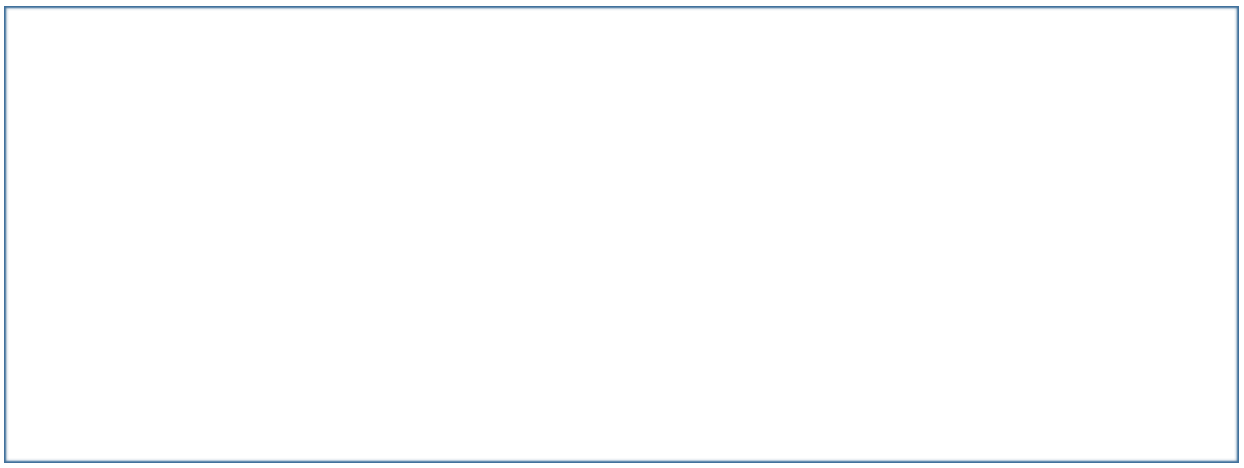
UNIT-2 ELECTRONIC SPREADSHEET (ADVANCED)



SESSION 1: Analyse data using scenarios and goal seek

SESSION 2: Link Data and Spreadsheets

SESSION 3: Share and review a spreadsheet

SESSION 4: Create and use Macros in spreadsheet

SESSION 1:
Analyze data using scenarios and goal seek

Consolidating data

Data > Consolidate provides a graphical interface for copying data from one range of cells to another, then running one of a dozen functions on the data. During consolidation, the contents of cells from several sheets can be combined in one place.

1) Open the document that contains the cell ranges to be consolidated.

2) Choose **Data > Consolidate** to open the Consolidate dialog (Figure 1).

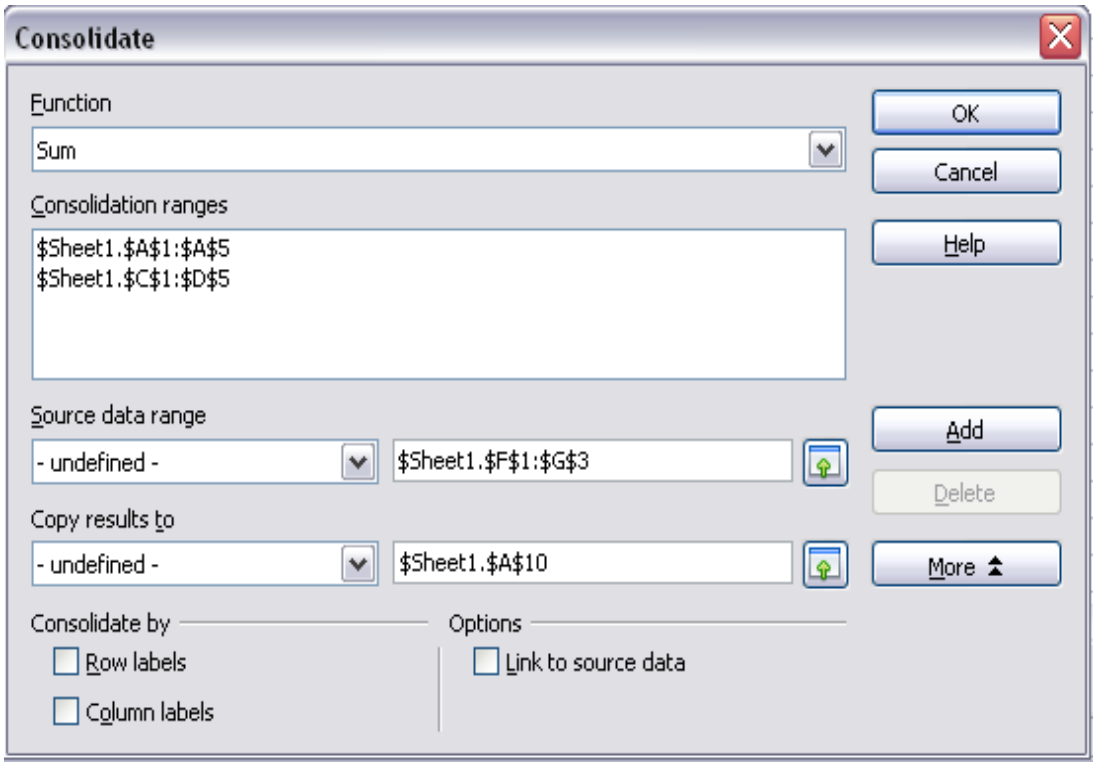


Figure 1: Defining the data to be consolidated

3) If the **Source data range** list contains named ranges, you can select a source cell range to consolidate with other areas.

   If the source range is not named, click in the field to the right. and either type a reference for the first source data range or use the mouse to select the range on the sheet. (You may need to move the Consolidate dialog to reach the required cells.)

4) Click **Add**. The selected range now appears on the Consolidation ranges list.

5) Select additional ranges and click **Add** after each selection.

6) Specify where you want to display the result by selecting a target range from the **Copy results to** box.

   If the target range is not named, click in the field next to **Copy results to** and enter the reference of the target range or select the range using the mouse or position the cursor in the top left cell of the target range.

7) Select a function from the Function list. The function specifies how the values of the consolidation ranges are linked. The Sum function is the default setting.

   Most of the available functions are statistical (such as AVERAGE, MIN, MAX, STDEV), and the tool is most useful when you are working with the same data over and over.

8) Optionally click **More** in the Consolidate dialog to display additional settings.
   - Select **Link to source data** to insert the formulas that generate the results in the target range, rather than the actual results. If you link the data, any values modified in the source range are automatically updated in the target range. The corresponding cell references in the target range are inserted in consecutive rows, which are automatically ordered and then hidden from view. Only the final result, based on the selected function, is displayed.
   - Under **Consolidate by**, select either Row labels or Column labels if the cells of the source data range are not to be consolidated corresponding to the identical position of the cell in the range, but instead according to a matching row label or column label. To consolidate by row labels or column labels, the label must be contained in the selected source ranges. The text in the labels must be identical, so that rows or columns can be accurately matched. If the row or column label does not match any that exist in the target range, it will be appended as a new row or column.

9) Click **OK** to consolidate the ranges.

If you are continually working with the same range, then you probably want to use **Data > Create Range** to give it a name.

The data from the consolidation ranges and target range are saved when you save the document. If you later open a document in which consolidation has been defined, this data will again be available.

Creating subtotals

SUBTOTAL is a function listed under the Mathematical category when you use the Function Wizard (**Insert > Function**). Because of its usefulness, the function has a graphical interface accessible from **Data > Subtotals**.

As the name suggests, SUBTOTAL totals data arranged in a array—that is, a group of cells with labels for columns and/or rows. Using the Subtotals dialog, you can select arrays, and then choose a statistical function to apply to them. For efficiency, you can choose up to three

groups of arrays to which to apply a function. When you click **OK**, Calc adds subtotals and grand totals to the selected arrays, using the Result and Result2 cell styles for them.

To insert subtotal values into a sheet:

1) Ensure that the columns have labels.
2) Select the range of cells that you want to calculate subtotals for, and then choose **Data > Subtotals**.
3) In the Subtotals dialog (Figure 2), in the **Group by** box, select the column that you want to add the subtotals to. If the contents of the selected column change, the subtotals are automatically recalculated.
4) In the **Calculate subtotals for** box, select the columns containing the values that you want to subtotal.
5) In the **Use function** box, select the function that you want to use to calculate the subtotals.
6) Click **OK**.

