROUND DOWN



### Syntax

**=Rounddown(Number, Count)**

In LibreOffice Calc, the ROUNDDOWN function is a built-in mathematical function that is used to round a numeric value down to a specified number of decimal places. The function takes two arguments: the number to be rounded, and the number of decimal places to which the number should be rounded down.

### INPUT

	A	B	C
1	<b>Number</b>	<b>Count</b>	<b>Round-DOWN</b>
2	4327.2545	0	=ROUNDDOWN(A2,B2)
3	4327.2545	1	=ROUNDDOWN(A3,B3)
4	4327.2545	2	=ROUNDDOWN(A4,B4)
5	4327.2545	3	=ROUNDDOWN(A5,B5)
6	4327.2545	-3	=ROUNDDOWN(A6,B6)
7	4327.2545	-2	=ROUNDDOWN(A7,B7)
8	4327.2545	-1	=ROUNDDOWN(A8,B8)

### OUTPUT

	A	B	C
1	<b>Number</b>	<b>Count</b>	<b>Round-DOWN</b>
2	4327.2545	0	4327
3	4327.2545	1	4327.2
4	4327.2545	2	4327.25
5	4327.2545	3	4327.254
6	4327.2545	-3	4000
7	4327.2545	-2	4300
8	4327.2545	-1	4320

## Comparative operators

Operator	Name	Example
=	Equal	A1 = B1
>	Greater than	A1 > B1
<	Less than	A1 < B1
>=	Greater or Equal than	A1 >= B1
<=	Less or Equal than	A1 <= B1

## AND FUNCTION

The **AND** function is a logical function used to require more than one condition at the same time. AND returns either TRUE or FALSE. The AND function can be used as the logical test inside the IF function.

### **Purpose of AND Function**

Test multiple conditions with AND.

### **Return value**

TRUE if all the conditions evaluate to TRUE, else it returns a FALSE.

### **Syntax**

**=And (Logical1, [Logical2],....)**

In the given example the return value will be TRUE if the score is less than 50 and 90 , FALSE if not matched with the given criteria.

### INPUT

	A	B	C
1	NAME	SCORE	RETURN
2	Amit	67	=AND(C4<50,C4<90)
3	Mohit	87	=AND(C5<50,C5<90)
4	Suresh	55	=AND(C6<50,C6<90)
5	Anurag	45	=AND(C7<50,C7<90)
6	Ankit	30	=AND(C8<50,C8<90)

## OUTPUT

	A	B	C
1	NAME	SCORE	RETURN
2	Amit	67	FALSE
3	Mohit	87	FALSE
4	Suresh	55	FALSE
5	Anurag	45	TRUE
6	Ankit	30	TRUE

## OR FUNCTION

### Syntax,

**=Or(Logical1, [Logical2],...)**

In LibreOffice Calc, the OR function is a logical function that returns a Boolean value of TRUE or FALSE. The OR function tests whether any of a set of conditions are true, and returns TRUE if at least one of the conditions is true, and FALSE if none of the conditions are true.

## INPUT

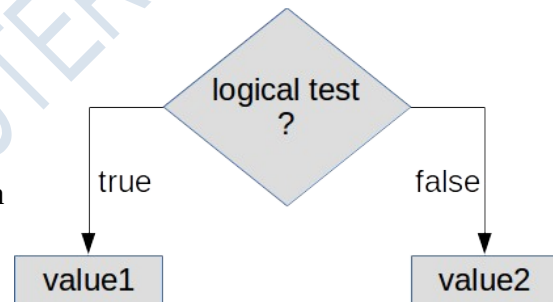
	A	B	C	D	E	F
1						
2	Employee Name	Sales Volume	Team			
3	Malkowitz, Sally	18	North	=OR(B3>30,C3="North")		
4	Wilson, Timothy	31	East			
5	Birch, Julia	42	West			
6	Fairclough, John	57	North			
7	Johnson, Mark	30	East			
8	Williams, Eric	16	South			
9						
10						

## OUTPUT

	A	B	C	D
1				Sales > 30, or North Team
2	Employee Name	Sales Volume	Team	
3	Malkowitz, Sally	18	North	TRUE
4	Wilson, Timothy	31	East	TRUE
5	Birch, Julia	42	West	TRUE
6	Fairclough, John	57	North	TRUE
7	Johnson, Mark	30	East	FALSE
8	Williams, Eric	16	South	FALSE

## IF FUNCTION

The **IF** function is one of the most popular functions in Calc and other spreadsheet applications. IF performs a **logical test** and return one value for a TRUE result, and another for a FALSE result. In its simplest form, the IF function says:



IF(Something is True, then return value1, otherwise return value2)

Returns one of two values, depending on a test condition.

### Syntax:

**=If(Test; Value1; Value2)**

where:

test is or refers to a logical value or expression that returns a logical value (TRUE or FALSE).

value1 is the value that is returned by the function if test yields TRUE.

value2 is the value that is returned by the function if test yields FALSE.

If value2 is omitted it is assumed to be FALSE; if value1 is also omitted it is assumed to be TRUE.

### INPUT

In  
the

Student	Test 1	Test 2	Final	Pass/Fail
AMIT	52	95	73,50	
SURESH	27	59	43,00	
MOHAN	52	42	47,00	
RAMESH	63	5	34,00	
ANURAG	38	80	59,00	
ANKIT	15	67	41,00	
NISANT	83	6	44,50	
RAJAT	98	79	88,50	
PANDIT	22	55	38,50	
SHARMA	53	58	55,50	

Pass/Fail column he wants to display a "Pass" text if the final score is greater or equal to 70. Using the IF function the formula is

=IF(E4>=70,"Pass","Fail")

Final	Pass/Fail
5 73,50	=IF(E4>=70;"Pass";"Fail")

After the function is filled the "Pass" or "Fail" result will be displayed.

Final	Pass/Fail
73,50	Pass

Then you can use autofill to fill the remaining cells.

### OUTPUT

Student	Test 1	Test 2	Final	Pass/Fail
AMIT	52	95	73,50	Pass
SURESH	27	59	43,00	Fail
MOHAN	52	42	47,00	Fail
RAMESH	63	5	34,00	Fail
ANURAG	38	80	59,00	Fail
ANKIT	15	67	41,00	Fail
NISANT	83	6	44,50	Fail
RAJAT	98	79	88,50	Pass
PANDIT	22	55	38,50	Fail
SHARMA	53	58	55,50	Fail

# VLOOKUP

## Syntax

**=Vlookup(Search Criteria, Array, Index , Sorted Range Lookup)**

In LibreOffice Calc, VLOOKUP is a built-in function that searches for a value in the leftmost column of a range or table, and returns a value in the same row from a specified column of that range or table.

