# CHAPTER

# **Functions and Chart**

Learning Objectives

Students will be able

- To know how to work with multiple sheets.
- To learn to rename, delete worksheet.
- To know to copy, move and change the order the sheets.
- To understand how to select cells, columns and rows.
- To learn how to format tool bar.
- To understand the types of cell referncing
- To know how to use functions in Open Office calc.
- To learn to create charts in Open Office Calc.

# 10.1 – Managing Worksheets

10.1.1 - Selecting Worksheets

One or multiple sheets can be selected using a mouse. This feature is useful when same changes are to be made at the time in multiple sheets.

# 10.1.2 Selecting single sheet

Click on the sheet tab for the sheet you want to select. The active sheet becomes white and any action that you perform will now affect the selected cells in the sheet.

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Shee	t 5 / 10	Default		STD *	Sum=0	Θ	; <b>@</b> ⊕   150 %

Serial number / Total no. of sheets

Figure 10.1 Selecting Single Sheet



If you want unselect the selection, click on any unselected sheet.

10.1.3. Selecting multiple continous sheets

The following steps should be followed to select multiple continuous sheets.

- Click on the sheet **tab** for the first desired sheet.
- Hold down the **Shift** key and click on the last sheet **tab**.

All the tabs between these two sheets will be selected and will turn white. Any actions that you perform will now affect all highlighted sheets. For example, if you want to select from **sheet1** to **sheet5**. Do the following,

Step 1: Click on Sheet1 to select first sheet

Step 2: Press and hold down "Shift" key and Click on the Sheet 5 i.e., last sheet

All the sheets between Sheet1 and Sheet5 will be selected and their sheet colour turns to white as given in the Figure 10.2 and any actions that you perform will now affect all highlighted sheets.



# Figure 10.2 Multiple continous sheets

If you want to unselect the selection, click on any unselected sheet.

10.1.4 Selecting multiple non-continous sheets.

If you want to select multiple non-continuous sheets the following steps will be followed.

- Click on any sheet,
- Hold down the **Ctrl** key,
- Click another sheet.

**Ctrl + Click on any sheet** is used to select multiple sheets. Selected sheets tab colour turns into **"White"**.

For example, if you want to select Sheet1, Sheet3 and Sheet 7;

Step 1: Click on **Sheet1** and then

Step 2: Hold down the **Ctrl key** 

# Step 3: Click on Sheet4, Sheet6 and Sheet8.

Selected Sheets colour becomes **"White"** and any actions that you perform will now affect all Selected sheets.



*Figure 10.3 Selecting Multiple non-continous sheets* 

# 10.2 Selecting all sheets

To select all sheets, **Right-click** any one of the sheet tabs and choose **Select All Sheets** option from the pop-up menu.



Figure 10.4 (a) - Selecting all sheets





**Deselect sheets** 

Deselecting a selected sheet is a very simple process. The following table shows you the deselect methods for various selections.

SN	Selection Type	Deselect process
1	Single Sheet	Click on any unselected sheet
2	Multiple continous sheets	Click on any unselected sheet
3	Multiple non- continous sheets	Click on any unselected sheet
4	All sheets	Click on any sheet

To deselect the already selected sheets, **Right-click**  $\rightarrow$  **Deselect All Sheets** option from the pop-up menu is selected.

10.3 – Renaming Worksheets

The default name of a new sheet is Sheet-n, where n is a number. There are two methods to give a more meaningful name to a sheet.

Method 1:

- **Double-click** on a Sheet in which you want rename
- A small "Rename Sheet" box is appears as shown in Figure 10.5

Rena	ame Sheet ×
Name	ОК
Sheet5	Cancel
	<u>H</u> elp

Figure. 10.5 Rename Sheet dialog box

• Type a new name and click "OK" button.

Method 2:

- **Right-click** on a sheet tab and choose **Rename Sheet** option from the pop-up menu now.
- Now Rename Sheet dialog box appears and type a new name and then click on ok button.
  - Sheet names must start with either a letter or a number or some special characters like &,!,@ etc. Attempting to rename a sheet with an invalid name will produce an error message.



Figure 10.6 Renaming a sheet

10.3.1 - Inserting and Deleting Worksheets

When you create a new worksheet, three sheets are there by default. If needed, one or more new worksheets can be added or deleted.

#### 10.3.1 - Inserting Worksheets

There are different ways to insert a new sheet.

Step 1:

• **Right-click** on a sheet tab and choose **Insert Sheet option** from the pop-up menu now.

(or)

• Choose **Insert** → **Sheet** option from the menu bar.

(or)

• Click the Enter Key between last sheet and horizontal scroll bar.



Figure 10.7 Inserting more sheets

Step 2:

• "Insert Sheet" dialog box appears (Refer Figure 10.8).

	Click "OK	
	Insert Sheet	
Position Before current sheet After current sheet	→ Set position Where the new sheet will be inserted	V OK Cancel
<ul> <li>New sheet → No</li> <li>No. of sheets 5 ÷</li> <li>Name Sheet</li> <li>Q From file</li> </ul>	ew Sheet	Неір
• Existing sheet from another file	<u>B</u> rowse	

*Figure 10.8 Insert Sheet dialog box* 

In this dialog box,

- Set position by clicking **"Before current sheet"** or **"After current sheet"**. If you select "Before" the new sheet(s) will inserted left side of the active sheet ie., selected sheet. If you select "After", the new sheet(s) will inserted right side of the active sheet.
- Type or spin the number of sheets you need to insert. If you type or spin one sheet, Name box will be activated, and you can enter new name of the sheet to be inserted. If you set more sheets, Name box will be disabled.
- The minimum number of sheet must be one and maximum will be 253 (OpenOffice Calc 4.1.5).
- Finally, click **OK** button.