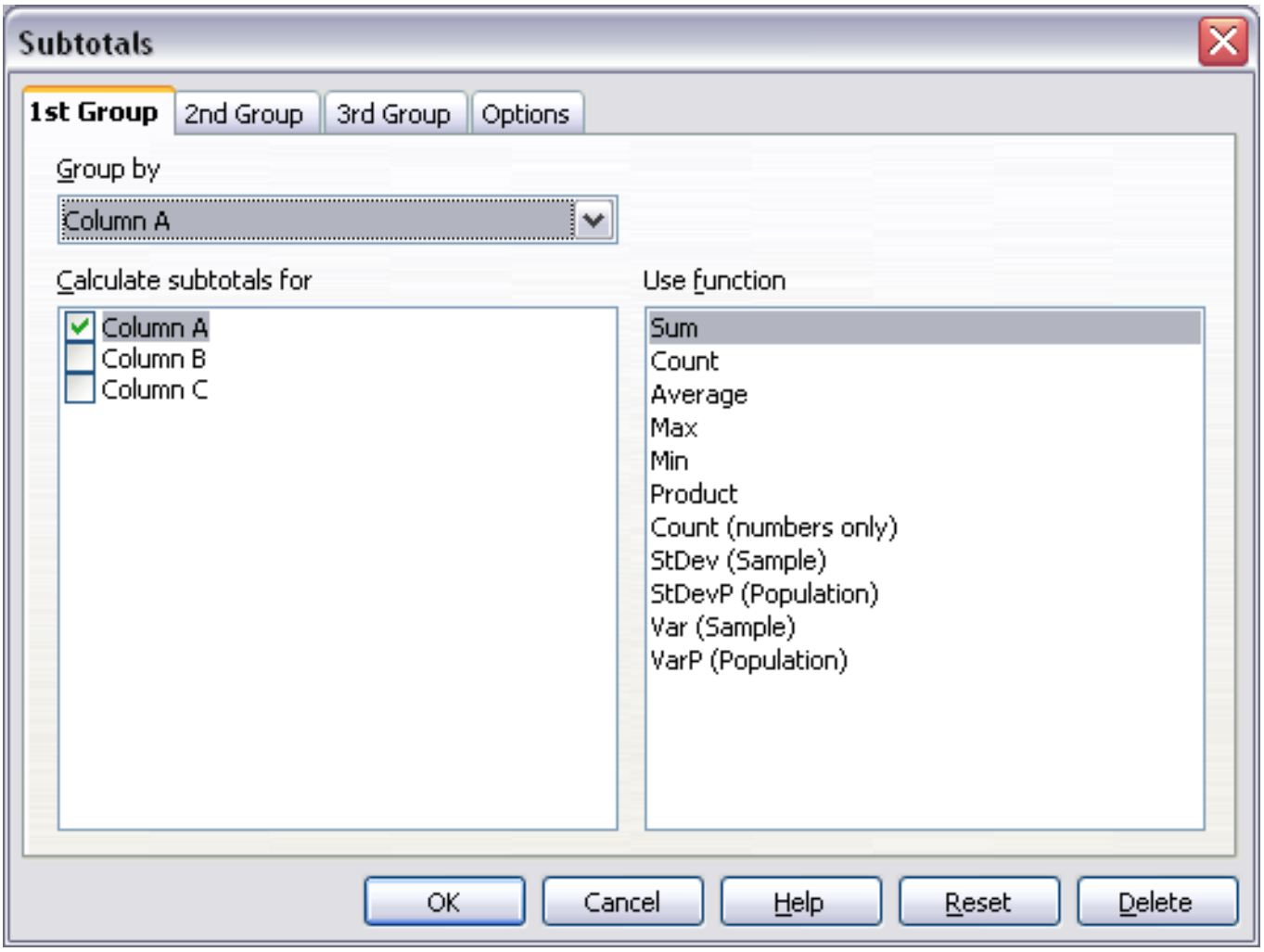


Figure 2: Setting up subtotals

If you use more than one group, then you can also arrange the subtotals according to choices made on the dialog's Options page (Figure 3), including ascending and descending order or using one of the predefined custom sorts defined in **Tools > Options > OpenOffice.org Calc > Sort Lists**.

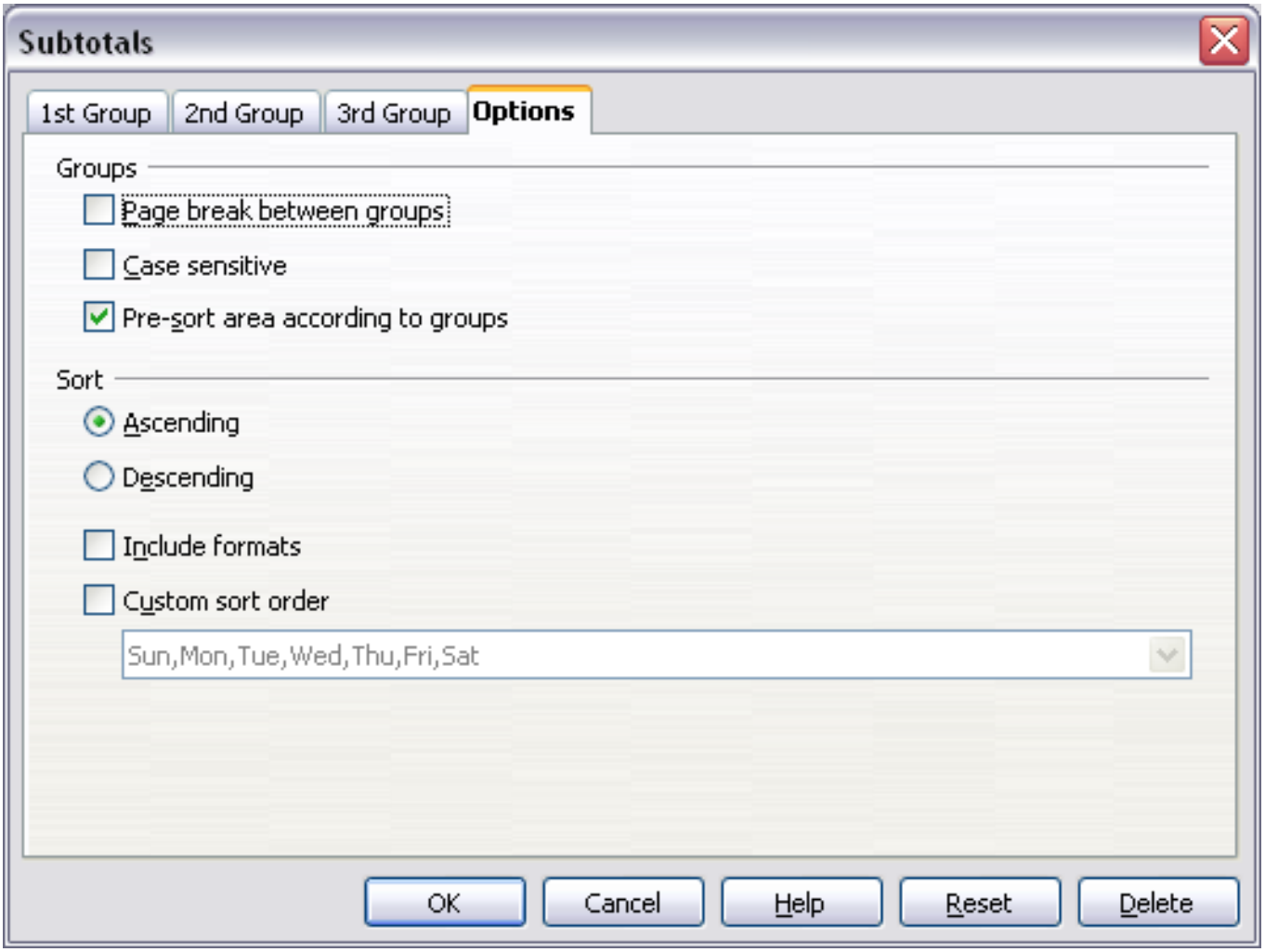


Figure 3: Choosing options for subtotals

Using "what if" scenarios

Scenarios are a tool to test "what-if" questions. Use **Tools > Scenarios** to enter variable contents—scenarios—in the same cell. Each scenario is named, and can be edited and formatted separately, and chosen from a drop-down list in the Navigator and the title bar of the scenario. When you print the spreadsheet, only the contents of the currently active scenario are printed.

By adding a scenario, you can quickly change the arguments of a formula and view the new results. For example, if you wanted to calculate different interest rates on an investment, you could add a scenario for each interest rate, and quickly view the results. If you had another formula that calculated your yearly income and included the result of the interest rate formula as an argument, it would also be updated. If all your sources of incomes used scenarios, you could efficiently build a complex model of your possible income.

Creating scenarios

To create a scenario, select all the cells that provide the data for the scenario.

1) Select the cells that contain the values that will change between scenarios. To select multiple cells, hold down the Ctrl key as you click each cell.
2) Choose **Tools > Scenarios**.
3) On the Create Scenario dialog (Figure 4), enter a name for the new scenario. It's best to use a name that clearly identifies the scenario, not the default name as shown in the illustration. This name is displayed in the Navigator and on the title bar of the scenario on the sheet itself.

