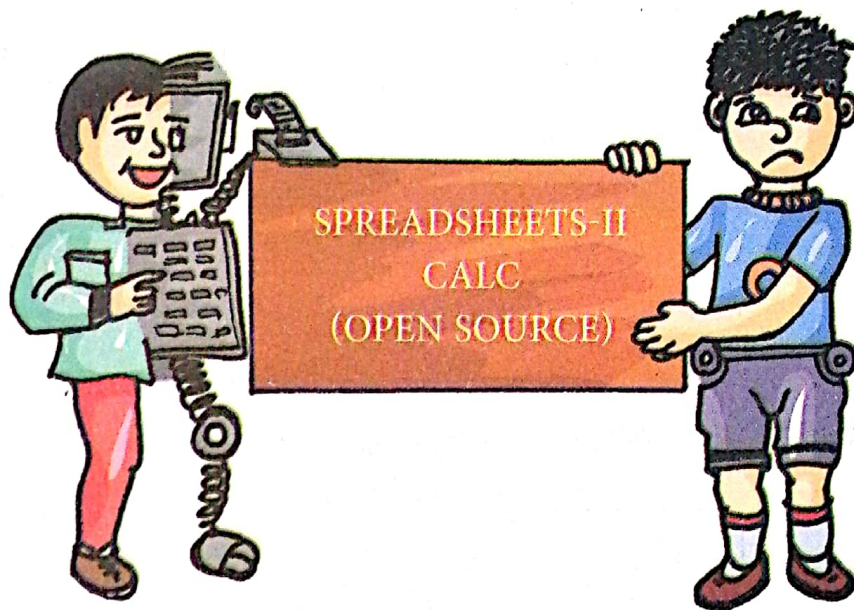# 8 Spreadsheets-II CALC (Open Source)

Learning Objectives :

After the completion of this chapter learners will be able to:

- ❑ sort the data,
- ❑ learn to work with mathematical formula,
- ❑ use simple statistical functions: SUM(), AVERAGE(), MAX(), MIN(),
- ❑ understand and analyse data using Charts,
- ❑ learn to edit, format and print a worksheet.

Tobo and Dobo are in school. Teacher is taking attendance. Dobo is carefully watching the attendance register.

Dobo: Hey! Tobo! Look our teacher is also working in a Spreadsheet.
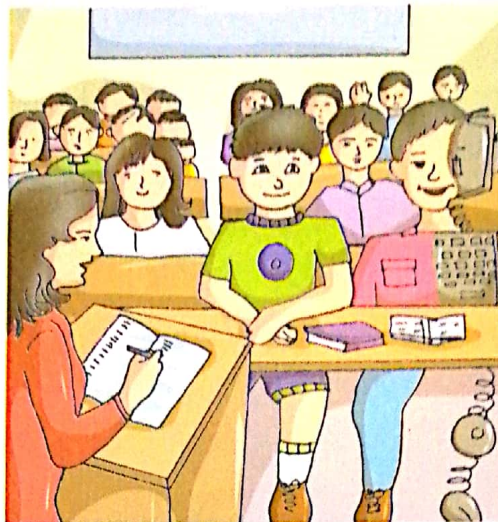
Tobo: Yes! Now you can very well relate to the spreadsheet.

Dobo: Have you noticed, our roll numbers are arranged in an alphabetical order?

Tobo: Yes, That's called as Sorting.

Dobo: Sorting! As far as I remember "Sorting" is classifying objects on the basis of shape, colour, size etc.



Tobo: True! But sorting has another meaning also.

Dobo: Okay! And what's that?

Tobo: Sorting means arranging data in ascending or descending order.

Let us say there are 5 students who want to go for Inter house competition.

Ansh, Zubin, Priya, Chetan and Babita

Teacher wants to arrange them alphabetically, look at this

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Ansh   Zubin   Priya   Ketan   Babita
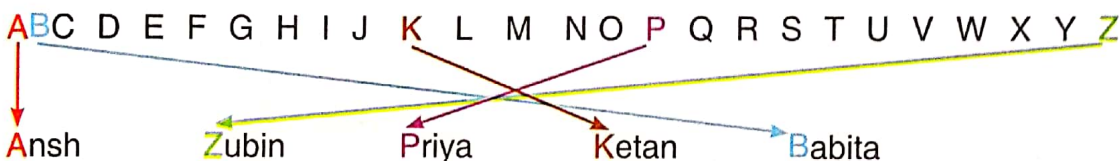
After Sorting, names would appear in the following order