10.3.2 - Deleting Worksheets

In a worksheet sheets can be deleted individually or in groups.

# To delete single sheet:

1. **Right-click** on the tab of the sheet which is to deleted and choose. **Delete Sheet** from the pop-up menu, or

2. Choose **Edit**  $\rightarrow$  **Sheet**  $\rightarrow$  **Delete** from the Menu bar (Refer Figure 10.9).



Figure 10.9 Delete Sheet

3. Either way, an alert will ask if you want to delete the sheet permanently. Click **Yes**.

# To delete multiple sheets:

To delete multiple sheets, select them as mentioned earlier and either **right-click** over one of the tabs and choose **Delete Sheet** from the **pop-up** menu, or choose **Edit**  $\rightarrow$  **Sheet**  $\rightarrow$  **Delete** from the menu bar. Rest of the procedure are similar to deleting a single sheet what you learnt earlier.

10.4 – Copy, Move and change the order of sheets

**Click and drag** the sheet tab is the simple way to move the sheets.

Menu also can be used to move sheets.

1. **Right-click** the sheet you want to move and select **Move/Copy Sheet** from the **pop-up** menu, or select **Edit** → **Sheet** → **Move/Copy** from the main menu (Refer Figure 10.10).

	Insert Sheet Delete Sheet Rename Sheet			
	Move/Copy Sheet			
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	Sheet Events	To document		OF
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		Untitled I		Cancel
×	Cut	Insert before		
<b>B</b>	Сору	Sheet1		<u>H</u> elp
(PA)	Paste	Sheet2		
CLC AC	neers a sheers a sheero / S	Sheet4		
	Default	Sheet5		
	Derudit	Sheet7		
		Sheet8		

Figure 10.10 Move / Copy Sheets

- 2. Specify the new position of the sheet in the **Move/Copy Sheet** dialog box. You can even move the sheet to a different document that is opened in Calc.
- 3. **Copy** Checkbox to be selected to copy sheet.
- 4. Click **OK**.

10.5 - Selecting Cells, Columns and Rows

10.5.1 Selecting a single cell:

- Move the mouse pointer to a cell and click to select a cell (or)
- Specify required cell address in the address bar to select a cell.

8	1
<u>File Edit View Insert Format Tools Data Window H</u> elp	<u>File Edit View Insert Format Tools Data Window H</u> elp
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Arial V 10 V B I U	E Arial V 10 V B I U
B3	B3 💉 🎢 🏂 =
A B C	A B C
1	Type cell address and
2	2 press Enter
3	3
<sup>4</sup> Click any cell to	4
5 1	5
6 Select	6

Figure 10.11 Selecting a Cell

10.5.2 Selecting Multiple Cells:

Continuous cells can be selected using the keyboard or the mouse.

10.5.2.1 Selecting Multiple cells using mouse:

- Click in a cell.
- Press and hold down the left mouse button.
- Move the mouse till the desired location is selected.
- Once the desired block of cells is selected, release the left mouse button.



# Figure 10.12 Selecting Multiple Sheets

10.5.2.2 Selecting multiple cells using keyboard:

- Move to the starting cell.
- Holding down the Shift key, use the cursor movement arrow keys to select the rest of the range.

10.5.3 Selecting single column or single row:

- To select a single column, click on the column identifier letter
- To select a single row, click on the row identifier number.



*Figure 10.13 Selecting Single column or single row* 

10.5.4 Selecting Continuous multiple columns or rows

- Click on the first column or row in the group.
- Hold down the Shift key.

Click the last column or row in the group.



Figure 10.14 Selecting Continuous multiple columns or rows

10.5.5 Selecting multiple columns or rows that are not continuous:

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

- Hold down the **Ctrl key**.
- Click on all of the subsequent columns or rows while holding down the **Ctrl** key.

To select range of non-continuous cells

- Select the cell or range of cells using one of the methods above.
- Move the mouse pointer to the start of the next range or single cell.
- Hold down the **Ctrl key** and **Click** or **Click-and-drag** to select another range of cells with already selected range.
- Repeat if necessary.

# 10.6 - Hide/Show Rows and Columns

When elements are hidden, they are neither visible nor printed, but can still be selected for copying if you select the elements around them. For example, if column B is hidden, it is copied when you select columns A and C. When you need a hidden element again, you can reverse the process, and show the element.

- To hide or show rows and columns, use the option in the **Format** menu or the **right-click** and choose from pop-up menu.
- To hide a row/column, first select the row/column, and then use menu options,
- Format → Row → Hide or Format
   → Column → Hide to hide row and column respectively.

- The same can be achieved by choosing "Hide" option from the pop-up menu when you **right-click** the selected **row/column.**
- To show the hidden row / column, choose Format→ Row → Show or Format→Column→ Show (or)
- **Right-click** and choose **Show** from pop-up menu.

# 10.7 - Freezing and Unfreezing rows and columns

Freezing locks number of rows at the top of a spreadsheet or number of columns on the left of a spreadsheet or both. Frozen columns and rows remain in view during scrolling, whereas other rows and columns gets scrolled.