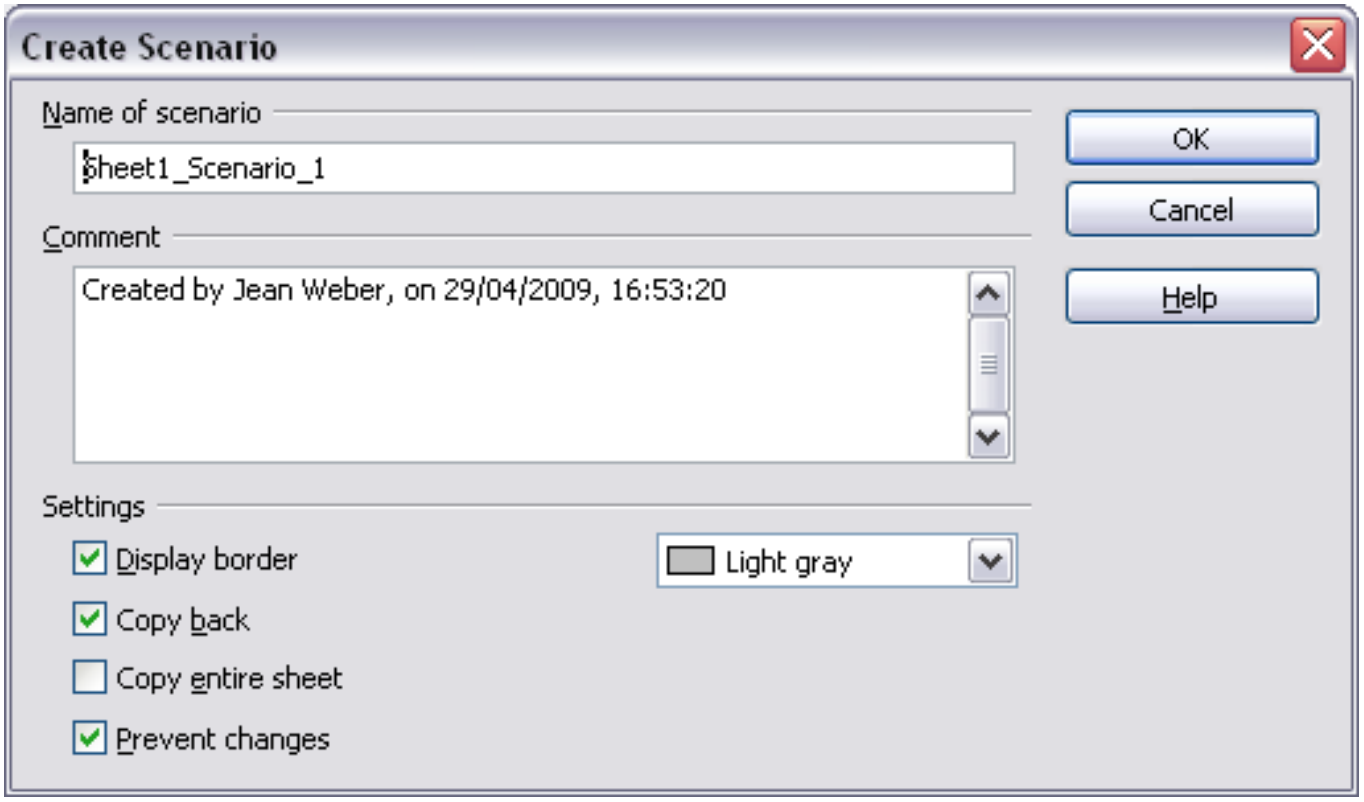


Figure 4: Creating a scenario

4) Optionally add some information to the **Comment** box. The example shows the default comment. This information is displayed in the Navigator when you click the Scenarios icon and select the desired scenario

.

5) Optionally select or deselect the options in the Settings section.
   See below for more information about these options.
6) Click **OK** to close the dialog. The new scenario is automatically activated.

Settings

The lower portion of the Create Scenario dialog contains several options. In most cases the default settings (shown selected in the example) are suitable.

Display border

Highlights the scenario in your table with a border. The color for the border is specified in the field to the right of this option. The border has a title bar displaying the name of the last scenario. The button on the right of the scenario border offers you an overview of all the scenarios in this area, if several have been defined. You can choose any of the scenarios from this list without restrictions.

Copy back

Copies the values of cells that you change into the active scenario. If you do not select this option, the scenario is not changed when you change cell values. The behavior of the **Copy back** setting depends on the cell protection, the sheet protection, and the **Prevent changes** settings.

Copy entire sheet

Copies the entire sheet into an additional scenario sheet.

Prevent changes

Prevents changes to the active scenario.

- You can only change the scenario properties if the **Prevent changes** option is not selected and if the sheet is not protected.
- You can only edit cell values if the **Prevent changes** option is selected, if the **Copy back** option is not selected, and if the cells are not protected.
- You can only change scenario cell values and write them back into the scenario if the **Prevent changes** option is not selected, if the **Copy back** option is selected, and if the cells are not protected.

Working with scenarios using the Navigator

After scenarios are added to a spreadsheet, you can jump to a particular scenario by using the Navigator, then selecting a scenario from the list. You can also color code scenarios to make them easier to distinguish from one another.

To select a scenario in the Navigator, click the **Scenarios** icon in the Navigator. The defined scenarios are listed, with the comments that were entered when the scenarios were created.

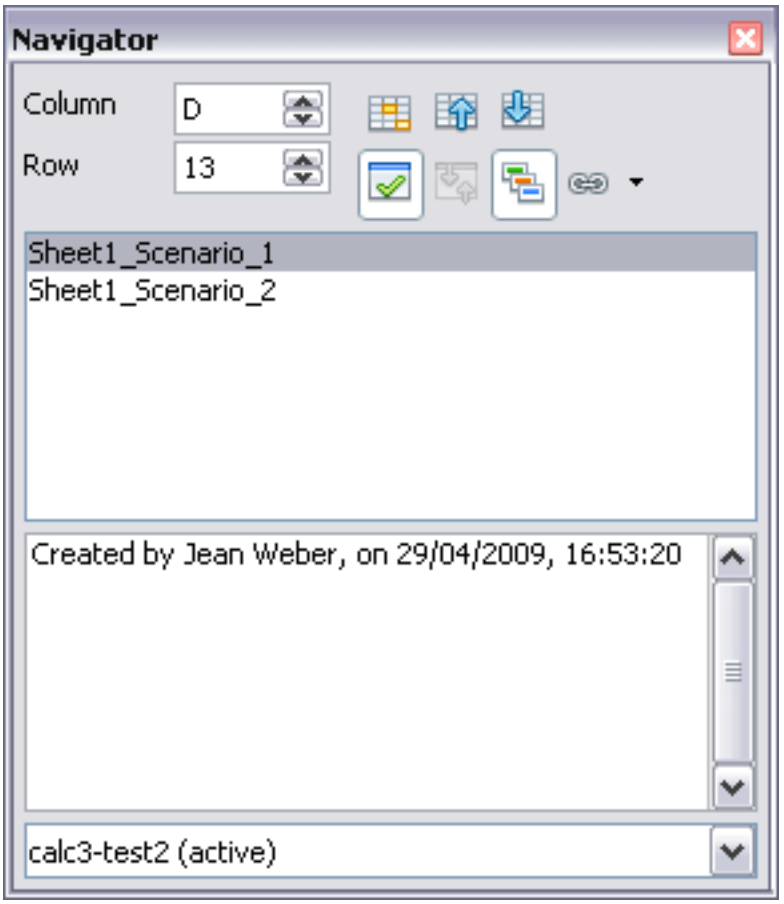


Figure 5: Scenarios in the Navigator

Double-click a scenario name in the Navigator to apply that scenario to the current sheet.

To delete a scenario, right-click the name in the Navigator and choose **Delete**.

To edit a scenario, including its name and comments, right-click the name in the Navigator and choose **Properties**. The Edit Properties dialog is the same as the Create Scenario dialog (Figure 4).

To learn which values in the scenario affect other values, choose **Tools > Detective > Trace Dependents**. Arrows point to the cells that are directly dependent on the current cell.

Providing alternate versions of formulas

Like scenarios, **Data > Multiple Operations** is a planning tool for "what if" questions. Unlike a scenario, the Multiple Operations tool does not present the alternate versions in the same cells or with a drop-down list. Instead, the Multiple Operations tool creates a formula array: a separate set of cells that give all the alternative results for the formulas used. Although the tool is not listed among the functions, it is really a function that acts on other functions, allowing you to calculate different results without having to enter and run them separately.

To use the Multiple Operations tool, you need two arrays of cells. The first array contains the original or default values and the formulas applied to them. The formulas must be in a range.

The second array is the formula array. It is created by entering variables—alternative values—for one or two of the original values. Once the variable values are created, you use the Multiple Operations tool to specify the formulas you are using, as well as the original values altered by the variables. The result is the outcome of the formulas using each variable.

The Multiple Operations tool can use any number of formulas, but only one or two variables. With one variable, you add different values for the variables as column or row labels. You then add a column to the right of the column labels or a row below the row labels (whichever you are using) for the results of each formula using the variable values. With two variables, the values for one variable are used as column labels, and the values for the other variable as row labels.

Setting up multiple operations can be confusing at first. For example, when using two variables, you need to select them carefully, so that they form a meaningful table. Not every pair of variables is useful to add to the same formula array. Yet, even when working with a single variable, a new or tired user can easily make mistakes or forget the relation between cells in the original array and cells in the formula array. In these situations, **Tools > Detective** can help to clarify the relations.

You can also make formula arrays easier to work with if you apply some simple design logic Place the original and the formula array close together on the same sheet, and use labels for the rows and columns in both. These small exercises in organizational design will make working with the formula array much less painful, particularly when you are correcting mistakes or adjusting results.

Multiple operations in columns or rows

In your spreadsheet, enter a formula to calculate a result from values that are stored in other cells. Then, set up a cell range where you enter some fixed values, and the Multiple Operations command will calculate the results depending on the formula.

In the Formula field, enter the cell reference to the formula that applies to the data range. In the Column input cell/Row input cell field, enter the cell reference to the corresponding cell that is part of the formula. This can be explained best by examples. (Cell references correspond to those in the following figures.)

Let's say you produce toys that you sell for $10 each (cell B1). Each toy costs $2 to make (cell B2), in addition to which you have fixed costs of $10,000 per year (cell B3). How much profit will you make in a year if you sell a particular number of toys?