## INPUT

	A	B	C	D	E
1	CU-ID	PRODUCT	PRICE	QTY	TOTAL
2	111	PEN	110	5	550
3	112	CAR	200	6	1200
4	113	GLASS	550	3	1650
5	114	CAR	342	4	1368
6	115	GLASS	140	7	980
7					
8	CU-ID	COLUMN NO.	VLOOKUP		
9	112	3	=VLOOKUP(A9,A2:E6,B9,0)		

## OUTPUT

	A	B	C	D	E
1	CU-ID	PRODUCT	PRICE	QTY	TOTAL
2	111	PEN	110	5	550
3	112	CAR	200	6	1200
4	113	GLASS	550	3	1650
5	114	CAR	342	4	1368
6	115	GLASS	140	7	980
7					
8	CU-ID	COLUMN NO.	VLOOKUP		
9	112	3	200		

# HLOOKUP

## Syntax

=Hlookup(Search Criteria, Array, Index , Sorted Range Lookup)

In LibreOffice Calc, HLOOKUP is a built-in function that searches for a value in the top row of a range or table, and returns a value in the same column from a specified row of that range or table.

## INPUT

	A	B	C	D	E	F
1	CU-ID	111	112	113	114	115
2	PRODUCT	PEN	CAR	GLASS	CAR	GLASS
3	PRICE	110	200	550	342	140
4	QTY	5	6	3	4	7
5	TOTAL	550	1200	1650	1368	980
6						
7						
8	CU-ID	ROW NO.	HLOOKUP			
9	112	3	=HLOOKUP(A9,B1:F5,B9,0)			

## OUTPUT

	A	B	C	D	E	F
1	CU-ID	111	112	113	114	115
2	PRODUCT	PEN	CAR	GLASS	CAR	GLASS
3	PRICE	110	200	550	342	140
4	QTY	5	6	3	4	7
5	TOTAL	550	1200	1650	1368	980
6						
7						
8	CU-ID	ROW NO.	HLOOKUP			
9	112	3	200			

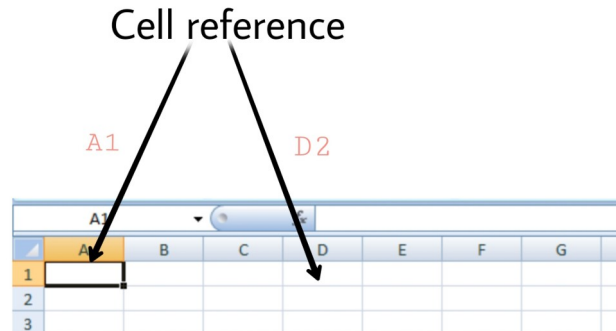


# Cell Reference

**Cell reference** is the address or name of a cell or a range of cells. It is the combination of column name and row number. It helps the software to identify the cell from where the data/value is to be used in the formula. We can reference the cell of other worksheets and also of other programs.

There are three types of cell references in Excel:

1. Relative reference
2. Absolute reference
3. Mixed Reference



## 1. Relative Reference

Relative reference is the default cell reference in calc. It is simply the combination of column name and row number without any dollar (\$) sign.

Steps to Use Relative Reference:

	A	B	C	D
1	Marks 1	Marks 2	Total marks	
2	23	56	=B2+A2	
3	45	90		
4	34	77		
5	76	98		
6	89	34		
7	67	45		
8	34	76		
9	66	34		
10	75	45		
11				

Step 1: We write the formula in any cell and press enter so that it is calculated.

Step 2: Now click on the Fill handle at the corner of cell which contains the formula(C2).

	A	B	C	D	E
1	Marks 1	Marks 2	Total marks		
2	23	56	79		
3	45	90			
4	34	77			
5	76	98			
6	89	34			
7	67	45			
8	34	76			
9	66	34			
10	75	45			

Click on Fill Handle

Step 3: Drag the Fill handle up to the cells you want to fill.

	A	B	C	D	E
1	<b>Marks 1</b>	<b>Marks 2</b>	<b>Total marks</b>		
2	23	56	79		
3	45	90	135		
4	34	77	111		
5	76	98	174		
6	89	34	123		
7	67	45	112		
8	34	76	110		
9	66	34	100		
10	75	45	120		

Drag the Fill Handle till C10

## 2. Absolute Reference

Absolute reference is the cell reference in which the row and column are made constant by adding the dollar (\$) sign before the column name and row number.

Step 1: We write the formula in any cell and press enter so that it is calculated. In this example, we write the formula  $=(A2+B2)*\$C\$2$  in cell D2 and press enter to calculate the formula.

	A	B	C	D	E
1	<b>Marks 1</b>	<b>Marks 2</b>	<b>Percentage</b>	<b>Total</b>	
2	23	56	20.00%	$=(A2+B2)*\$C\$2$	
3	45	90			
4	34	77			
5	76	98			
6	89	34			
7	67	45			
8	34	76			
9	66	34			
10	75	45			

Step 2: Now click on the Fill handle at the corner of cell which contains the formula(D2).

	A	B	C	D	E
1	<b>Marks 1</b>	<b>Marks 2</b>	<b>Percentage</b>	<b>Total</b>	
2	23	56	20.00%	15.8	
3	45	90			
4	34	77			
5	76	98			
6	89	34			
7	67	45			
8	34	76			
9	66	34			
10	75	45			

Click the Fill handle

Step 3: Drag the Fill handle up to the cells you want to fill.

	A	B	C	D
1	<b>Marks 1</b>	<b>Marks 2</b>	<b>Percentage</b>	<b>Total</b>
2	23	56	20.00%	15.8
3	45	90		27
4	34	77		22.2
5	76	98		34.8
6	89	34		24.6
7	67	45		22.4
8	34	76		22
9	66	34		20
10	75	45		24

DRAG THE  
FILL  
HANDLE  
TILL D10

Step 4: Now we can see that the percentage is calculated in column D.