	A	8	c	D	E	in the second second	G
1	Reg No	Student Name	Maths Marks	Chemistry Marks	Physics Marks	Comp. Sci Marks	Total Marks
2	100	1 Suresh	163	180	125	123	591
3	100	2 Raman	160	158	154	145	617
4	1003	3 Venkatesh	165	178	145	185	673
5	100-	4 Arun	164	175	186	189	714
6	100	5 Velu	178	168	198	189	733
7						-	1
						2 3	
9	2						
10							

# *Figure 10.15 Freezing and Unfreezing rows and columns*

Freezing single rows or columns:

- 1. Click on the **Header** for the row below where to the freeze or for the column to the right of where to freeze.
- 2. Choose the **Window** -> **Freeze**. A dark line appears, indicating where the freeze is done.

Freezing a row and a column:

1. Click the **Cell** that is immediately below the row to be frozen and immediately to the right of the column to be frozen.

- 2. Choose **Window** -> **Freeze**.
- 3. Two lines appear on the screen, a horizontal line above this cell and a vertical line to the left of this cell. Now as you scroll around the screen, everything above and to the left of these lines will remain in view.

Unfreeze:

To unfreeze rows or columns, choose **Window** -> **Freeze**. The check mark in Freeze will vanish.

10.8 - Merge Cells

To merge a group of cells into one cell:

Select the cells to merge.

1. Click on **Merge Cell** icon or select **Format** -> **Merge Cells** option from menu bar.

Form	at	Tools	Data	<u>W</u> indow	Help
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	C	e <u>l</u> ls		Ctrl+1	
	R	w			٠Ĕ
	C	olu <u>m</u> n			•
	Sł	neet			• -
	М	<u>e</u> rge Ce	ells		at

Figure 10.16 Merge cells

10.9 – Formatting Cells and Protecting Worksheets, locking and hiding cells

Formatting Data in a cell gives additional effect to the text. Additional effect includes changing the Font type, Style, Font size, automatic wrapping, bold, underline, italic etc. The data in Calc can be formatted in several ways using the icons of the Formatting Tool bar (Refer Figure 10.17)

Arial ✓ 10 ✓ B I U ≡ Ξ ≡ ≡ ∴ % % ‰ ‰ ∈ € □ · ∞ · A · .

#### Figure 10.17 Formatting Tool bar

10.9.1 - Icons available in the Formatting Tool Bar:

- 1. Font Name list box: Various fonts are available in the list from which the required font can be selected.
- 2. **ID** Font Size list box: Font size can be selected from this list box.

- 3. **B Bold Icon**: This icon is used to apply bold for selected cell. Key board shortcut **Ctrl + B** can also be used.
- 4. *I* Italic Icon: Italic icon is used to apply italic style to selected cell. Ctrl + I can also be used to apply italic.
- Under line Icon: To apply underline for selected cell this icon can be used.
   Ctrl + U can also be used for this.
- 6. E = E = Four alignment Icons: Using this icon content of a cell can be aligned Left, Center, Right and Justify. The key board short cuts are Ctrl + L, Ctrl + E, Ctrl + R and Ctrl + J can also be used respectively to align cell content.
- 7. J. % S and S Number Format
  Icon: Currency symbol (Ctrl + Shift + 4), Percent (Ctrl + Shift + 5), Standard (Ctrl + Shift + 6), Add Decimal Place,

Delete Decimal Place can be applied using this icons.

- Increase Indent and Decrease Indent Icons can be used to indent the cell content.
- 9 Borders Icon, Background Colour Icon and Font Colour Icons can be used to apply border, to change cell background colour and to change font colour.

10.9.2 - Formatting using Format Cells Dialog Box:

The above formatting options can be applied individually one by one. The Format Cells dialog box is used to apply formatting and see the preview. Select a cell and **Right-click** and select Format cells or click **Format**  $\rightarrow$  **Cells** or press **Ctrl+1**, now **Format Cells** dialog box appears with seven tabs as follows.

			Format	Cells			
unibers Font Fo	ont Effects	Alignment	Borders	Background	Cell Protectio	on	
<u>Category</u>		Format			<u>L</u> anguage		
Number Percent Currency Date Time Scientific Fraction Boolean Value Options Decimal places Leading zeros Format code	×	General -1234 -1234.12 -1,234 -1,234.12 -1,234.12 -1,234.12 1 €		☐ <u>N</u> egative r ☐ <u>T</u> housand	Default -	English (USA) 234.56789	~
General						V E	*

Figure 10.18 Format Cells

# Numbers Tab :

Several number formats like Category, Format, Language, Decimal places, leading zeros and Thousands separator. User-defined Format code is also applied. The main advantage here is that preview is available.

# Cell Protection Tab :

In Open Office Calc, cells are protected against any accidental changes. Protection can be provided by means of a password. Authorization is given by entering the correct password. It is clear that the Cell Protection with a **Protected** attribute is only effective when the whole sheet is in protected mode.

				Format	Cells		
Numbers	Font	Font Effects	Alignment	Borders	Background	Cell Protection	
Protectio	on <u>de all</u> ] ] <u>P</u> rote ] Hide	ected <u>f</u> ormula		Cell pro sheet h Select ' and spe	otection is only as been prote Protect Docur ecify 'Sheet'.	y effective after the curren cted. ment' from the 'Tools' mer	t
Print — ☐ Hi	de <u>w</u> h	en printing		The cel	ls selected wil	l be omitted when printing	g.
				(	ОК Са	ancel <u>H</u> elp	<u>R</u> eset

Figure 10.19 Format Cell - Cell Protection

- 1. Select the cells that you want to apply the cell protection feature..
- 2. Choose Format  $\rightarrow$  Cells and click the Cell Protection tab.
- 3. In the **Protection** group, the **Protected** check box is enabled, click Ok button. This becomes effective only when password and confirm are entered through Tools → Protectd Document → Sheet(Refer Figure 10.20).