Calculating with one formula and one variable

1) To calculate the profit, first enter any number as the quantity (items sold); in this example, 2000 (cell B4). The profit is found from the formula Profit=Quantity * (Selling price – Direct costs) – Fixed costs. Enter this formula in B5: =B4*(B1-B2)-B3.
2) In column D enter given annual sales, one below the other; for example, 500 to 5000, in steps of 500.
3) Select the range D2:E11, and thus the values in column D and the empty cells alongside in column E.
4) Choose **Data > Multiple Operations**.
5) With the cursor in the Formulas field of the Multiple operations dialog, click cell B5.
6) Set the cursor in the Column input cell field and click cell B4. This means that B4, the quantity, is the variable in the formula, which is replaced by the selected column values. Figure 6 shows the worksheet and the Multiple operations dialog.
7) Click **OK**. The profits for the different quantities are now shown in column E. See Figure 7.

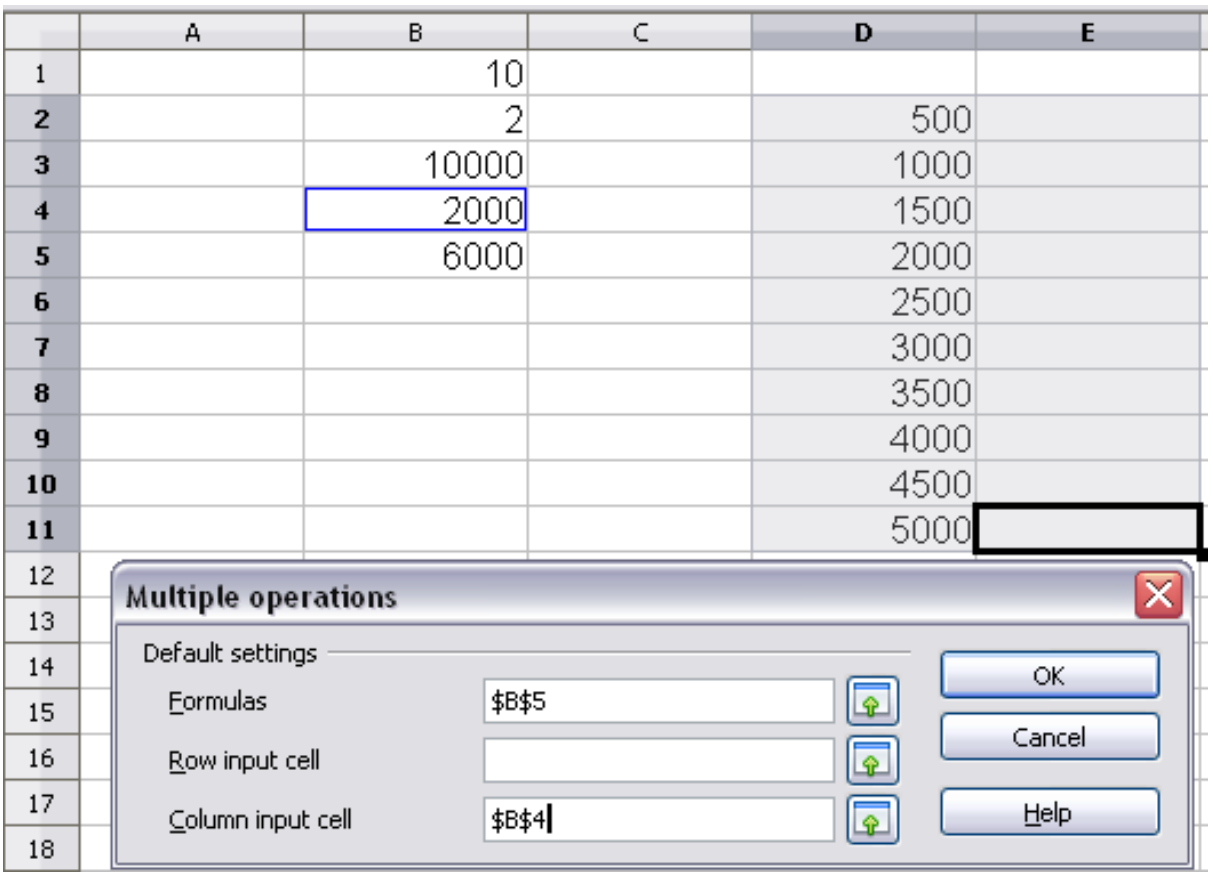


Figure 6: Sheet and Multiple operations dialog showing input

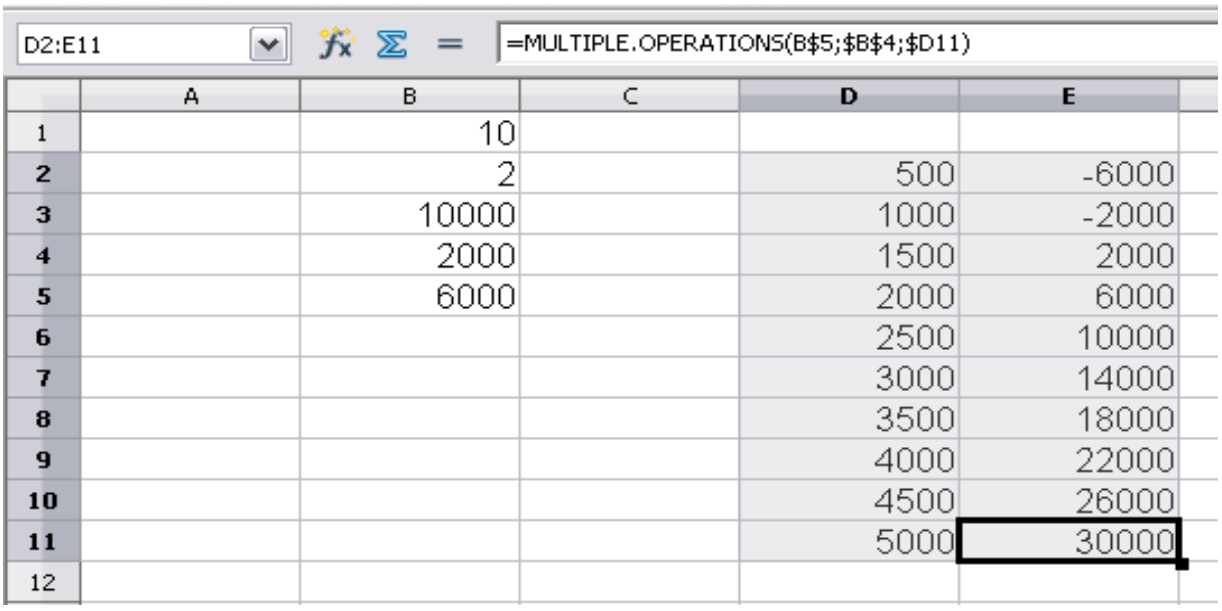


Figure 7: Sheet showing results of multiple operations calculations

Tip

You may find it easier to mark the required reference in the sheet if you click the Shrink icon to reduce the Multiple operations dialog to the size of the input field. The icon then changes to the Maximize icon; click it to restore the dialog to its original size.

Calculating with several formulas simultaneously

1) In the sheet from the previous example, delete the contents of column E.
2) Enter the following formula in C5: =B5/B4. You are now calculating the annual profit per item sold.
3) Select the range D2:F11, thus three columns.
4) Choose **Data > Multiple Operations**.
5) With the cursor in the Formulas field of the Multiple operations dialog, select cells B5 thru C5.
6) Set the cursor in the Column input cell field and click cell B4.
Figure 8 shows the worksheet and the Multiple operations dialog.