	A	B	C	D	E
1	<b>Marks 1</b>	<b>Marks 2</b>	<b>Percentage</b>	<b>Total</b>	
2	23	56	20.00%	15.8	
3	45	90		27	
4	34	77		22.2	
5	76	98		34.8	
6	89	34		24.6	
7	67	45		22.4	
8	34	76		22	
9	66	34		20	
10	75	45		24	
11					

Step 5: You can double-click on any cell to check that the operation is performed in between which cells, and we see that the address of cell C2 does not change.

	A	B	C	D	E
1	<b>Marks 1</b>	<b>Marks 2</b>	<b>Percentage</b>	<b>Total</b>	
2	23	56	20.00%	15.8	
3	45	90		27	
4	34	77		22.2	
5	76	98		34.8	
6	89	34		<code>= (A6+B6)*\$C\$2</code>	
7	67	45		22.4	
8	34	76		22	
9	66	34		20	
10	75	45		24	
11					

### 3. Mixed Reference

Mixed Reference is a type of Absolute reference in which either the column is made constant or the row is made constant. When we make any column or row constant then the column name or row number does not change as we copy the formula to other cell(s). The mixed reference is designated by a dollar sign (\$) in front of the row or column.

Step 1: Write the formula in any cell. We write the formula(=B2+A2) in cell C2 and press enter.

	A	B	C	D	E
1	Data 1	Data 2	Sum		
2	10	23	=B2+A2		
3		12			

Step 2: Click and hold on to the Fill handle.

	A	B	C	D
1	Data 1	Data 2	Sum	
2	10	23	33	
3		12		
4				
5				

Click and hold Fill handle

Step 3: Drag it to the cell you want to fill. We drag it till cell C3.

	A	B	C	D
1	Data 1	Data 2	Sum	
2	10	23	33	
3		12	12	

Drag it till C3

Step 4: We did not make row 2 of column A constant, thus we see that as we copy the formula to cell C3, A2 changes to A3 i.e. the addition is performed between A2 and B2, A3 and B3.

We make row 2 of column A constant by adding a dollar sign before 2.

	A	B	C
1	Data 1	Data 2	Sum
2	10	23	33
3		12	=B3+A3

Step 5: Write the formula in any cell. We write the formula(=B2+A\$2) in cell C2 and press enter.

	A	B	C
1	Data 1	Data 2	Sum
2	10	23	=B2+A\$2
3		12	

Step 6: Click and hold on to the Fill handle.

	A	B	C	D
1	Data 1	Data 2	Sum	
2	10	23	33	
3		12		
4				
5				

Click and hold Fill handle

Step 7: Drag it to the cell you want to fill. We drag it till cell C3.

	A	B	C	D
1	Data 1	Data 2	Sum	
2	10	23	33	
3		12	22	

Drag it till C3

Step 8: We made row 2 of column A constant, thus we see that as we copy the formula to cell C3, A2 does not change to A3 i.e. A2 is added to cell B2 and B3.

	A	B	C
1	Data 1	Data 2	Sum
2	10	23	33
3		12	=B3+A\$2

## Database Function Parameters:

1. **Database** : is the cell range defining the database.
2. **DatabaseField** specifies the column where the function operates on after the search criteria of the first parameter is applied and the data rows are selected. It is not related to the search criteria itself.
3. **SearchCriteria**: is the cell range containing search criteria.

### EXAMPLE:

## DSUM

DSUM calculates the sum of all numeric values in the cells (fields) of the specified column, for all rows (database records) that match the specified search criteria. Blank cells or cells containing non-numeric characters are not included.

Returns 0 if no matches are found, or if there are no numeric values in the cells of the specified column for the matching records.

### Syntax

DSUM(Database; DatabaseField; SearchCriteria)

### **INPUT**

	A	B	C	D	E	F	G	H
1	<b>S.NO</b>	<b>ITEM</b>	<b>PRICE</b>	<b>UNIT</b>	<b>TOTAL</b>			
2	1	PEN	11	5	55			
3	2	CAR	2000	2	4000			
4	3	GLASS	550	6	3300			
5	4	CAR	2000	5	10000			
6	5	GLASS	300	7	2100			
7	6	PEN	20	44	880			
8								
9								
10	<b>S.NO</b>	<b>ITEM</b>	<b>PRICE</b>	<b>UNIT</b>	<b>TOTAL</b>			
11		PEN	>15	>40	=DSUM(A1:E7,E1,A10:D11)			

## OUTPUT

	A	B	C	D	E
1	<b>S.NO</b>	<b>ITEM</b>	<b>PRICE</b>	<b>UNIT</b>	<b>TOTAL</b>
2	1	PEN	11	5	55
3	2	CAR	2000	2	4000
4	3	GLASS	550	6	3300
5	4	CAR	2000	5	10000
6	5	GLASS	300	7	2100
7	6	PEN	20	44	880
8					
9					
10	<b>S.NO</b>	<b>ITEM</b>	<b>PRICE</b>	<b>UNIT</b>	<b>TOTAL</b>
11		PEN	>15	>40	880

## DAVERAGE

DAVERAGE calculates the average of the numeric values in the cells (fields) of the specified column, for all rows (database records) that match the specified search criteria. Non-numeric values in those cells are ignored.

Returns a #DIV/0! error if no records match the specified search criteria, or if there are no numeric values in the cells of the specified column for the matching records.

### Syntax

DAVERAGE(Database; DatabaseField; SearchCriteria)

## DCOUNT

DCOUNT counts the number of cells (fields) of the specified column that contain numeric values, for all rows (database records) that match the specified search criteria. However, if no column is specified, DCOUNT returns the count of all records that match the specified search criteria irrespective of their contents.

### Syntax

DCOUNT(Database; DatabaseField; SearchCriteria)

## DMAX

DMAX calculates the maximum value across the cells (fields) of the specified column that contain numeric values, for all rows (database records) that match the specified search criteria. Blank cells or cells containing non-numeric characters are not included.

Returns 0 if no matches are found, or if there are no non-zero numeric values in the cells of the specified column for the matching records.

### Syntax

DMAX(Database; DatabaseField; SearchCriteria)

## DMIN

DMIN calculates the minimum value across the cells (fields) of the specified column that contain numeric values, for all rows (database records) that match the specified search criteria. Blank cells or cells containing non-numeric characters are not included.

Returns 0 if no matches are found, or if there are no non-zero numeric values in the cells of the specified column for the matching records.

### Syntax

DMIN(Database; DatabaseField; SearchCriteria)

## DPRODUCT

DPRODUCT calculates the product of all numeric values in the cells (fields) of the specified column, for all rows (database records) that match the specified search criteria. Blank cells or cells containing non-numeric characters are not included.