Protect this sheet and the contents of locked cells	ОК
assword	Cancel
onfirm	Help
tions	
llow all users of this sheet to:	
✓ Select locked cells ✓ Select unlocked cells	
🛏 a and tanunda atas two sad	

Figure 10.20 Protecting the Sheet

In the Format Cells dialog box - for cell protection under the Protection group:.

- 4. Enable **Protected** to prevent changes to the contents and the format of a cell.
- 5. Enable **Hide formula** to hide and to protect formulae from changes.
- 6. Enable **Hide when printing** to hide protected cells in the printed document. (The cells are not hidden on screen).
- 7. Click OK.
- 8. Apply the protection options.

8.1 To protect the cells from being changed / viewed / printed according to your settings in the Format $\rightarrow$  Cells Dialog box, choose Tools  $\rightarrow$  Protect Document  $\rightarrow$  Sheet.

8.2 Enter a password with of atleast 5 or more characters.

# 10.10 - Cell Referencing

#### 10.10.1 Relative Addressing

The cell from A1 to A3 is addressed as A1:A3. Assume A4 has the formula = SUM(A1:A3). When the same formulae is copied to column B4 Relative Addressing automatically changes the formulae in B4 as =SUM(B1:B3). Relative here means that the reference to this area will be changed automatically when you copy the formulae.

#### 10.10.2 Absolute Addressing

Absolute Addressing is opposite to Relative Addressing. A dollar sign is placed before each column name and row number in an Absolute Addressing, for example, assume A5 has the formula =SUM(\$A\$1:\$A\$3), when it is copied to B5 the reference will not automatically change and formulae in B5=SUM(\$A\$1:\$A\$3) that is same as A5.

84	Y Jx	Z = [=SUM(B1:B3
	A	В
1	20	45
2	30	545
3	50	45
4	100	635
5		1996

Figure: 10.21 Relative Cells Addressing

P. A	rial	✓ 10 ✓	<b>B</b> <i>I</i> <u>U</u>   ≡
B4	✓ ∱x	∑ = = SUM(\$A	\$1:\$A\$3)
	A	В	C
1	20	45	
2	30	545	
3	50	45	
4	100	100	D
5			

Figure: 10.22 Absolute Cell Addressing

10.11- Functions in OpenOffice Calc

#### **10.11.1 – Introduction**

A function is a predefined calculation entered in a cell to help to analyze or manipulate data in a spreadsheet. These functions simplify help to create the formulas needed to get the expected results. Formulae are equations using numbers and variables to get a result. In a spreadsheet, the variables are cell locations that hold the data needed for the equation to be completed. Open Office Calc includes over 350 functions to analyze and reference data. Many of these functions are used for working on numbers, dates, times, and text.

# 10.11.2 - Familiarization with the categories of functions

The most commonly used functions are the built-in functions, which is available in .the Function Wizard. To open the Function Wizard choose Insert  $\rightarrow$  Function or press the shortcut key Ctrl+F2.

- 1. Once the Function Wizard is open, Select a **Category** from the Category dropdown box and select the function from the Function list box.
- 2. When you select a function its description appears on the right-hand side of the dialog box. Double-click on the required function.
- 3. The Wizard now displays a textbox where you can enter data manually in the text box and the result will be displayed in the Result text box

	Func	tion Wizard		
Functions Structure	ABS		Function result 35	
<u>C</u> ategory Mathematical	Absolute valu	e of a number.		
<u>Function</u>	Number (requ	uired)		
ABS	The number v	vhose absolute value	is to be returned.	
ACOS ACOSH ACOT ACOTH ASIN ASINH ATAN ATAN2 ATANH AVERAGEIE		Number fx	-35 Perult 25	
AVERAGEIFS CEILING COMBIN COMBINA	=ABS(-35)		indian po	^
AVERAGEIF AVERAGEIFS CEILING COMBIN COMBINA	For <u>m</u> ula = ABS(-35)		Result 35	

Figure: 10.23 Function Wizard Dialoge Box

10.11.3 – Working with the functions in Mathematical and Statistical Category

10.11.3.1 - Mathematical functions under Mathematical Category:

Various Mathematical functions are readily available under Mathematical category for mathematical calculations.

A11	
Eunction	
ABS	~
ACCRINT	
ACCRINTM	
ACOS	
ACOSH	
ACOT	
ACOTH	
ADDRESS	
AMORDEGRC	
AMORLINC	
AND	
ARABIC	
AREAS	
ASC	
ASIN	
	X

Figure: 10.24 Mathematical functions

Few mathematical functions are listed below.

ABS (Number/Cell Address)

**Number/ Cell Address** is the value whose absolute value is to be calculated. The absolute value of a number is its value without +/- sign.

# Example

=ABS (-76) returns 76, =ABS (74) returns 74, =ABS (0) returns 0.

# ACOS (Number/Cell Address)

This function returns the inverse trigonometric cosine of **Number** which is in radians. The angle returned is in the range 0.0 to +PI. To return the angle in degrees, use the **DEGREES** function.