	Ascending	Descending
1	Ansh	Zubin
2	Babita	Priya
3	Ketan	Ketan
4	Priya	Babita
5	Zubin	Ansh

Dobo: Oh okay! But it must be very difficult for our teacher to write, I mean to sort the names of all our classmates in alphabetical order in the attendance Register. I wish if I could help her.
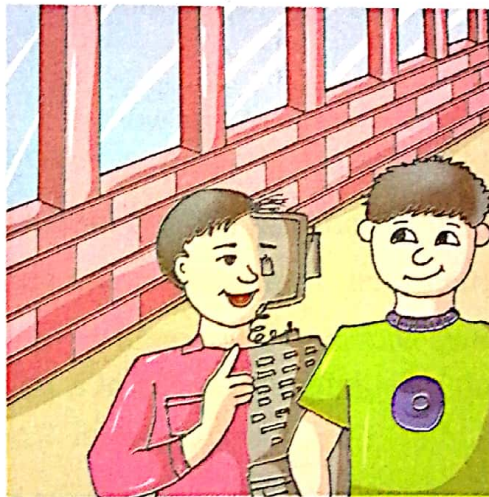
Tobo: Well! Manually Yes, it is very difficult.

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ACTIVITY :

Arrange the following list of names in Descending Order.

Names	Descending
Arpan	
Aakash	
Aarohan	
Amrit	
Arjun	
Anirudh	
Akhilesh	
Aradhya	
Ajay	
Ananya	

Tobo: But Dobo! You can help her easily using Calc Software.

Dobo: Who me? Don't tell me.

OpenOffice.org Calc helps to arrange the rows of a data list alphabetically or numerically in ascending or descending order.

Notice the following two buttons on Standard toolbar.

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(A-Z) Ascending helps to sort the lowest number, the beginning of the alphabet, or the earliest date first.

(Z-A) Descending helps to sort the highest number, the end of the alphabet, or the latest date first.

Data to be sorted/arranged needs to be selected first and then one can choose the icon for ascending or descending as per the requirement.

Hands On

Take a survey of at least 10 of your neighbours on "CYBER Conduct" to collect information under the various heads like

Name

Last Name

Age

Date of Birth

Time spent on Internet per week

Can you live without internet?

Feed the data in a calc spreadsheet and sort the data one by one under all the heads.

Dobo: Great Tobo. Now teacher will be very happy. But...

Tobo: Now what happened?

Dobo: What if I want to help teacher further in her work. I wish if I could help her in preparing marksheet.

> **DO YOU REMEMBER:**
> Cell is the basic element of a spreadsheet

Tobo: Wait... Wait... You mean to perform calculations for her.

Dobo: Well said Tobo. This what exactly I wanted to do for her.

Calc Software has a feature that allows you to create formulas and use inbuilt functions. A formula is an expression which calculates the value of a cell.

A formula can contain

    (a) **Values** eg: 2, 7, 10 etc

    (b) **Operators** eg: +, −, /, * etc

    (c) **Cell Addresses** eg: B15, G100

    (d) **Function** eg: Sum(), Average()

> **DO YOU REMEMBER:**
> Cell Address is column letter followed by row number

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Rules for writing formulae in OpenOffice.org Calc

1. Formula **must start with "=" sign** and there should be no space before the "=" sign.

2. There must be some **arithmetic operator** to operate on values.

   We can add (+), subtract (-), multiply (*), divide (/) or find exponentiation (^) using formulae.

	A	B
1	4	9
2	2	3
3	5	1
4	Formula	Output
5	=A1+B1-B3	12

Examples shown explains the rules mentioned above:

Dobo: But can't we write =4+9-1instead of using cell address

Tobo: You can write but in case you make any change in the values then recalculation becomes easier by using cell address as it will automatically recalculate the answer.

	A	B
1	4	9
2	2	3
3	5	9
4		
5	=A1+B1-B3	4

Dobo: Okay. Means if I change value of B3 to 9 then answer will automatically change to 4

Hands On

1. Enter some numeric values in cells from A1 to F6

   Type the formulae for the following and write the answer in the space provided:

1	Add A3 and D3 in G1	
2	Subtract B2 from C2 in G2	
3	Multiply F4 with 8 in G3	
4	Divide E6 by 3 in G4	
5	Subtract 10 from the sum of C4 and C5 in G5	
6	Multiply E1 with 4 exponentiation 2 in G6	
7	Add the values of A1 and A2 and divide A3 in G7	

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2. Type the same formulae without starting them with "=" sign and observe the changes.