Returns 0 if no matches are found, or if there are no numeric values in the cells of the specified column for the matching records.

### Syntax

DPRODUCT(Database; DatabaseField; SearchCriteria)

## Freezing And Splitting

When working with large data it can be difficult to view the information in a spreadsheet. Fortunately Calc includes two useful tools to help us view the



contents of a spreadsheet with large amount of data that exceed the window width or height.

- Freeze Rows and Columns
- Split Window

### **Freeze Rows and Columns**

When freezing a row or column, it has a fixed position in the window when we scroll horizontally or vertically.

#### **Freeze a row**

To freeze a row select the row below the one you want to freeze and click the Freeze Button. The frozen row will be indicated by a black line on the bottom.

	A	B	C	D	E
1	EMPLOYEE	JAN	FEB	MARCH	APRIL
2	PERSON 1	24	38	41	36
3	PERSON 2	46	52	25	43
4	PERSON 3	52	38	53	48
5	PERSON 4	49	55	27	35
6	PERSON 5	51	42	48	20

#### **Freeze a column**

To freeze a column select the column on the right and click the Freeze Button. The frozen column will be indicated by a black line on the right.

	A	B	C	D	E
1	EMPLOYEE	JAN	FEB	MARCH	APRIL
2	PERSON 1	24	38	41	36
3	PERSON 2	46	52	25	43
4	PERSON 3	52	38	53	48
5	PERSON 4	49	55	27	35
6	PERSON 5	51	42	48	20

## Freeze both a row and column

To freeze a row and a column at the same time select the cell that is on the bottom row and on the right column and click the Freeze button.

	A	B	C	D	E
1	EMPLOYEE	JAN	FEB	MARCH	APRIL
2	PERSON 1	24	38	41	36
3	PERSON 2	46	52	25	43
4	PERSON 3	52	38	53	48
5	PERSON 4	49	55	27	35
6	PERSON 5	51	42	48	20

## Remove freezing

When a row or column in a spreadsheet is frozen the Freeze button is highlighted . To revert a row or column back to normal state and remove freezing simply click on the Freeze button.

## Split windows

Another useful tool to help you view a sheet is the Split Window tool. Using this tool you can divide a sheet to 2 or 4 windows that scroll separately.

### Split window horizontally

To split horizontally into two separate windows select a **row** and click the Split window button. A gray line indicates the borders between the two windows.

	A	B	C	D	E
1	EMPLOYEE	JAN	FEB	MARCH	APRIL
2	PERSON 1	25	41	23	46
3	PERSON 2	39	48	33	56
4	PERSON 3	23	21	21	48
5	PERSON 4	25	54	33	30
6	PERSON 5	48	23	53	44
7	PERSON 6	55	48	41	31
8	PERSON 7	32	34	25	48
9	PERSON 8	30	43	49	36
10	PERSON 9	39	49	26	23
11	PERSON 10	51	37	42	54

### **Split window vertically**

To split vertically into two separate windows select a **column** and click the Split window button. A gray line indicates the borders between the two windows.

	A	B	C	D	E
1	EMPLOYEE	JAN	FEB	MARCH	APRIL
2	PERSON 1	25	41	23	46
3	PERSON 2	39	48	33	56
4	PERSON 3	23	21	21	48
5	PERSON 4	25	54	33	30
6	PERSON 5	48	23	53	44
7	PERSON 6	55	48	41	31
8	PERSON 7	32	34	25	48
9	PERSON 8	30	43	49	36
10	PERSON 9	39	49	26	23
11	PERSON 10	51	37	42	54

### **Split window into 4**

To split into 4 separate windows select a cell and click the Split window button. A gray line indicates the borders between the windows.

	A	B	C	D	E
1	EMPLOYEE	JAN	FEB	MARCH	APRIL
2	PERSON 1	25	41	23	46
3	PERSON 2	39	48	33	56
4	PERSON 3	23	21	21	48
5	PERSON 4	25	54	33	30
6	PERSON 5	48	23	53	44
7	PERSON 6	55	48	41	31
8	PERSON 7	32	34	25	48
9	PERSON 8	30	43	49	36
10	PERSON 9	39	49	26	23
11	PERSON 10	51	37	42	54

### **Remove the split**

When a sheet is split into separate parts the split button is highlighted. To remove the split simply click on the Split Window button.

# Sorting And Filtering

When operating with data in a spreadsheet, we usually require **arranging and organising** the data for better viewing and finding. Furthermore, we can use LibreOffice Calc as a simple **database tool** and ask simple questions to obtain helpful information from our data. This is performed using the Sorting and Filtering tools.

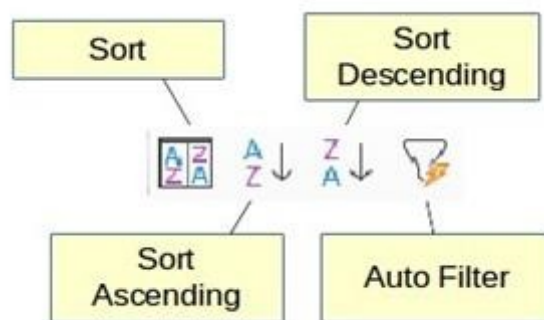
Sorting and filtering in LibreOffice Calc can be accessed using the Sort and Filter section in Standard Toolbar.

Step 1:- select range of cell that you want to arrange in sorting order.

Step 2:- then go to data menu – select sort option.

Step 3:- sort dialogue box will appear on your screen in this dialogue box select sorting criteria that you want.

Step 4:- click on OK button.



## FILTERING

When a sheet contains a large amount of data, it can be difficult to find information quickly. In that case **Filters** can be used to narrow down the data in your worksheet, allowing you to view only the information you need. In other words Filters help you to ask questions to your data and retrieve useful information.

Calc provides three types of filter:

- **Standard** – specifies the logical conditions to filter your data.
- **AutoFilter** – Automatically filters the selected cell range and creates one-row list boxes where you can choose the items that you want to display.
- **Advanced** – uses filter criteria from specified cells.

In this lesson we will cover the AutoFilter command

## AutoFilter

The easiest way to apply filters is using the AutoFilter command. In order to use this command your data must be organized in a **table format** and meet the following criteria:

- the first row contains column headers. The headers describe the column contents (for example name, age, product)
- Every row after the first contains only data. Each data row represents a record of your data table.
- All records must be in sequence with no empty records in between.