# Example

=ACOS (-1) returns 3.14159265358979 (PI radians)

=DEGREES (ACOS(0.5)) returns 60. The cosine of 60 degrees is 0.5.

# ACOSH (Number/Cell Address)

This function returns the inverse hyperbolic cosine of a Number. The Number must be greater than or equal to +1.0.

# Example

=ACOSH(1) returns 0, =ACOSH(COSH(4)) returns 4.

# ACOT(Number/Cell Address)

This function returns the inverse trigonometric cotangent of a Number. Where the angle is in radians is Number. The angle returned is in the range 0.0 to +PI. To return the angle in degrees, use the **DEGREES** function.

# Example

=ACOT(1) returns 0.785398163397448 (PI/4 radians).

=DEGREES(ACOT(1)) returns 45. The tangent of 45 degrees is 1.

# ASIN (Number/Cell Address)

This function returns the inverse trigonometric sine of Number where the angle is in radians. The angle returned is in the range -PI/2 to +PI/2. To return the angle in degrees, use the **DEGREES** function.

#### Example

=ASIN (0) returns 0. =ASIN (1) returns 1.5707963267949 (PI/2 radians).

=DEGREES (ASIN (0.5)) returns 30. The sine of 30 degrees is 0.5.

#### ATAN (Number/Cell Address)

This function returns the inverse trigonometric tangent of Number where the angle is in radians. The angle returned is in the range -PI/2 to +PI/2. To return the angle in degrees, use the **DEGREES** function.

#### Example

=ATAN (1) returns 0.785398163397448 (PI/4 radians).

=DEGREES (ATAN (1)) returns 45. The tangent of 45 degrees is 1.

**CEILING (Number; Significance; Mode)** 

This function rounds a number up to the nearest multiple of Significance. **Number** is the number that is to be rounded up. **Significance** is the value that the number is to be rounded up to a multiple of. **Mode** is an optional value. If the Mode parameter is supplied and is not equal to zero and if Number and Significance are negative, rounding up is carried out based on the absolute value of Number. This parameter is omitted when exporting to Microsoft Excel since Excel does not support a third parameter for this function

#### Example:

=CEILING (15.5;2;2) returns 16, =CEILING(-11;-2) returns -10

=CEILING (-11;-2;0) returns -10, =CEILING(-11;-2;1) returns -12

#### COMBIN (Count1; Count2)

Returns the number of combinations for a given number of objects (without repetition). Count1 is the number of items in the set. Count2 is the number of items to choose from the set. **COMBIN** returns the number of ordered ways to choose these items. For example if there are 3 items A, B and C in a set, you can choose 2 items in 3 different ways, namely AB, AC and BC. **COMBIN** implements the formula: Count1!/(Count2!\*(Count1-Count2)!)

#### **Example:**

=COMBIN (3;2) returns 3, =COMBIN(5;3) returns 10.

#### COMBINA (Count1; Count2)

Returns the number of combinations of a subset of items including repetitions. Count1 is the number of items in the set. Count2 is the number of items to choose from the set. COMBINA returns the number of unique ways to choose these items, where the order of choosing is irrelevant, and repetition of items is allowed. For example if there are 3 items A, B and C in a set, you can choose 2 items in 6 different ways, namely AB, BA, AC, CA, BC and CB. COMBINA implements the formula: (Count1+Count2-1)! (Count2!(Count1-1)!)

# Example

=COMBINA(3;2) returns 6, =COMBINA(4;3) returns 20

#### COS (Number)

Returns the (trigonometric) cosine of Number, whose angle is in radians. To return the cosine of an angle in degrees, use the **RADIANS** function.

#### **Examples:**

=COS(PI()/2) returns 0, the cosine of PI/2 in radians.

=COS(RADIANS(60)) returns 0.5, the cosine of 60 degrees.

#### **COUNTBLANK (Range)**

Returns the number of empty cells in the cell range.

#### **Example:**

=COUNTBLANK (A1:B2) returns 4 if cells A1, A2, B1 and B2 are all empty.

#### **COUNTIF (Range; Criteria)**

**Range** is the range where the criteria is to be applied.

#### **Example:**

The Criteria determines which cells are counted and is in the form of a number, an expression or a text string. The search text may also be given in the form of a regular expression. The command "b.\*" is given for all words that begin with b. If search is for literal text, enclose the text in double quotes.

A1:A10 is a cell range containing the numbers 2000 to 2009. Cell B1 contains the number 2006. In cell B2, you enter a formula:

=COUNTIF (A1:A10;2006) - this returns 1

=COUNTIF (A1:A10;B1) - this returns 1

=COUNTIF (A1:A10;">=2006") - this returns 4

=COUNTIF (A1:A10;"<"&B1) - when B1 contains 2006, this returns 6

=COUNTIF (A1:A10;C2) where cell C2 contains the text >2006 counts the number of cells in the range A1:A10 which are > 2006.

To count only negative numbers: =COUNTIF (A1:A10;"<0")

#### 10.11.3.2 - Statistical functions



# Figure: 10.25 Statistical functions

COUNT(Value1; Value2; ... Value30)

Counts how many numbers are in the list of arguments. Text entries are normally ignored. Value1; Value2; ... Value30 are 1 to 30 values or ranges representing the values to be counted.

# Example

The entries 2, 4, 6 and eight in the Value 1 ... 4 fields are to be counted.

=COUNT (2;4;6;"eight") = 3. The count of numbers is therefore 3. Text is ignored.