3. Change the values typed in cells and observe the changes in the result.

Hierarchy of Operators

Operator	Priority
( ) (Bracket)	I
^ Exponentiation	II
* & / (Multiplication and Division)	III
+ & – (Addition & Subtraction)	IV

4. Type the following formulae and write the result in space provided:

FORMULA	RESULT
= (4+5)^2	
= (4+5)*2	
= (1+5^2–8)+12/4	
= 3+5*(5+6/3)+14*7–12	
= (400–(28/4–2*8))*7	

5. Enter the marks in 5 Subjects for 15 students as given below and find their total. First one is done for you.

H2   fx Σ =   =C2+D2+E2+F2+G2

	A	B	C	D	E	F	G	H
1	R.No.	Name	Hindi	English	Maths	Science	S.St.	Total
2	1	Amit	77	78	75	80	75	385
3	2	Arun	67	65	80	75	70	
4	3	Babita	85	82	85	88	90	
5	4	Chaitanya	92	95	99	94	89	
6	5	Falguni	45	58	77	65	66	
7	6	Kavya	92	90	100	98	95	
8	7	Nirmit	88	80	90	87	89	
9	8	Parul	65	69	89	65	74	
10	9	Pooja	54	70	78	78	67	
11	10	Rahul	87	89	99	90	94	
12	11	Rijul	79	84	89	88	79	
13	12	Shirish	70	67	88	84	67	
14	13	Tarun	56	70	55	65	89	
15	14	Utkarsh	68	66	45	78	65	
16	15	Yash	66	55	67	56	60	

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Spreadsheet also offers a feature called **"Fill Handle"** wherein we don't have to type the formula. **Fill Handle is used for generating series of numbers, days, months etc. and it also copies formulas and functions for us.**

When dealing with large amount of data, such as mark sheet, it is time taking to type the formula for adding the marks of all the students. In such cases "Fill handle" can be used very effectively. The user types the formula only once and by dragging it to other cells, the formula gets copied to other cells wherein cell addresses are changed automatically.

> **DO YOU REMEMBER:**
> Average is Sum of Values divided by Number of Values.

Hands On

Use Fill Handle to calculate the Average marks of the 15 students entered earlier.

	A	B	C	D	E	F	G	H	I
1	R.No.	Name	Hindi	English	Maths	Science	S.St.	Total	Average
2	1	Amit	77	78	75	80	75	385	
3	2	Arun	67	65	80	75	70	357	
4	3	Babita	85	82	85	88	90	430	
5	4	Chaitanya	92	95	99	94	89	469	
6	5	Falguni	45	58	77	65	66	311	
7	6	Kavya	92	90	100	98	95	475	
8	7	Nirmit	88	80	90	87	89	434	
9	8	Parul	65	69	89	65	74	362	
10	9	Pooja	54	70	78	78	67	347	
11	10	Rahul	87	89	99	90	94	459	
12	11	Rijul	79	84	89	88	79	419	
13	12	Shirish	70	67	88	84	67	376	
14	13	Tarun	56	70	55	65	89	335	
15	14	Utkarsh	68	66	45	78	65	322	
16	15	Yash	66	55	67	56	60	304	

Tobo: Fill Handle **copies formulas and functions** for us.

Dobo: What is a Function?

Calc also has certain pre-written formulas that can be applied directly for the calculations. Functions are the pre-defined or built-in formulas in OpenOffice Calc that perform calculations using specific values known as Arguments in a particular order.

For example, if we want to add the Total Marks of Kavya (Cell Address H7) given in the data above,

So instead of writing, =C7+D7+E7+F7+G7, we can simply write

= SUM (C7:G7)

Structure of a Function

= Name (argument1, argument2...) where arguments are the values passed to the functions

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Hands On

Find out the functions used to complete the following table by calculating

1. Sum of all the 5 Subjects in Column H (using Sum() as stated above)

2. Percentage/Average of the 5 subjects in column I

3. Highest marks in each Subject in 18th Row

4. Lowest marks in each Subject in 19th Row

	A	B	C	D	E	F	G	H	I
1	R.No.	Name	Hindi	English	Maths	Science	S.St.	Total	Percentage
2	1	Amit	77	78	75	80	75		
3	2	Arun	67	65	80	75	70		
4	3	Babita	85	82	85	88	90		
5	4	Chaitanya	92	95	99	94	89		
6	5	Falguni	45	58	77	65	66		
7	6	Kavya	92	90	100	98	95		
8	7	Nirmit	88	80	90	87	89		
9	8	Parul	65	69	89	65	74		
10	9	Pooja	54	70	78	78	67		
11	10	Rahul	87	89	99	90	94		
12	11	Rijul	79	84	89	88	79		
13	12	Shirish	70	67	88	84	67		
14	13	Tarun	56	70	55	65	89		
15	14	Utkarsh	68	66	45	78	65		
16	15	Yash	66	55	67	56	60		
17									
18		Highest Marks							
19		Lowest Marks							

Functions are used to quickly manipulate the data. I can easily analyse the total marks, the average marks, the maximum and minimum marks.