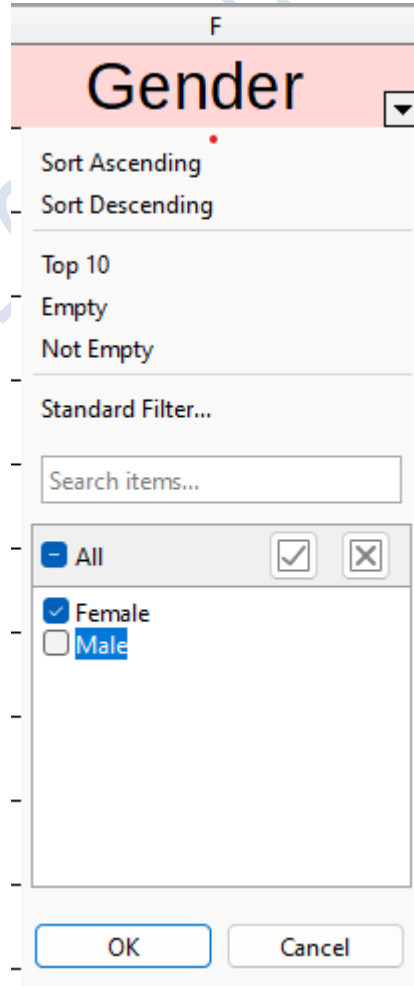
## Create an AutoFilter

To create an AutoFilter simply click on the AutoFilter Button. A drop-down arrow will appear in the header cell for each column.

	A	B	C	D	E	F	G
1	Id	First Name	Last Name	City	Country	Gender	Age
2	1	Rishabh	Kumar	Prayagraj	India	Male	22
3	2	Amit	Kumar	Ambala	India	Male	23
4	3	Anurag	Sahu	Hyderabad	India	Male	24
5	4	Vivek	Singh	Suratgarh	India	Male	25
6	5	Shradha	Kesarwani	Suratgarh	India	Female	26
7	6	Aastha	Kesarwani	Patna	India	Female	27
8	7	Neha	Singh	Secunderabad	India	Female	28
9	8	Rahul	Yadav	Kausambi	India	Male	29
10	9	Aditya	Srivastava	Jammu	India	Male	30
11	10	Manpreet	Singh	Gurgaon	India	Male	31
12	11	Ankita	Sharma	Ashok Nagar	India	Female	32

## Applying a filter

To apply a filter click on a column's drop-down arrow to bring the filter window. In this window you can set the filter criteria. For example to show only the Female persons we deselect the other values.

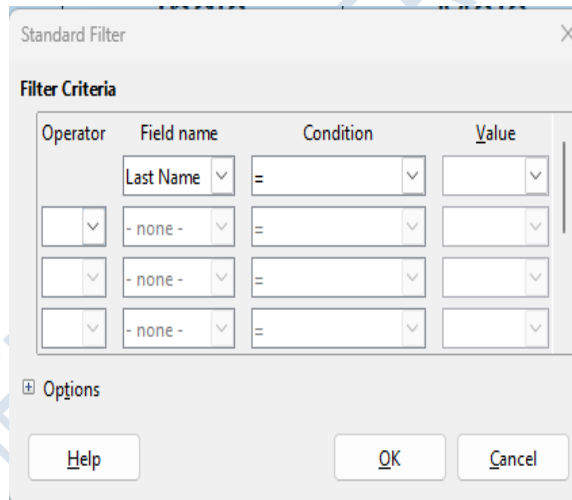


## OUTPUT

	A	B	C	D	E	F	G
1	Id	First Name	Last Name	City	Country	Gender	Age
6	5	Shradha	Kesarwani	Suratgarh	India	Female	26
7	6	Aastha	Kesarwani	Patna	India	Female	27
8	7	Neha	Singh	Secunderabad	India	Female	28
12	11	Ankita	Sharma	Ashok Nagar	India	Female	32

## STANDARD FILTER

For more advanced filters click data>more filter>standard filter



To create a standard filter in general you specify the

- Operator. Can be the logical AND or logical OR.
- Field name. This is the name of the column
- Condition. A logical condition (equality, greater, less)
- Value. The value of the filter.

## ADVANCE FILTER

When using the advanced filter, the arrows of drop-down menu don't appear, instead we need to enter criteria in the scope of criteria. If we want to see, for example, only students who have more than 50 points in mathematics then we would define it as follows :

step1:-

MATH	MATH
>50	<50

We mark a table in which we want to do the filtering and on tab Data -> More Filter -> Advanced Filter. The dialog box will then appear and then we bring our criteria in it, or in this case in the range of criteria we import table with conditions that we have defined, and then click OK

	A	B	C	D	E
1	NAME	MATH	HINDI	RESULT	
2	RAM	85	87	PASS	
3	SHYAM	50	77	PASS	
4	MOHAN	72	22	FAIL	
5	SOHAN	24	24	FAIL	
6					
7					
8					
9	MATH	MATH			
10	>50	<100			
11					

now select the condition which is created in step 1 in advanced filter's expand and the shrink it you get the result for math which is >50 and<100:- here is the result

	A	B	C	D
1	NAME	MATH	HINDI	RESULT
2	RAM	85	87	PASS
4	MOHAN	72	22	FAIL

## Goal Seek

Usually, you create a formula to calculate a result based upon existing data. LibreOffice Calc includes tools to help you experiment and answer questions with your data, even when the data is incomplete. In this lesson, you will learn how to use a **what-if analysis** tool called **Goal Seek**.

### What Is Goal Seek

Let's examine a simple example. A student tracks his final exam grades in school using a spreadsheet shown in the image below. So far he has received all grades for each subject except the one marked with a question mark.

Subject	Grade
Math	74
Language	85
Science	40
Physical Edu	65
French	35
Music	82
Arts	55
Information Technology	?
<b>Average</b>	<b>62,29</b>

Currently the average grade is 62 but he needs at least a 65 to pass the class. What is the minimum score he must achieve in the Information Technology exam in order to pass the class? Instead of manually trying random values he can use Goal Seek to find out what grade he needs on the final exam to pass.



## Using Goal Seek

Goal Seek tool need three parameters

- The **formula cell**. This is the cell contains the formula we want to resolve
- The **target value**. The required value that we want our formula to to resolve to (in our example 65)
- The **variable cell**. The cell that contains the unknown data that we want to find a value that meets the requirements.