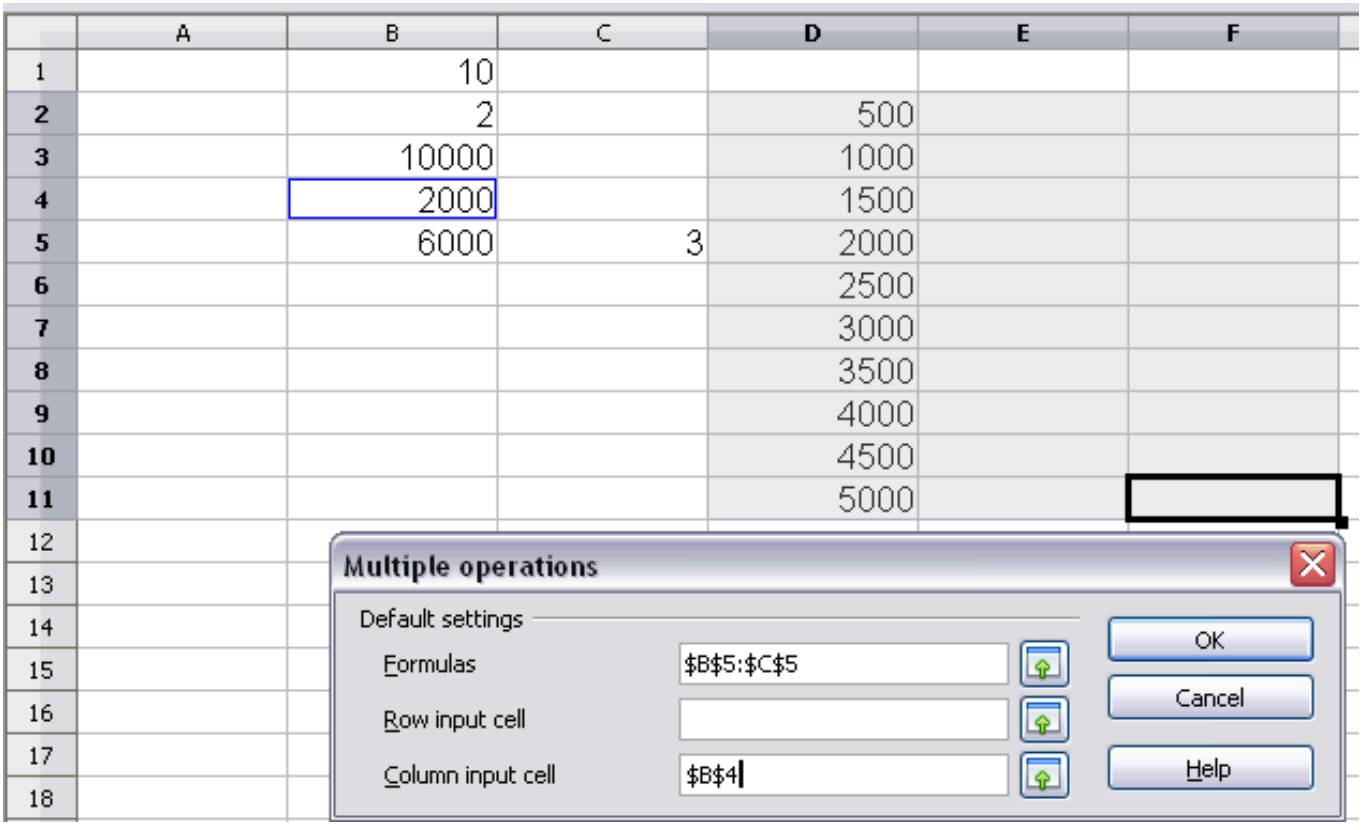


Figure 8: Sheet and dialog showing input

7) Click **OK**. Now the profits are listed in column E and the annual profit per item in column F. See Figure 9. (You might want to format column F to show 2 decimal points, for easier comparison of the amounts.)

D2:F11 | =MULTIPLE.OPERATIONS(C$5;$B$4;$D11)

	A	B	C	D	E	F
1		10				
2		2		500	-6000	-12
3		10000		1000	-2000	-2
4		2000		1500	2000	1.33
5		6000	3	2000	6000	3
6				2500	10000	4
7				3000	14000	4.67
8				3500	18000	5.14
9				4000	22000	5.5
10				4500	26000	5.78
11				5000	30000	6
12						

Figure 9: Results of multiple operations calculations

Multiple operations across rows and columns

You can carry out joint multiple operations for columns and rows in so- called cross-tables. The formula cell must refer to both the data range arranged in rows and the one arranged in columns. Select the range defined by both data ranges and call the multiple operation dialog. Enter the reference to the formula in the Formula field. The Row input cell and the Column input cell fields are used to enter the reference to the corresponding cells of the formula.

Calculating with two variables

You now want to vary not just the quantity produced annually, but also the selling price, and you are interested in the profit in each case.

Expand the table shown above. D2 thru D11 contain the numbers 500, 1000 and so on, up to 5000. In E1 through H1 enter the numbers 8, 10, 15 and 20.

1) Select the range D1:H11.
2) Choose **Data > Multiple Operations**.
3) With the cursor in the Formulas field of the Multiple operations dialog, click cell B5 (profit).
4) Set the cursor in the Row input cell field and click cell B1. This means that B1, the selling price, is the horizontally entered variable (with the values 8, 10, 15 and 20).
5) Set the cursor in the Column input cell field and click cell B4. This means that B4, the quantity, is the vertically entered variable.

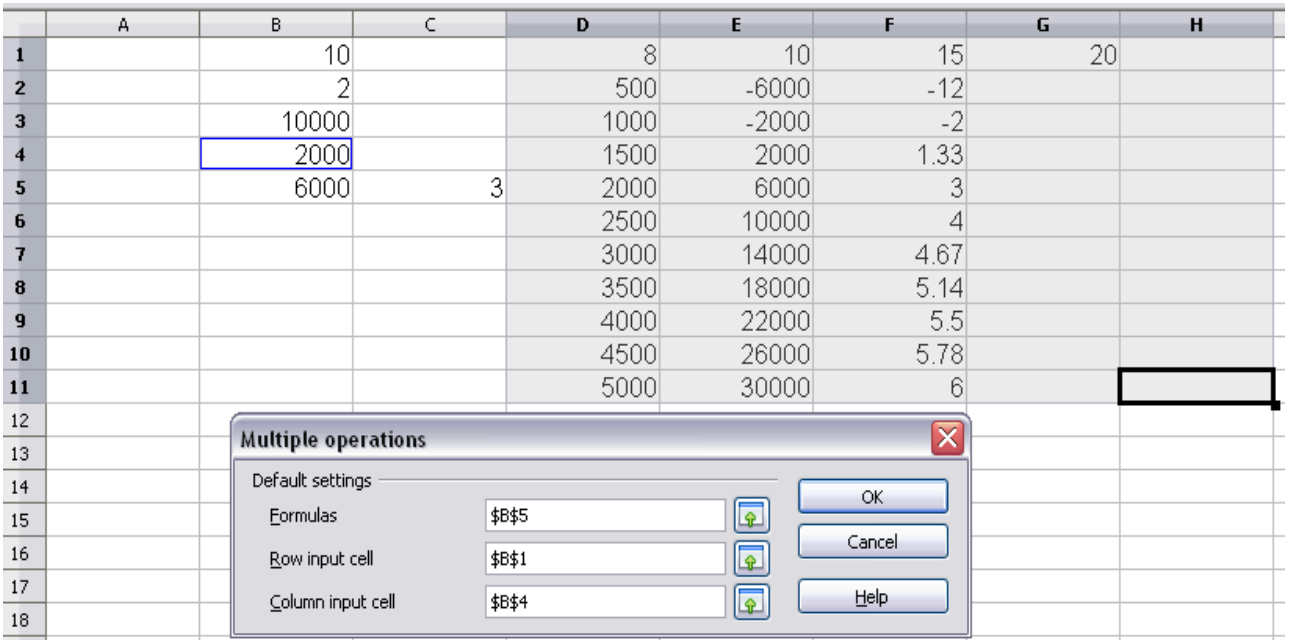


Figure 10: Sheet and dialog showing input

6) Click **OK**. The profits for the different selling prices are now shown in the range E2:H11.

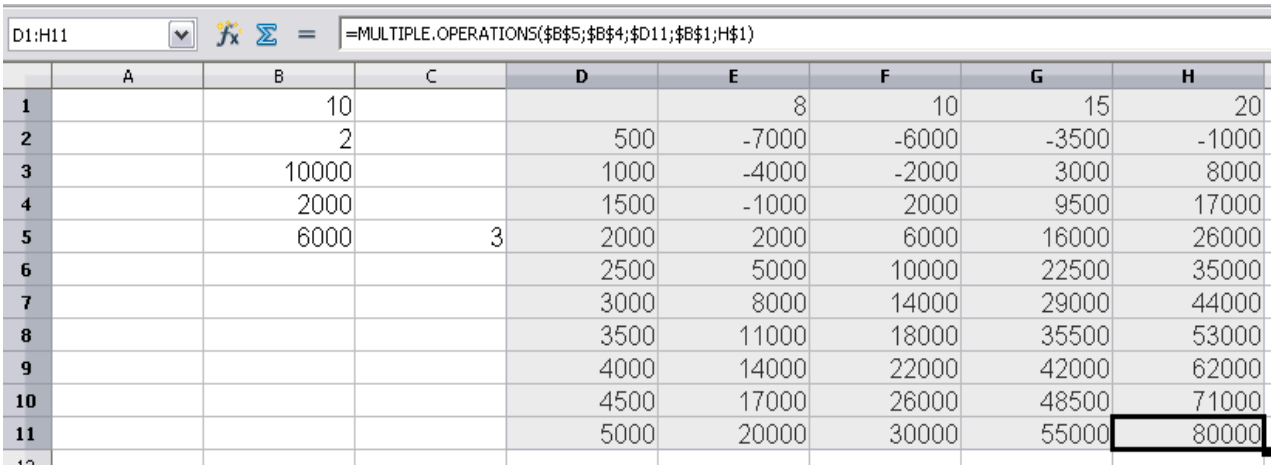


Figure 11: Results of multiple operations calculations

Working backwards using Goal Seek

Tools > Goal Seek reverses the usual order for a formula. Usually, you run a formula to get the result when certain arguments are entered. By contrast, with Goal Seek, you work with a completed formula to see what values you need in an argument to get the results that you want.

To take a simple example, imagine that the Chief Financial Officer of a company is developing sales projections for each quarter of the forthcoming year. She knows what the company's total income must be for the year to satisfy stockholders. She also has a good idea of the company's income in the first three quarters, because of the contracts that are already signed. For the fourth quarter, however, no definite income is available. So how much must the company earn in Q4 to reach its goal? To answer, the CFO enters the projected earnings for each of the other three quarters and the projection for the entire year. Then she runs a goal seek on the cell for Q4 sales, and receives her answer.

Other uses of goal seek may be more complicated, but the method remains the same. To run a goal seek, at least one of the values for an argument must be a referenced cell or range. Only one argument can be altered in a single goal seek. After you get the result of a goal seek, you can replace the original value in the referenced cell with the result, or record the result elsewhere for later use, possibly as a scenario.