ACTIVITY :

Brainstorm and find different areas in which you can help your parents in doing speedy calculations using formulas and functions.
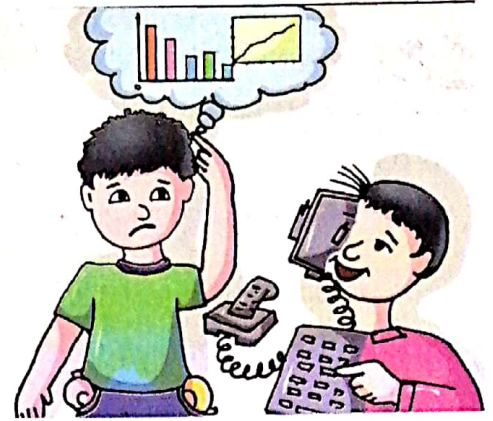
_____   _____

_____   _____

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Tobo:Its difficult to analyse the workbooks that contain a lot of data thereby making comparisons tedious.

Dobo: Hmm...

Tobo: Don't loose heart. Open Office.org provides solution for this in the form of Charts.Do you remember making Histograms in maths?

Charts are the graphical representation of data available in the worksheet.

ACTIVITY :

Take a graph paper and make a histogram of total marks of all the students given in the above marksheet and paste it in the space provided.

Note for Teacher: Help students read the histogram and write its analysis in the space provided.

Analysis:

_____

_____

_____

_____

Charts in Calc are also like Histograms. They are **visually appealing** and are **easier to read and understand.** They can be used in various fields because of its uses.

Calc charts facilitates **quick comparisons** and analysis of trends. Calc supports various kinds of Charts like **Line Chart, Pie Chart, Bar Chart, Column Chart etc.**

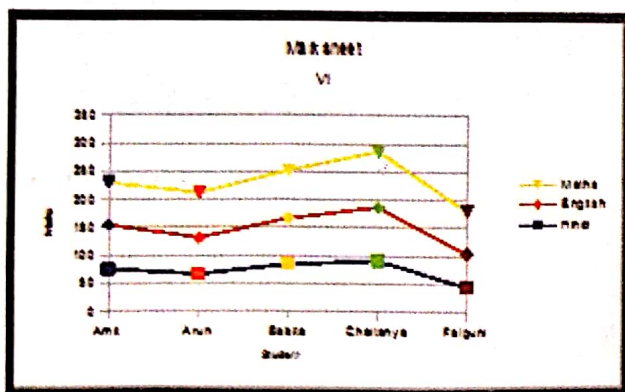Observe different charts made by taking data of 5 students from the given mark sheet in 3 subjects.
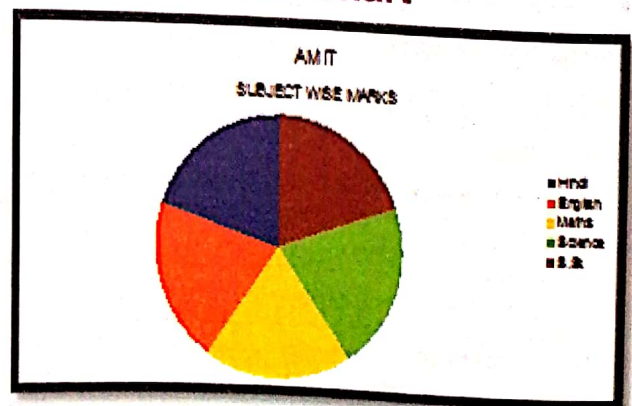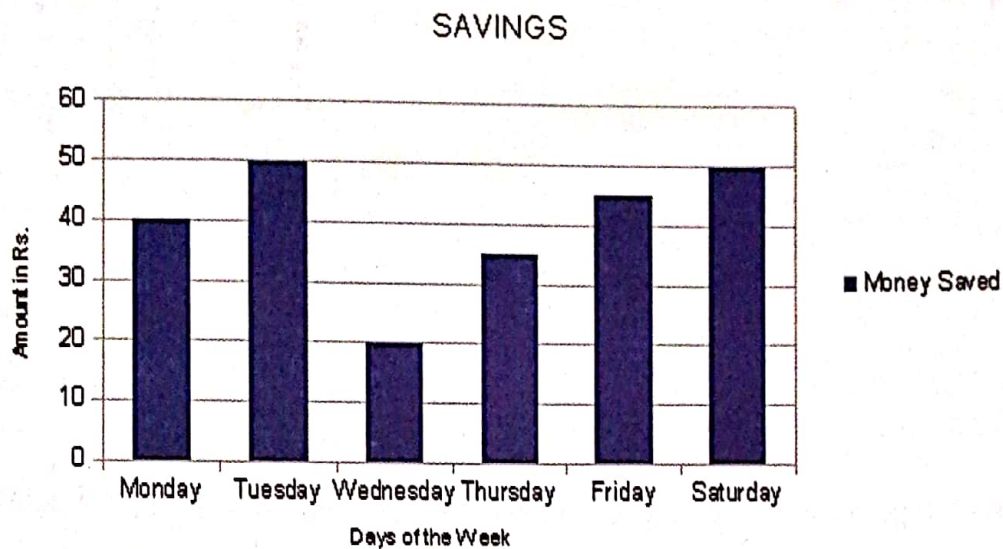
COLUMN Chart
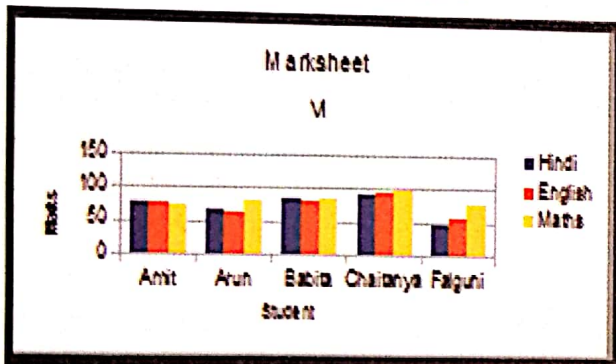
BAR Chart