	B	C	D
	<b>Subject</b>	<b>Grade</b>	
	Math	74	
	Language	85	
	Science	40	
	Physical Edu	65	
	French	35	
	Music	82	
	Arts	55	
	Information Technology	?	← Variable Cell
	<b>Average</b>	<b>62,29</b>	← Formula Cell

## To Use Goal Seek:

1. Fill the cell with the unknown data with a 0 (or any other value). The Average will change but ignore it.

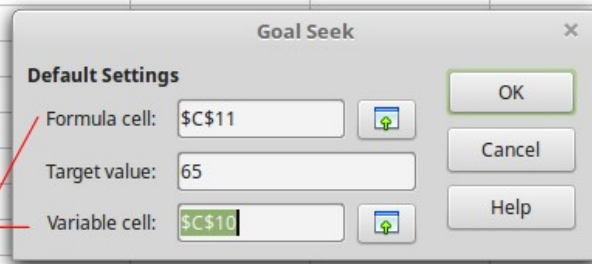
	Music	82
	Arts	55
	Information Technology	0
	<b>Average</b>	<b>54,50</b>

Normally we would not need to do this but it seems to be a bug in LibreOffice Calc that crashes Goal Seek tool when the value cell is empty.

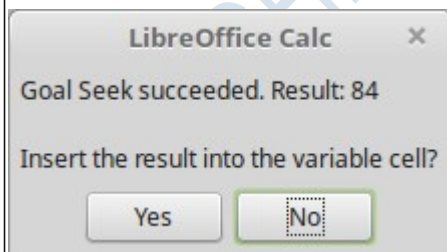
2. Select the cell containing the Formula (in our example the Average grade) and **Choose Tools > Goal Seek** from the main menu.

3. In the Goal Seek dialog window fill in the parameters. The Formula cell is already filled in. Type in the **Target value** and click the **Variable cell** to autofill the cell reference value in the dialog.

Subject	Grade
Math	74
Language	85
Science	40
Physical Edu	65
French	35
Music	82
Arts	55
Information Technology	0
<b>Average</b>	<b>54,50</b>



4. Goal Seek now calculates and displays the Result in another pop up dialog. Choose Yes to insert the result to the variable cell



Now the student knows that he must achieve a grade **84** or greater in the IT exam in order to pass the course.

Subject	Grade
Math	74
Language	85
Science	40
Physical Edu	65
French	35
Music	82
Arts	55
Information Technology	84
<b>Average</b>	<b>65,00</b>

# Pivot Tables

**Pivot Tables** are one of the most powerful and useful tools in Calc. With this tool you can combine, compare, and analyzing large amounts of data easily. Using Pivot Tables, you can view different summaries of the source data, display the details of areas of interest, and create reports.

## Why use Pivot Tables

To better understand pivot tables let's examine an example. The spreadsheet below records sales from a company. To answer the question what is the amount sold by each salesperson it could be time consuming and difficult because each salesperson appears on multiple rows. We could use the Subtotal command to find the total for each salesperson, but we would still have a lot of data to work with.


	A	B	C	D	E
1	date	employee	category	region	sales
2	23/04/17	John	canoe	west	377
3	21/03/17	Hans	golf	north	817
4	15/09/17	Mary	sailing	north	1951
5	05/04/17	Mary	tennis	south	1174
6	07/04/17	Kurt	golf	east	2059
7	18/06/17	Brigitte	golf	north	619
8	18/11/17	Brigitte	tennis	east	2149
9	05/11/17	Fritz	golf	west	4321
10	05/07/17	Kurt	sailing	north	3579
11	30/01/17	Elen	tennis	north	992
12	08/07/17	Brigitte	sailing	west	1068
13	05/05/17	Elen	canoe	east	3757
14	03/06/17	Fritz	sailing	east	3273

## Creating Pivot Table

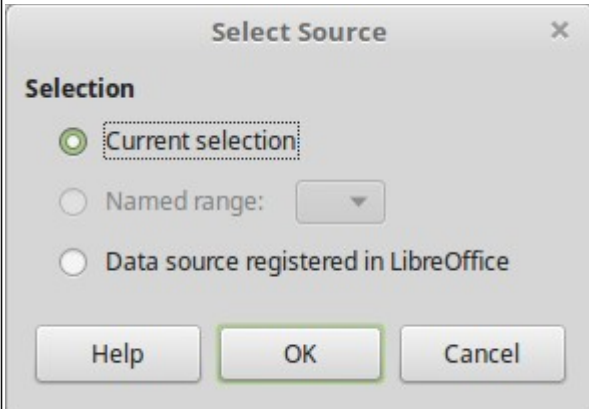
Pivot table can created on data that have the table format which means no empty columns or rows and the first row contains the column names.

To create a Pivot Table:

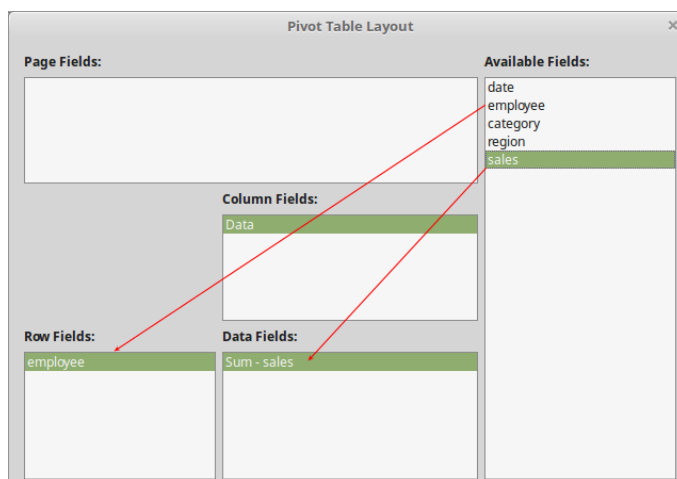
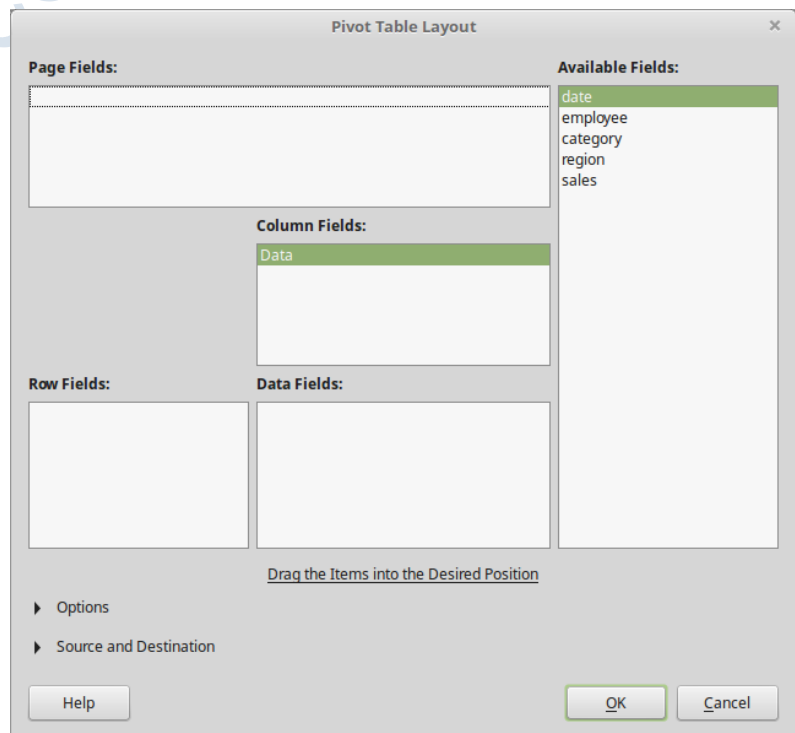
Select only one cell from your data.

Choose the Insert Pivot Table command from the main menu or click the  from the Standard toolbar.

Calc automatically selects all the cells and opens the Select Source dialog. Click OK to continue



In the Pivot Table Layout Dialog you set up the pivot table. In general you drag fields from the Available Fields pane to the other white areas.



Drag the **employee** field to the Row fields area and the **sales** field to the Data Fields area and click OK.

The pivot table is created in a new sheet. Now we get a summary of the sum of sales for each employee.

	A	B
1	employee	Sum - sales
2	Brigitte	341416
3	Elen	336666
4	Fritz	349790
5	Hans	400752
6	John	360679
7	Kurt	379809
8	Mary	317458
9	<b>Total Result</b>	<b>2486570</b>

### **Pivot Table Layout**

The layout of the pivot table is divided into 4 parts: Rows, Columns, Data and Page. If you understand the layout you will be able to create more complex pivot tables and extract important information from your data.

	A	B	C	D	E	F	G
1	region	- all -					
2							
3	Sum - sales	Data					
4	employee	canoe	golf	sailing	tennis	Total Result	
5	Brigitte	24254	26597	31127	38120	120098	
6	Elen	25522	17220	14086	25432	82260	
7	Fritz	24439	15918	25359	17291	83007	
8	Hans	18074	33059	24059	15739	90931	
9	John	27724	12826	9143	18458	68151	
10	Kurt	27175	26211	39180	20816	113382	
11	Mary	38925	21986	25318	16182	102411	
12	<b>Total Result</b>	<b>186113</b>	<b>153817</b>	<b>168272</b>	<b>152038</b>	<b>660240</b>	
13							

#### **The Rows Area**

When you drag a field into the Rows area of the pivot table, all the unique values in that field will be displayed in the first column of the pivot. The pivot table removes all the duplicates in the field (column of source data) and only displays the unique values. In the example we used the employee field for the Row area.

#### **The Data Area**

The Values area displays the data (values) that we want to summarize in our pivot table report. When you drag a field into the Values area, the pivot table will automatically sum or count the data in that field. If the data in the field contains numbers, then the sum will be calculated. If the data contains text or blanks, then the count will be calculated.

## The Columns Area

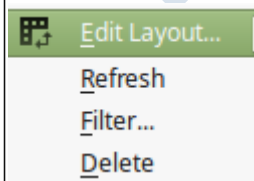
The Columns area works just like the Rows area. It lists the unique values of a field in the pivot table. The only difference is that it lists the values across the top row of the pivot table. In the example above we used the **category** field in the Columns Area.

## Page Area

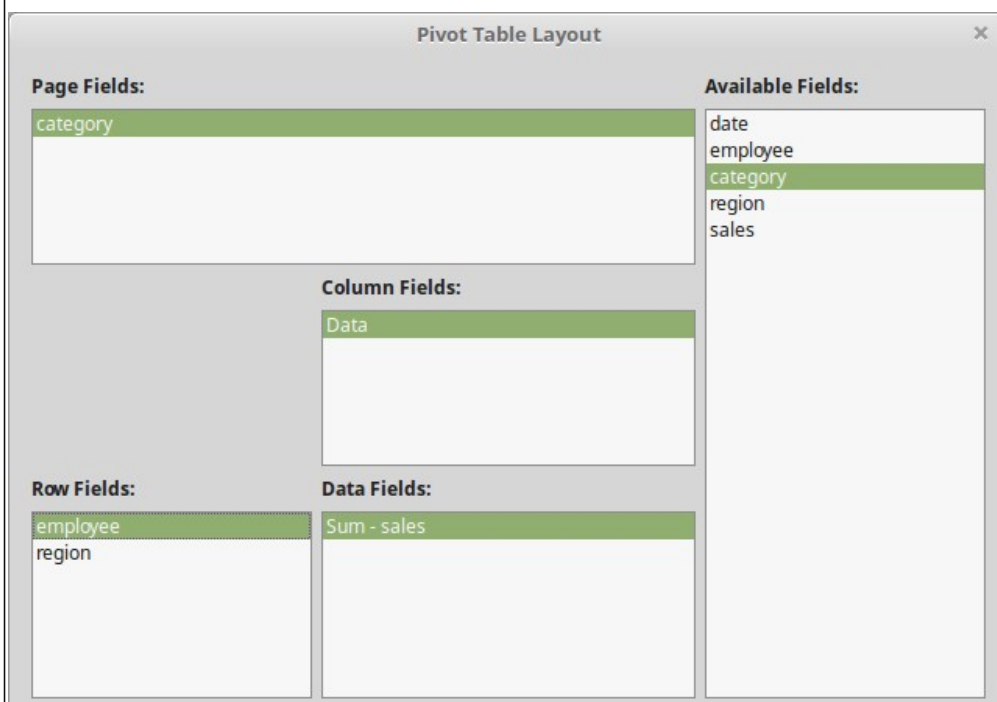
Fields that are placed into the Page Fields area appear in the result above as a drop down list. The summary in your result takes only that part of your base data into account that you have selected. In the example above we used the **region** field in the Page Fields Area.