With the help of Goal Seek you can calculate a value that, as part of a formula, leads to the result you specify for the formula. You thus define the formula with several fixed values and one variable value and the result of the formula.

Goal Seek example

To calculate annual interest (I), create a table with the values for the capital (C), number of years (n), and interest rate (i). The formula is I = C*n*i.

Let us assume that the interest rate i of 7.5% and the number of years n (1) will remain constant. However, you want to know how much the investment capital C would have to be modified in order to attain a particular return I. For this example, calculate how much capital C would be required if you want an annual return of $15,000.

Enter each of the values for Capital C (an arbitrary value like $100,000), number of years n (1), and interest rate i (7.5%) in one cell each. Enter the formula to calculate the interest I in another cell. Instead of C, n, and i use the reference to the cell with the corresponding value. In our example, these are B1, B2, and B3.

1) Place the cursor in the formula cell (the cell containing the interest I), and choose **Tools > Goal Seek**.
2) On the Goal Seek dialog, the correct cell is already entered in the Formula cell field.
3) Place the cursor in the Variable cell field. In the sheet, click in the cell that contains the value to be changed, in this example it is the cell with the capital value C.
4) Enter the desired result of the formula in the Target value field. In this example, the value is 15000. Figure 12 shows the cells and fields.

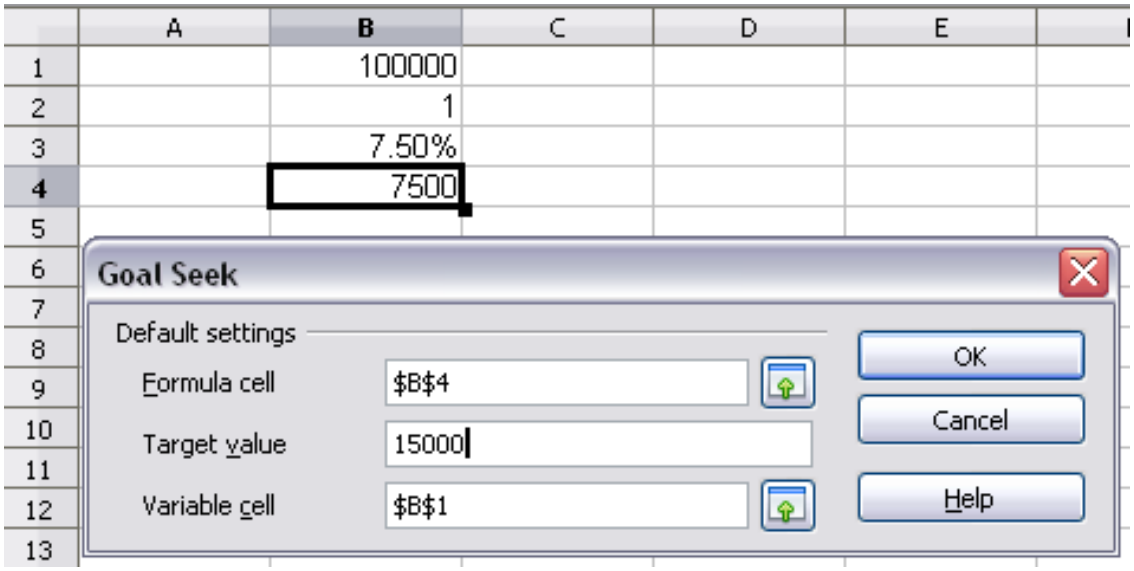


Figure 12: Example setup for goal seek

5) Click **OK**. A dialog appears informing you that the Goal Seek was successful. Click **Yes** to enter the result in the cell with the variable value. The result is shown in Figure 13.

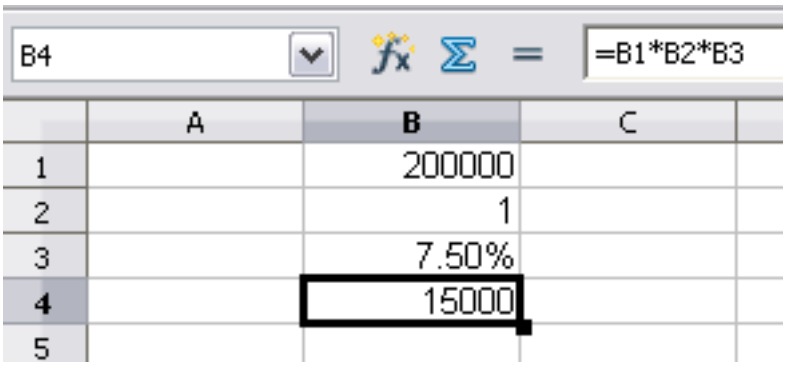


Figure 13: Result of goal seek operation

Using the Solver

Tools > Solver amounts to a more elaborate form of Goal Seek. The difference is that the Solver deals with equations with multiple unknown variables. It is specifically designed to minimize or maximize the result according to a set of rules that you define.

Each of these rules sets up whether an argument in the formula should be greater than, lesser than, or equal to the figure you enter. If you want the argument to remain unchanged, you enter a rule that the cell that contains it should be equal to its current entry. For arguments that you would like to change, you need to add two rules to define a range of possible values: the limiting conditions. For example, you can set the constraint that one of the variables or cells must not be bigger than another variable, or not bigger than a given value. You can also define the constraint that one or more variables must be integers (values without decimals), or binary values (where only 0 and 1 are allowed).

Once you have finished setting up the rules, you can adjust the argument and the results by clicking the **Solve** button.

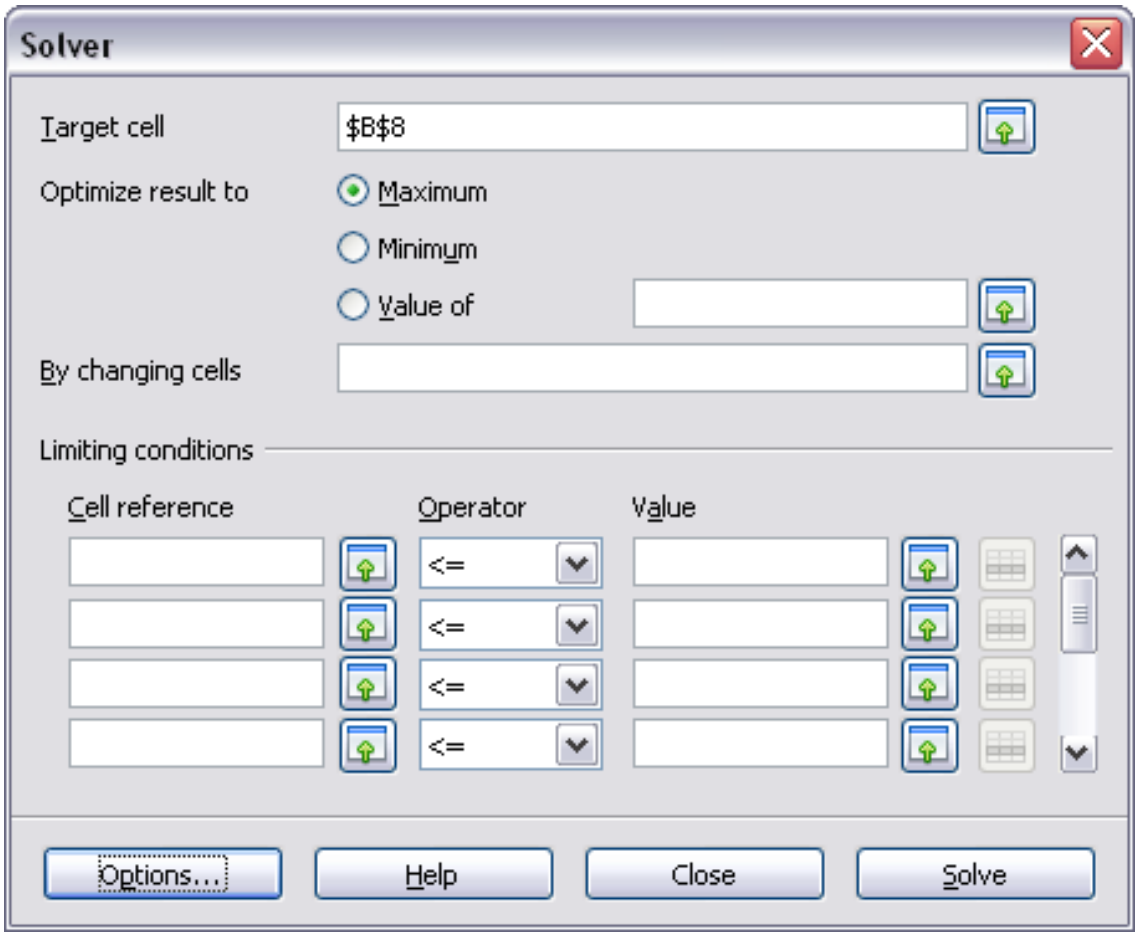


Figure 14: The Solver dialog

Let's Practice

1. A student is planning her goals about the marks she should attain in the forthcoming Semester 4 examinations in order to achieve a distinction (75%). Assuming that examination of each subject is for 100 marks, her marks of the previous semesters are given as under.

	Subject 1	Subject 2	Subject 3	Subject 4
Semester 1	82	67	53	87
Semester 2	88	78	76	69
Semester 3	89	85	91	67

Find out how many marks should she obtain in 4^{th} semester to secure distinction.