LINE Chart

PIE Chart

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ACTIVITY :

1.

SAVINGS
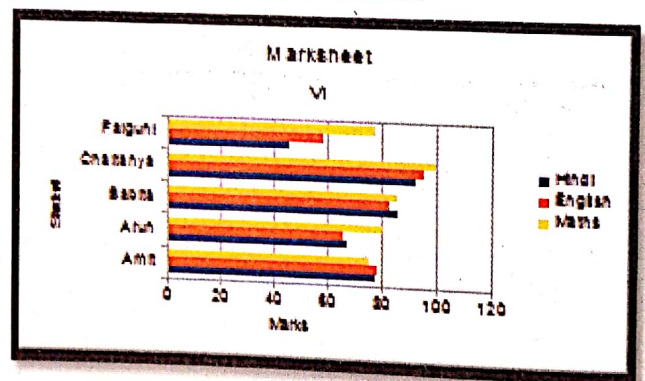
I. Study the charts given above and answer the questions

1. On how many days same amount of money was saved?

_____

2. On which day least amount of money was saved?

_____

3. How much more money was saved on Tuesday than Friday?

_____

II. Working in Pairs

Ask Students to collect different types of charts from newspapers and magazines and interpret them in class.

STEPS FOR CREATING A CHART

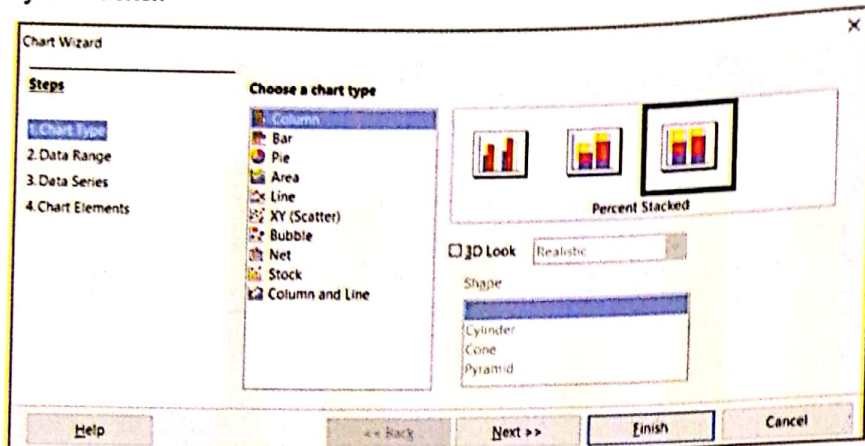Select the data for which chart is to be created and follow the steps given below:

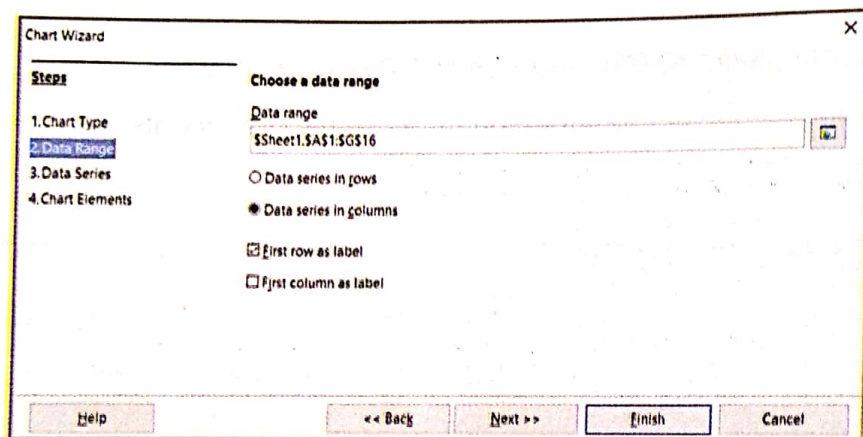**Step 1:** Choose any **one** method to **open Chart Wizard**

1. Insert → Chart

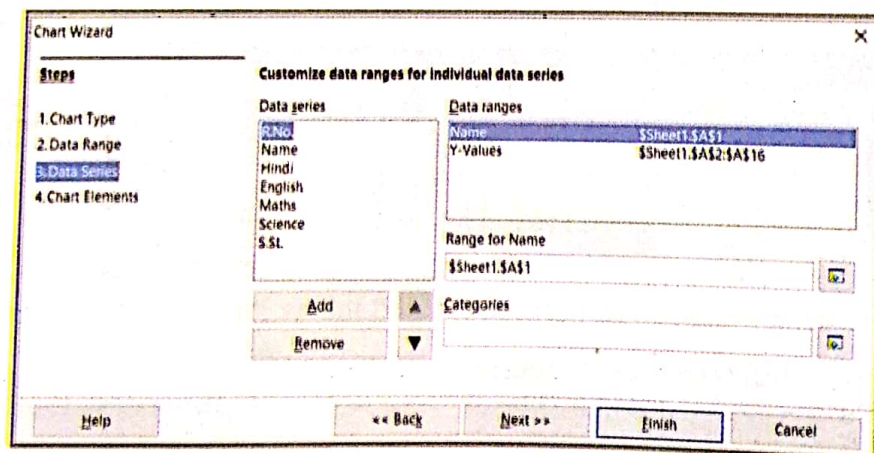2. Click [icon] Chart button on Standard Toolbar

Step 2: **Choosing a chart type from Chart Wizard:** Choose the type of chart which best suits your data.

Step 3: In this step, select the **range of cells** for which chart is to be generated.

Step 4: Here, data in series can be added or removed.

Step 5: This is the final step towards creation of chart. In this step choose titles, legends and their placement. Click Finish

Chart Wizard ✕

Steps

1. Chart Type
2. Data Range
3. Data Series
4. Chart Elements

Choose titles, legend, and grid settings

Title: Marksheet
Subtitle: Class VII
X axis: Name of Student
Y axis: Marks
Z axis:

☑ Display legend
○ Left
⦿ Right
○ Top
○ Bottom

Display grids
☐ X axis   ☑ Y axis   ☐ Z axis

[Help]   [<< Back]   [Next >>]   [Finish]   [Cancel]
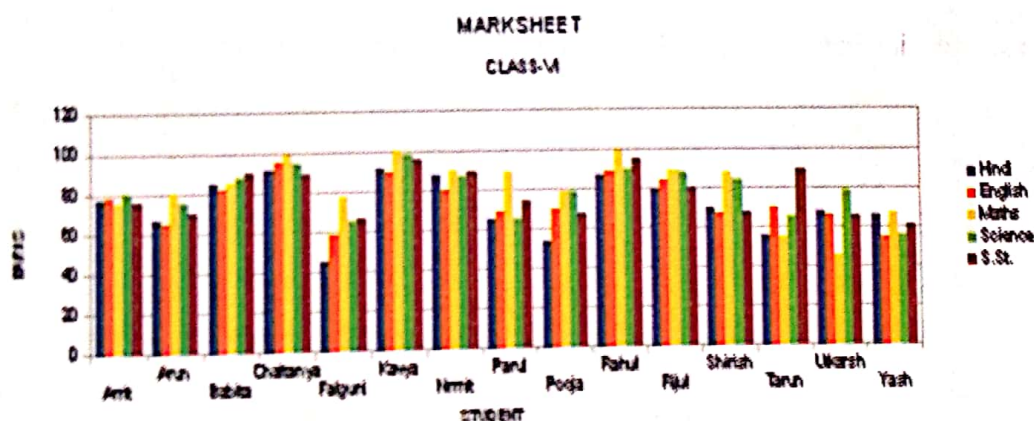

ACTIVITY :

Watch the video to learn about the formatting of the chart elements

https://www.youtube.com/watch?v=uZ1dN_AeU38

Explore different elements of Chart and label them in any Bar/Column Chart

---

A sample chart is shown below. You can customise charts for fonts and colours.

MARKSHEET
CLASS-VI

Dobo: Wow! That's great. It's looking beautiful and just by observing the columns, I can analyse the information.

1. Create a Pie Chart to represent composition of Air.

2. Collect information from Class teachers of other sections of Class VI and create a Bar Chart to represent number of boys and girls in each section and analyse it.

Dobo: I am wondering can we change the data entered in worksheet and what will happen to the chart, if any content of worksheet is changed?

Tobo: Okay! This is called editing of worksheet.

Editing cell contents involves:

1. **Replacing or overwriting** the cell contents

2. **Making changes** (removing some and keeping some) in the contents

3. **Deleting** the cell contents

Suppose there is a change in the marks entered in the previous worksheet. Open the mark sheet created earlier, and try to change marks written in cell

D10 with 76

F5 with 92

E15 with 49

Also change the caption **Name** with **Name of the Student**

	A	B	C	D	E	F	G
1	R.No.	Name	Hindi	English	Maths	Science	S.St.
2	1	Amit	77	78	75	80	75
3	2	Arun	67	65	80	75	70
4	3	Babita	85	82	85	88	90
5	4	Chaitanya	92	95	99	94	89
6	5	Falguni	45	58	77	65	66
7	6	Kavya	92	90	100	98	95
8	7	Nirmit	88	80	90	87	89
9	8	Parul	65	69	89	65	74
10	9	Pooja	54	70	78	78	67
11	10	Rahul	87	89	99	90	94
12	11	Rijul	79	84	89	88	79
13	12	Shrish	70	67	88	84	67
14	13	Tarun	56	70	55	65	89
15	14	Utkarsh	68	66	45	78	65
16	15	Yash	66	55	67	56	60

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Observe what happens the moment you select the cell and type the contents. Are the preview contents **overwritten?**

In order to partially change the content

Select the cell to be edited

Click on the Formula Bar

Double Click Inside the cell

Press F2

◆ Click on the formula bar

   or

◆ double click inside the cell

   or

◆ Press F2 key from the keyboard

◆ Use arrow keys and edit the contents

◆ Press Enter

Hands On

Redo the activity and make the changes using any of the methods written above.

Remove all the contents to the formatting for Roll No.15 from the mark sheet

Observe what happens to the formatting, if you have applied any formatting effects on the cell.

Also observe the changes taking place in the chart created by you earlier using the same data.

ACTIVITY :

Think-Pair-Share

    Take a small piece of paper, write any quality of yourself, you want others to know and any one weakness of your which you want to get rid of. Work in pairs and share details with your partner.

Teachers note: Relate the qualities to be added with Copy option and weakness to be removed with Cut option.

In Calc, we can Copy some or selective text without changing the original one and pasting it at a new place making it appear at both the places.

Also, if you don't want it at original place, there is an option to Cut/move the text from there and pasting it at a new place.

There are various methods for **Copy/Paste** and **Cut/Paste**

Hands On

Search and explore various methods to Copy/Paste and Cut/Paste and write in the space provided:

	Copy/Paste	Cut/Paste
Using Keyboard Shortcuts		
Using Menu		
Using tools on the toolbar		
Any other		

Do the following:

1. Copy the marks obtained by Amit for all the subjects to 17th row.

2. Move the marks of all the students in Hindi after Science.

3. Insert Student **Harmeet** as Roll No. 5 and enter his marks in all the subjects as given below:

| 5 | Harmeet | 66 | 87 | 89 | 90 | 87 |

4. Delete English Marks of Shrish and move the marks of remaining students up.

Formatting a Worksheet

Formatting means general arrangement of data. Formatting of worksheets make them more professional and presentable.