COUNTA(Value1; Value2; ... Value30)

Counts how many values are in the list. Text entries are also counted, even when they contain an empty string of length 0. Value1; Value2; ... Value30 are 1 to 30 arguments representing the values to be counted.

# Example

The entries 2, 4, 6 and eight in the Value 1 ... 4 fields are to be counted.

=COUNTA(2;4;6;"eight") = 4. The count of values is therefore 4.

# CORREL(Data1; Data2)

Returns the correlation coefficient between two data sets.Data1 is the first data set. Data2 is the second data set.

# Example

=CORREL(A1:A20;B1:B20)

calculates the correlation coefficient as a measure of the linear correlation of the two data sets.

# LARGE(Data; Rank\_C)

Returns the Rank\_c-th largest value in a data set. Data is the cell range of data. Rank\_C is the ranking of the value.

# Example

=LARGE(A1:C50;2) gives the second largest value in the range A1:C50.

SMALL(Data; Rank\_C)

Returns the Rank\_c-th smallest value in a data set. Data is the cell range of data. Rank\_C is the rank of the value.

# Example

=SMALL(A1:C50;3) gives the third smallest value in the range A1:C50.

AVERAGE(Number1; Number2; ... Number20)

Returns the average of the arguments. Number1; Number2; ... Number20.

# Example

=AVERAGE(A1:A20) returns the average of set of values in the cell range A1:A20

10.11.4 – Working with the functions in Logical Category.

# IF (Test; TrueValue; FalseValue)

Specifies a logical test to be performed. Test is any value or expression that can be TRUE or FALSE. TrueValue (optional) is the value that is returned if the logical test is TRUE. FalseValue (optional) is the value that is returned if the logical test is FALSE.

# Example

=IF(A1>5;"True";"too small") If the value in A1 is higher than 5 then the text "True" is returned in the current cell otherwise the text "too small" (without quotes) will be returned.

10.11.5 – Working with the functions in Date and Time Category

OpenOffice Calc internally handles a date/time value as a numeric value. To change the number format to date or time, Select the cell containing the date or time, Click Format $\rightarrow$  Cell, select Numbers tab of the Format Cells Dialog Box, select the desired format.

Numbers F	ont	Font Effects	Alignment	Borders	Background	C	Cell Protection
<u>Category</u>			Format				Language
Number Percent Currency Date Time Scientific		^	12/31/99 Friday, De 12/31/99 12/31/199 Dec 31, 99 Dec 31, 19 31 Dec 19	cember 3 9 ) 199	1, 1999	•	Default - English (USA) 🗸
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Options – <u>D</u> ecima Leading	il pla g <u>z</u> eri	ces os	0		<u>N</u> egative i <u>T</u> housand	nur s si	mbers red eparator
	de						
<u>Format co</u>							0 TT 00

Figure: 10.26 Number format

10.11.6 – Working with the functions in Text Category

CONCATENATE("Text1"; "Text2"; "Text3"; ...)

Combines several text strings into one string. Text1; Text2; Text3; ... are 1 to 30 text passages which are to be concatenated together into one string.

# Example

=CONCATENATE("Good ";"Morning ";"Mr. ";"Ramki") returns **Good Morning Mr. Ramki** 

#### DECIMAL("Text"; Radix)

Converts a text string with characters from a number system to a positive integer in the base radix given. Text is the text string to be converted. To differentiate between a hexadecimal number, such as A1 and a cell address A1, you must place the text in quotation marks, for example, "A1" or "FACE". Radix indicates the base of the number system. It may be any positive integer in the range 2 to 36.

#### Example

=DECIMAL("17";10) returns 17. =DECIMAL("FACE";16) returns 64206. =DECIMAL("0101";2) returns 5. **10.12 - Charts in OpenOffice Calc** 

10.12.1 – Introduction

Charts and graphs are powerful ways to convey information to the reader through a pictorial representation. OpenOffice Calc offers a variety of different charts and graph formats for data representation. Calc helps to customize charts and graphs to enhance the Presentation in a best manner.

10.12.2 – Familiarization with the types of charts

There are various types of charts and graphs for representing data through relevant pictorial representation. The creation and presentation of charts are discussed in the following sections.

The following are the types of charts that Calc provides.

- 1. Column chart
- 2. Bar chart
- 3. Pie chart
- 4. Area chart
- 5. Line chart
- 6. Scatter or XY chart
- 7. Bubble chart
- 8. Net chart
- 9. Stock chart

10. Column and line chart

#### **Column Chart**

This is a bar chart or bar graph with vertical bars. The height of each bar is proportional to its value. The x-axis shows categories. The y-axis shows the value for each category.

Normal type is a sub-type which shows all data values belonging to a category next to each other. Main focus is on the individual absolute values, compared to every other value.

**Stacked** type is a sub-type which shows the data values of each category on top of each other. Main focus is the overall category value and the individual contribution of each value within its category.

**Percent** is a sub-type which shows the relative percentage of each data value with regard to the total of its category. The main focus is the relative contribution of each value to its total category.



Figure: 10.27 Percentage

#### **Bar Chart**

This type shows a bar chart or bar graph with horizontal bars. The length of each bar is proportional to its value. The y-axis shows categories. The x-axis shows the value for each category.



Figure: 10.28 Horizontal Bar

# Pie Chart

A pie chart shows values as circular sectors of the total circle. The length of the arc, or the area of each sector, is proportional to its value.

**Normal Pie** is a sub-type which shows sectors as colored areas of the total pie, for one data column only. In the created chart, you can click and drag any sector to separate that sector from the remaining pie or to join it back.