2. A business owner wants to decide if he should try to increase the sales a product or price of an existing product in order to increase the profit by 10%.

Current Sales	82
Cost per Unit	75
Profit per unit	12

The owner believes that he can either increase sales by 5 units without incurring additional costs while the price can be increased by Rs 8 without affecting the sales.

3. The current profit situation of a business owner is as follows.

Current Sales	82
Cost per Unit	75
Profit per unit	12

Using the scenario manager, find the effect of in the new profit in case of the following situations.

a. Sales = 70 and cost = 80
b. Sales = 90 and cost = 72
c. Sales = 85 and cost = 80
d. Sales = 65 and cost = 80

SESSION 2:

Link Data and Spreadsheets

Using Multiple Workbooks and Linking Cells

RELEVANT Knowledge

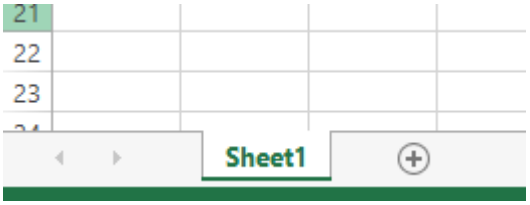
Spreadsheet also allows you to link the cells from various worksheets and from various spread sheets to summarize data from several sources. In this manner, you can create formulas that span different sources and make calculations using a combination of local and linked information.

Multiple sheets help keep information organized;

Setting up multiple sheets

Identifying sheets

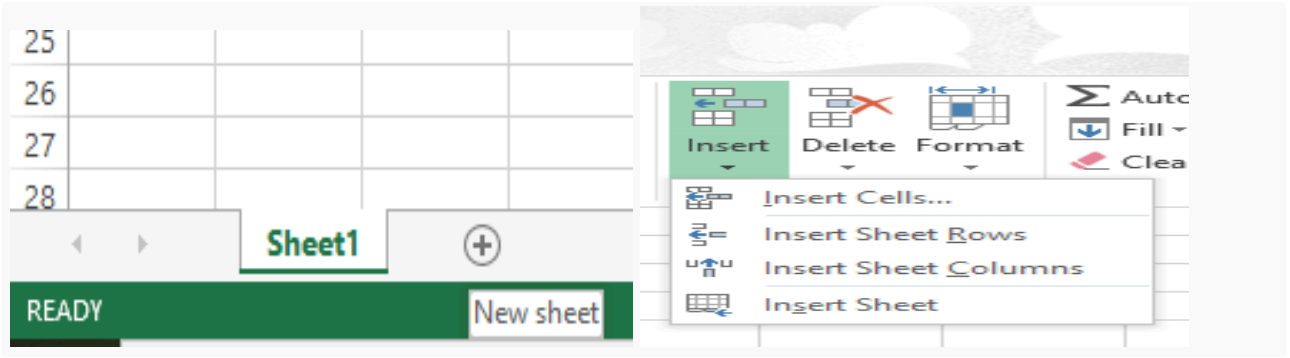
When you open a new spreadsheet it has, by default, it has a sheet named Sheet1 which is managed using tabs at the bottom of the spreadsheet, as shown below.



Inserting new sheets

There are several ways to insert a new sheet. The first step, in all cases, is to select the sheet that will be next to the new sheet. Then do any of the following:

- Select the ⊕ plus icon at the bottom of the screen.
- Or, select **Home** > **Insert** > **Insert Sheet**.



Renaming Worksheets

At the bottom of each worksheet window is a small tab that indicates the name of the worksheets in the workbook. These names (Sheet1, Sheet2, Sheet3, and so on) are not very descriptive; you might want to rename your worksheets to reflect what they contain. For instance, if your workbook contains Students Marks in individual Subject then you may want to rename the worksheets as Subject names such as English, Mathematics and Social Science etc.

There are three ways you can rename a worksheet, and the only difference between them is the way in which you start the renaming process. You can do any of the following:

- Double-click on one of the existing worksheet names.
- Right-click on an existing worksheet name, then choose Rename from the resulting Context menu.
- Select the worksheet you want to rename (click on the worksheet tab) and then select the Sheet option from the Format menu. This displays a submenu from which you should select the Rename option.

Create or change a cell reference

A cell reference refers to a cell or a range of cells on a worksheet and can be used to find the values or data that you want formula to calculate.

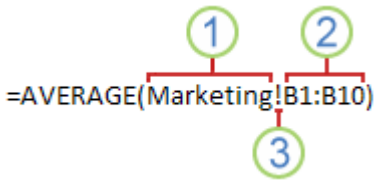
In one or several formulas, you can use a cell reference to refer to:

- Data from one or more contiguous cells on the worksheet.
- Data contained in different areas of a worksheet.
- Data on other worksheets in the same workbook.

Creating reference to other sheets

You can refer to cells that are on other worksheets in the same workbook by prepending the name of the worksheet followed by an exclamation point (!) to the start of the cell reference. In

the following example, the worksheet function named AVERAGE calculates the average value for the range B1:B10 on the worksheet named Marketing in the same workbook.



1. Refers to the worksheet named Marketing

2. Refers to the range of cells between B1 and B10, inclusively

3. Separates the worksheet reference from the cell range reference

Click the cell in which you want to enter the formula.

In the formula bar  , type = (equal sign) and the formula you want to use.

Click the tab for the worksheet to be referenced.

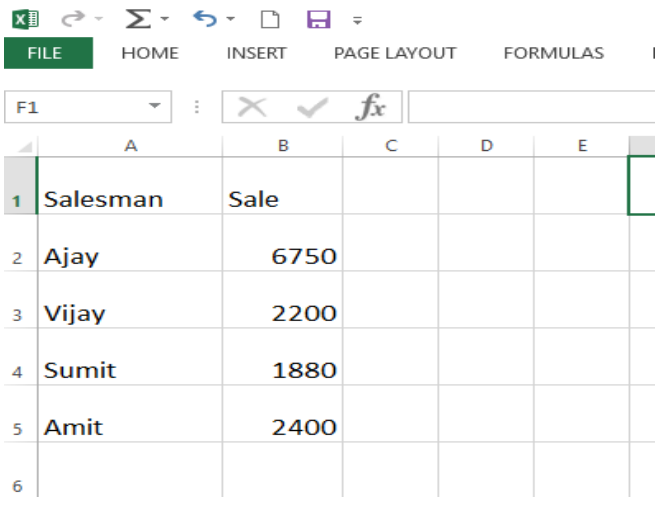
Select the cell or range of cells to be referenced.

Referencing other sheets

There are two ways to reference cells in other sheets: by entering the formula directly using the keyboard or by using the mouse. We will look at the mouse method first.

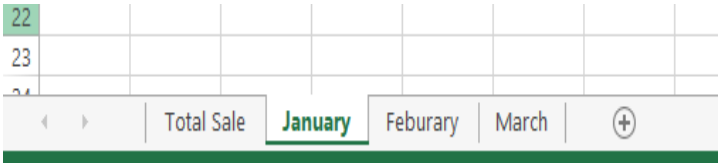
Consider the example mentioned below:-

On the *Total Sale* sheet, set up a place for all four salesman Total Sales, so we know where to put the cell reference. The figure below shows a Total Sale sheet with a Sale column. We want to place the reference for the checking total Sale Month in cell B3.



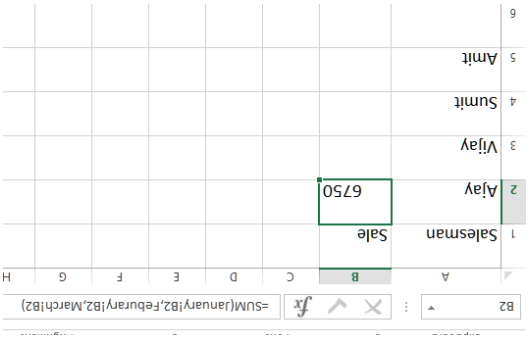
To make the cell reference in cell B3, select the cell and follow these steps.

1. Type = in the formula bar, type sum and click on the sheet tab for the sheet containing the cell to be referenced. In this case, it is January sheet as shown below.



2. Click on cell B2 (where January sale for Ajay is) in the January sheet. The phrase =SUM(January!B2 should appear in the input line as shown below

1. Repeat the Steps for February and March. Click the green checkmark in the input line to finish.
2. The Total Sale should now look like the figure below



Creating the reference with the keyboard

From the figure above, you can deduce how the cell reference is constructed. The reference has two parts: the sheet name (*January'*) and the cell reference (*B2*). Notice that they are separated by a period.

Note: The sheet will be in single quotes because it contains a space, and the mandatory period (.) always falls outside any quotes.

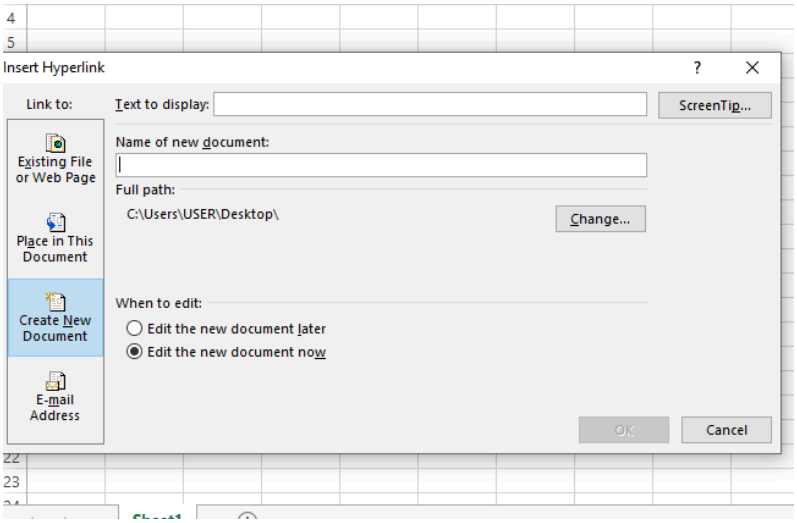
Working with Hyperlinks

1. On a worksheet, click the cell where you want to create a hyperlink.
   You can also select an object, such as a picture or an element in a chart that you want to use to represent the hyperlink.