It can be applied on both numbers as well as text.

(1) Formatting Numbers include representation in currency, percentage, date/time etc.

(2) Formatting text includes change in font, colour, size, alignment etc

Formatting can be applied by selecting the data and then choosing the options from Formatting toolbar or Clicking Format → Cells

Hands On

1. Explore and write different formatting effects, you can use to enhance the appearance of the mark sheet. (Clue: refer to Formatting Tool Bar)

    ----

2. Make the marksheet look more organised by applying various formatting options as shown below and change the appearance of marks in all the subjects.
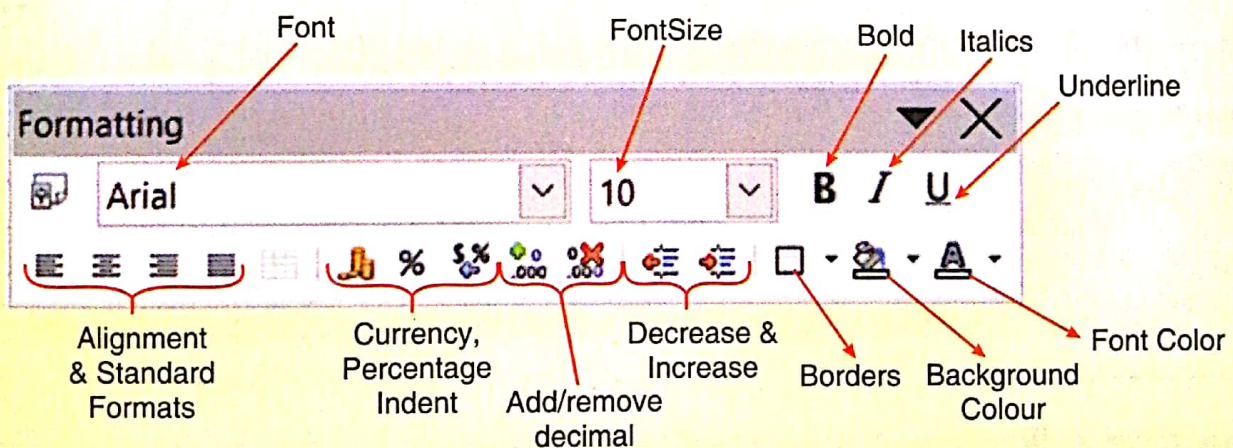
Printing a Worksheet

In order to take print out, make sure that your printer is connected and has paper. Then follow the steps listed below:
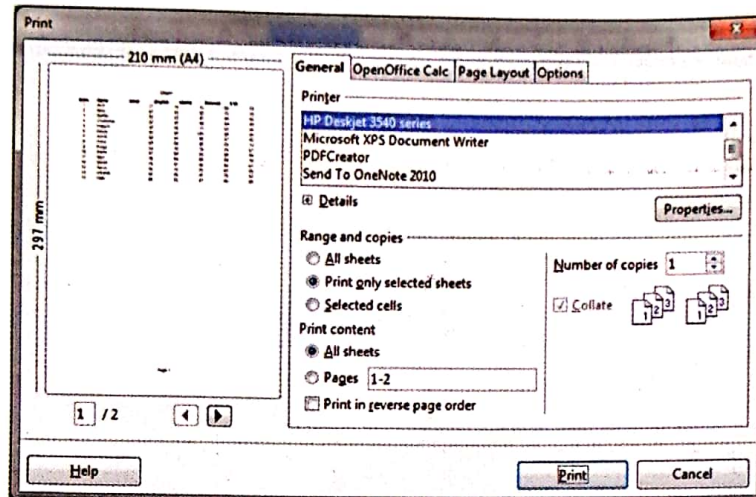
Step 1: Click File → Print

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Or

Press Ctrl+P from the keyboard

Or

Click Print button on the Standard toolbar

It will open the following Dialog Box for you

Step 2: Choose the desired printer from the list of printers already installed in your computer. Provide the range, the content and the number of copies to be printed.

Step 3: Click Print

Assessment Activity

Hands On

1. Raghav is very fussy about eating green vegetables.

   Help his mother in preparing an interesting but nutritious menu for Breakfast, Lunch and Dinner for next 7 days.

2. Make a Calendar of your birthday Month and give suitable background to your worksheet depending upon the season of that month.