## Edit a pivot Table

The real value of Pivot Tables is that they can quickly pivot (or reorganize) your data, allowing you to examine them in multiple ways. Pivoting data can help you answer different questions and discover new trends and patterns. To edit a pivot table layout, right click anywhere inside the Pivot Table and select **Edit Layout** from the context menu.



The Pivot Table Layout dialog window opens and allows you to **delete**, **add** or **reorder** fields in the layout.

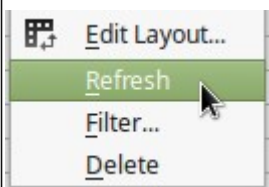


In our initial example we add the region fields to the Row area and the category fields to the Page area.

	A	B	C	D
1	category	- all -		
2				
3	employee	region	Sum - sales	
4	Brigitte	east	120098	
5		north	64587	
6		south	75538	
7		west	81374	
8	Elen	east	82260	
9		north	92326	
10		south	79515	
11		west	82565	
12	Fritz	east	83007	
13		north	87169	
14		south	86456	
15		west	93158	
16	Hans	east	80021	

### **Updating the Pivot Table**

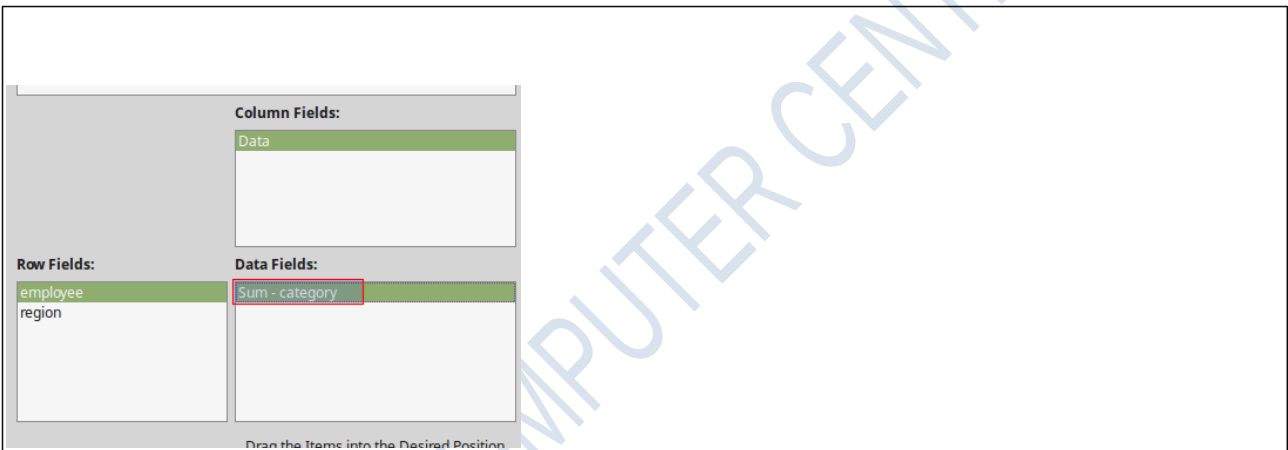
A Pivot Table will not update automatically if you change any of the data in your source sheet. To update, right click anywhere inside the Pivot Table and select **Refresh** from the context menu.



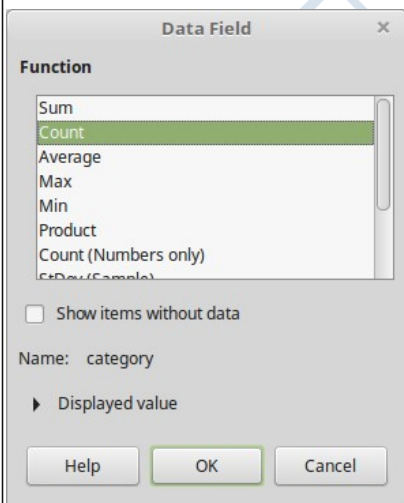
### **Data Fields calculation**

By default **numerical** fields that are placed in the **Data** area are summarized with the *SUM* function. For **text** fields the default calculation is the *COUNT* function. This is why it's important to make sure you don't mix data types for value fields. You can change the calculation of a Data field in the Pivot Table Layout window.

To change the calculation **double click** on the field in the Data area.



In the Data Field pop up window select the function and click OK



The following pivot table example uses the COUNT function for the category field

	A	B	C
1	employee ▼	region ▼	Count - category
2	Brigitte	east	51
3		north	27
4		south	32
5		west	32
6	Elen	east	37
7		north	35
8		south	32
9		west	33
10	Fritz	east	30

### **Delete a Pivot Table**

To delete a pivot table, right click anywhere inside the Pivot Table and select **Delete** from the context menu.



# Apply Data Validation To Cells

1. Select Data > VALIDITY

2. On the Settings tab, under Allow, select an option:

- Whole Number** - to restrict the cell to accept only whole numbers.
- Decimal** - to restrict the cell to accept only decimal numbers.
- List** - to pick data from the drop-down list.
- Date** - to restrict the cell to accept only date.
- Time** - to restrict the cell to accept only time.
- Text Length** - to restrict the length of the text.
- Custom** – for custom formula.

3. Under Data, select a condition.

4. Set the other required values based on what you chose for Allow and Data.

5. Select the Input Message tab and customize a message users will see when entering data.

6. Select the Show input message when cell is selected checkbox to display the message when the user selects or hovers over the selected cell(s).

7. Select the Error Alert tab to customize the error message and to choose a Style.

8. Select OK.

9. Now, if the user tries to enter a value that is not valid, an Error Alert appears with your customized message.

How to create a chart

To create a chart in LibreOffice Calc, follow these steps:

Select the data that you want to include in the chart.

1. Click on the "Insert" menu and select "Chart".
2. In the "Chart Type" dialog box, choose the type of chart you want to create and click "Next".
3. In the "Data Range" dialog box, verify that the correct data range is selected and click "Next".
4. In the "Chart Elements" dialogue box, select the chart elements that you want to include and customize the chart as desired.
5. Click "Finish" to create the chart.

You can further customize the chart by using the "Format" menu and the "Chart Area" dialogue box.