**Exploded pie** is a sub-type which shows the sectors already separated from each other. In the created chart, you can click and drag any sector to move it along a radial from the pie's center.

**Doughnut** is a sub-type that shows multiple data columns. Each data column is shown as one doughnut shape with a hole inside, where the next data column can be shown. In the chart created, you can click and drag an outer sector to move it along a radial from the doughnut's center.

Exploded doughnut is a subtype that shows the outer sectors already separated from the remaining doughnut. In the created chart, you can click and drag an outer sector to move it along a radial from the doughnut's center.



Figure: 10.29 Pie Chart

Area chart

An area chart shows values as points on the y-axis. The x-axis shows categories. The y-values of each data series are connected by a line. The area between each two lines is filled with a colour. The area chart's focus is to emphasise the changes from one category to the next.

**Normal** - this sub-type plots all values as absolute y-values. It first plots the area of the last column in the data range, then the next to last, and so on, and finally the first column of data is drawn. Thus, if the values in the first column are higher than the other values, the last drawn area will hide the other areas.

**Stacked** - this sub-type plots values cumulatively stacked on each other. It ensures that all values are visible, and no data set is hidden by others. However, the y-values no longer represent absolute values, except for the last column which is drawn at the bottom of the stacked areas.

**Percent** - this sub-type plots values cumulatively stacked on each other and scaled as percentage of the category total.



Figure: 10.30 Area Chart Percentage

#### Line chart

A line chart shows values as points on the y-axis. The x-axis shows categories. The y-values of each data series can be connected by a line.

**Points only** - this sub-type plots only points.

**Points and lines** - this sub-type plots points and connects points of the same data series by a line.

Lines only - this sub-type plots only lines.

**3-D lines** - this sub-type connects points of the same data series by a 3-D line.



Figure: 10.31 Line Chart - Points Only

Scatter or XY chart

An X-Y chart in its basic form is based on one data series consisting of a name, a list of x values, and a list of y values. Each value pair (x|y) is shown as a point in a coordinate system. The name of the data series is associated with the y values and shown in the legend.

All the charts are created with default settings. After the chart is finished, you can edit its properties to change the appearance. Line styles and icons can be changed on the Line tab page of the data series properties dialogue box.

Double-click on any data point to open the **Data Series** dialogue box. In this dialogue box, you can change many properties of the data series.

For 2-D charts, you can choose **Insert - y-Error Bars** to enable the display of error bars.

You can enable the display of mean value lines and trend lines using commands on the **Insert** menu.

#### **Points only**

Each data point is shown by an icon. OpenOffice uses default icons with different forms and colours for each data series. The default colours are set using **Tools**  $\rightarrow$ **Options**  $\rightarrow$  **Charts**  $\rightarrow$  **Default Colours**.

#### Lines Only

This variant draws straight lines from one data point to the next. The data points are not shown by icons.

The drawing order is the same as the order in the data series. Mark **Sort by x-values** to draw the lines in the order of the x-values. This sorting applies only to the chart, not to the data in the table.

#### **Points and Lines**

This variant shows points and lines at the same time.

#### 3-D Lines

The lines are shown like tapes. The data points are not shown by icons. In the finished chart choose 3-D View to set properties like illumination and angle of view.



Figure: 10.32 3D Points Only

**Bubble chart** 

A bubble chart shows the relation of three variables. Two variables are used for the position on the x-axis and y-axis, while the third variable is shown as the relative size of each bubble.

The **Data Series dialog box** for a bubble chart has an entry to define the data range for the Bubble Size.

# Net chart

A Net chart displays data values as points connected by some lines, in a grid net that resembles a spider net or a radar tube display.

For each row of chart data, a radial is shown on which the data is plotted. All data values are shown with the same scale, so all data values should have the same magnitude.



Figure: 10.33 Bubble Chart Points Only

Column and line chart



Figure: 10.34 Column and Line Charts

A Column and Line chart is a combination of a Column chart with a Line chart.

Select one of the variants

- Columns and Lines. The rectangles of the column data series are drawn side by side so that you can easily compare their values.
- Stacked Columns and Lines. The rectangles of the column data series are drawn stacked above each other, so that the height of a column visualises the sum of the data values.
- You can insert a second y-axis with Insert Axis after you finish the wizard.

# 10.12.3 - Creating and formatting charts

- 1. Select the cells that contain the data that you want to present in your chart.
- 2. Click the **Insert->Chart** option or click **Insert Chart** icon **b** on the **Standard** toolbar.

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Figure: 10.35a Insert Chart

- 3. The Chart Wizard has three main parts:
- List of steps involved in setting up the chart,
- List of chart types, and
- The options for each chart type.

At any time you can go back to a previous step and change selections.

steps	Choose a chart type	
1. Chart Type 2. Data Range 3. Data Series 4. Chart Elements	<ul> <li>Column</li> <li>Bar</li> <li>Pie</li> <li>Area</li> <li>Line</li> <li>X-Y (Scatter)</li> <li>Bubble</li> <li>Net</li> <li>Stock</li> <li>Column and Line</li> </ul>	Normal Normal  3-D Look Realistic  Shape  Cylinder Cone Pyramid

Figure: 10.35b Chart Type

4. Choose a **Chart type** and its option type. Then click Next button.

	Chart Wizard	×
Steps 1. Chart Type	Choose a data range Data range Scheet2 SAS1-SGS6	
2. Data Range 3. Data Series 4. Chart Elements	<ul> <li>Data series in rows</li> <li>Data series in columns</li> <li>First row as label</li> <li>First column as label</li> </ul>	
Help	<< Back <u>N</u> ext >> <u>Finish</u> Ca	ancel

Figure: 10.35c Data Range

5. In Step 2, **Data Range**, helps to manually correct any mistakes made in selecting the data. Click one of the options for **Data series in rows** or in **columns**. Check whether the data range has labels in the first row or in the first column or both. Then click the **Finish** button, or click **Next** to change some more details of the chart.

Steps	Customise data range	s for	individual data series	
1 Chart Type	Data <u>s</u> eries Reg No Student Name Maths Marks Chemistry Marks Physics Marks		<u>D</u> ata ranges	
2. Data Range 3. Data Series 4. Chart Elements			Name y-Values	\$Sheet2.\$A\$1 \$Sheet2.\$A\$2:\$A\$6
	Comp. Sci Marks Total Marks		Range for Name \$Sheet2.\$A\$1	9
	Add		<u>Categories</u>	
	<u>R</u> emove	•		L.

Figure: 10.35d Data Series

- 6. The **Data Series** list box contains a list of all data series in the current chart.
- To organize the data series, select an entry in the list.
- Click **Add** to add another data series below the selected entry. The new data series has the same type as the selected entry.

- Click **Remove** to remove the selected entry from the Data Series list.
- Use the Up and Down arrow buttons to move the selected entry in the list up or down. This does not change the order in the data source table, but changes only the arrangement in the chart.
- Then click **Next** button

		Chart Wizard	×
Steps 1. Chart Type 2. Data Range 3. Data Series 4. Chart Elements	Choose til      Itle      Subtitle      x-Axis      y-Axis      z-Axis	itles, legend and grid settings Mark Statement Subject - wise Marks Subject	<ul> <li>☑ Display legend</li> <li>○ Left</li> <li>④ Right</li> <li>○ Iop</li> <li>○ Bottom</li> </ul>
Help	Display g x- <u>A</u> xis	rids y-Ax <u>i</u> s z-Axi <u>s</u> << Bac <u>k</u> <u>N</u> ext >>	<u>Finish</u> Cancel

Figure: 10.35e Chart Elements

7. In the **Chart Elements** page, chart a title and, if desired, a subtitle. Give a suitable title that draws the viewers' attention to the chart: For example: Figure 10.35f has the chart Title as Mark Statement. Then click **Finish** to create chart.



Figure: 10.35f Final Chart

**Case Study:** Create a spreadsheet file to store sales data of a particular product and present it in the form of Chart.



Part - A

Choose the best answer:

1. The active sheet colour will be of which colour?

A) Grey B) Green C) White

- 2. To select multiple continuous sheet which key is used?A) CtrlB) ShiftC) Alt
- 3. To delete a single sheet which command is to be selected?
  - A) File  $\rightarrow$  Sheet  $\rightarrow$  Delete
  - B) Delete  $\rightarrow$ Sheet $\rightarrow$ Delete

C) Sheet  $\rightarrow$  Delete

- D) Edit  $\rightarrow$  Sheet  $\rightarrow$  Delete
- 4. Which command is used to show the hidden row in OpenOffice Calc?
  - A) Format  $\rightarrow$  Row  $\rightarrow$  Show
  - B) Format  $\rightarrow$  Show  $\rightarrow$  Row
  - C)Format→Display→Row
  - D) Format  $\rightarrow$  Row  $\rightarrow$  Display
- 5. To protect cell in Open Office Calc Format  $\rightarrow$  Cells and click which tab?
  - A) Protect Cell
  - B) Protection Cell
  - C) Cell Protection
  - D) Cell Protect
- 6. To make which cell address absolute we use sign?

A) Absolute	B) Relative	C) Comparative	D) Reference
-------------	-------------	----------------	--------------

7. Which function sounds a number upto the nearest multiple of significance?

A) COMBINA B	B) CEILING	C) Floor	D) ABS
--------------	------------	----------	--------



D) tab

D) Yellow

8. If cell A5 contains value 18, then if (A5>26; "true", "False") will return

A)True B)False C)Blasse D) Error

9. Which can be a powerful way to convey information to the reader through a pictorial representation?

- A) Charts and images B) graphs and images
- C) Charts and graphs D) Images and Pictures

10. What will be value returned by = decimal ("16";1101)

A) 12 b) 13 c) d d) e

Part-II

Answer the following questions (2 Marks)

- 1. How to select continuous and non-continuous sheets in OpenOffice Calc?
- 2. Write the method to rename sheet.
- 3. What is the use of freezing a sheet?
- 4. What are the types of Cell addressing?
- 5. What is a Chart?

# Part-III

Answer the following questions (3 Marks)

- 1. Differentiate Relative cell addressing from Absolute cell addressing
- 2. What are functions in OpenOffice Calc?
- 3. How to hide/show rows and columns in sheet?
- 4. Write briefly about ASIN function in Open Office Calc.
- 5. What is a range? Give example.

# Part-IV

Answer the following questions (5 Marks)

- 1. Create a Worksheet which consist of student database with the following fields. Rollno., Name, English, Tamil, Maths, Science, Social, Total, average.
- 2. Explain how to format a worksheet
- 3. Discuss in detail the steps to create chart in OpenOffice calc.
- 4. How to use function in Open Office Calc? Explain with suitable example.