   On the **Insert** tab, in the **Links** group, click **Hyperlink**  .

   You can also right-click the cell or graphic and then click **Hyperlink** on the shortcut menu, or you can press Ctrl+K.

2. Under Link to, click Create New Document.
3. In the Name of new document box, type a name for the new file.



4. Under When to edit, click Edit the new document later or Edit the new document now to specify when you want to open the new file for editing.
5. In the Text to display box, type the text that you want to use to represent the hyperlink.
6. To display helpful information when you rest the pointer on the hyperlink, click ScreenTip, type the text that you want in the ScreenTip text box, and then click OK.

Session 3:

Sharing Worksheet Data

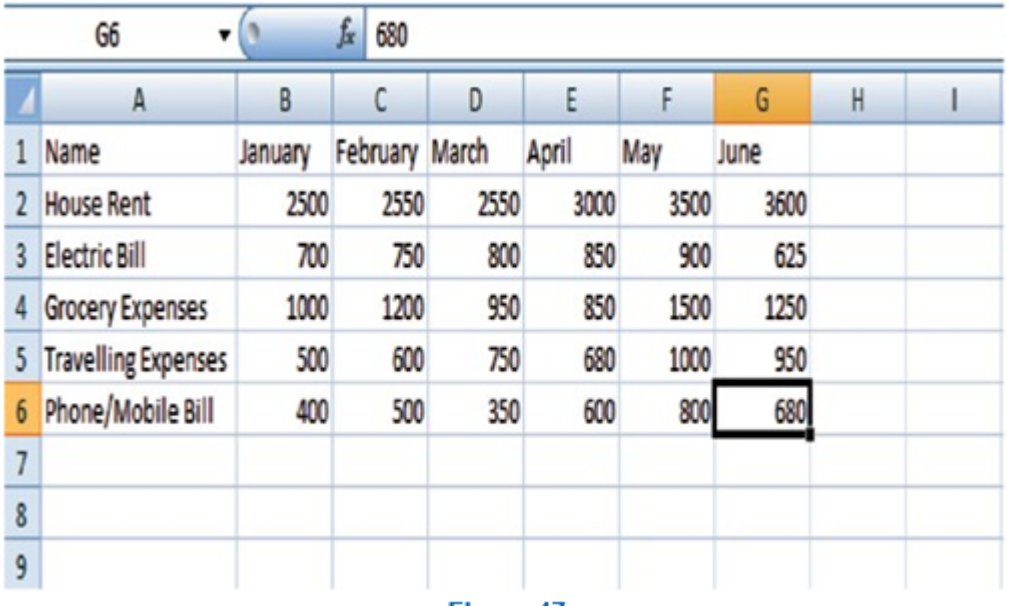
Relevant Knowledge

In most office settings, there is a shared drive where teams can store common files for everyone to use. This usually leads to sighting of the message: “The document [file name] is locked for editing by another user. To open a read-only copy of this document, click“!! This message appears because someone else already has the file open. Sometimes however, it is necessary to have multiple people working on a file at the same time. This can be to either speed up data entry or simply make things easier for collaboration purposes.

Spreadsheet software allows the user to share the workbook and place it in the network

location where several users can access it simultaneously. in this exercise, you will learn how to share a worksheet.

open a new spreadsheet and type the following.



G6 | fx 680

	A	B	C	D	E	F	G	H	I
1	Name	January	February	March	April	May	June		
2	House Rent	2500	2550	2550	3000	3500	3600		
3	Electric Bill	700	750	800	850	900	625		
4	Grocery Expenses	1000	1200	950	850	1500	1250		
5	Travelling Expenses	500	600	750	680	1000	950		
6	Phone/Mobile Bill	400	500	350	600	800	680		
7									
8									
9									

Now to share the spreadsheets do the following.

- Click on ***Share workbook*** option under ***Changes*** group in the ***Review*** tab.

- A dialog box appears as shown below.

  - Check the option Allow changes by more than one user at the same time. This also allows workbook merging.
  - Click ***OK.***

Note: Most spreadsheets software automatically turns off some features in shared work books.

This is to simplify the workbook since multiple people can be working on the file at the same time. For example, shared workbooks don't allow merging cells, conditional formatting, or inserting pictures/graphs/etc.

Perform the following activity till you are confident:

S.No.	Activity
1.	Share worksheet data with other users.

Assessment

Fill in the blanks:

1. Share Workbook option is available in_____group under the Review tab.
2. Shared workbooks don't allow_____, _____& inserting _____or_____.

Session 4:

Create and use Macros in Spreadsheet

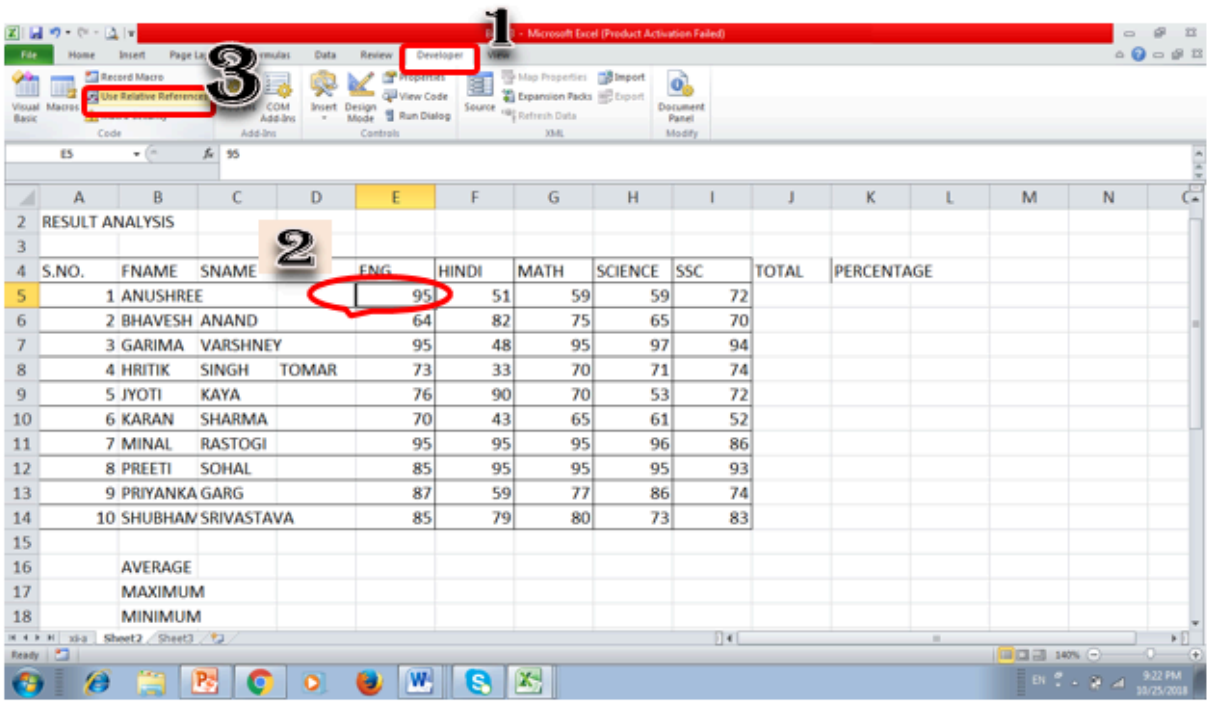
Macros are a very useful feature of Excel.

It helps in saving time in cases when same set of tasks are to be done repeatedly like formatting or applying similar formula in similar range of data.

In excel, macros can be used to name and record a set of actions or set of actions. These named set of recorded can be used again and again. The macros (recorded set of actions) are stored in the same workbook in which you created.

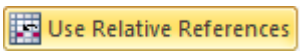
In order to use a macro, we need to create a macro first.

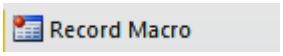
Let us take an example:

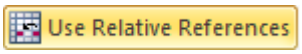


To create a macro for calculating the average, minimum and maximum in each subject,

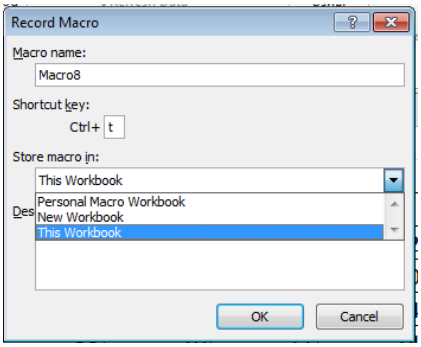
1. Click on the developer tab.
2. Select the first value in the list of marks.

3. Now select the option 

to give the respective location from where the steps would be followed.
4. Now click on the 

option (just above 

.
5. Following Record Macro dialog window appears on the screen.



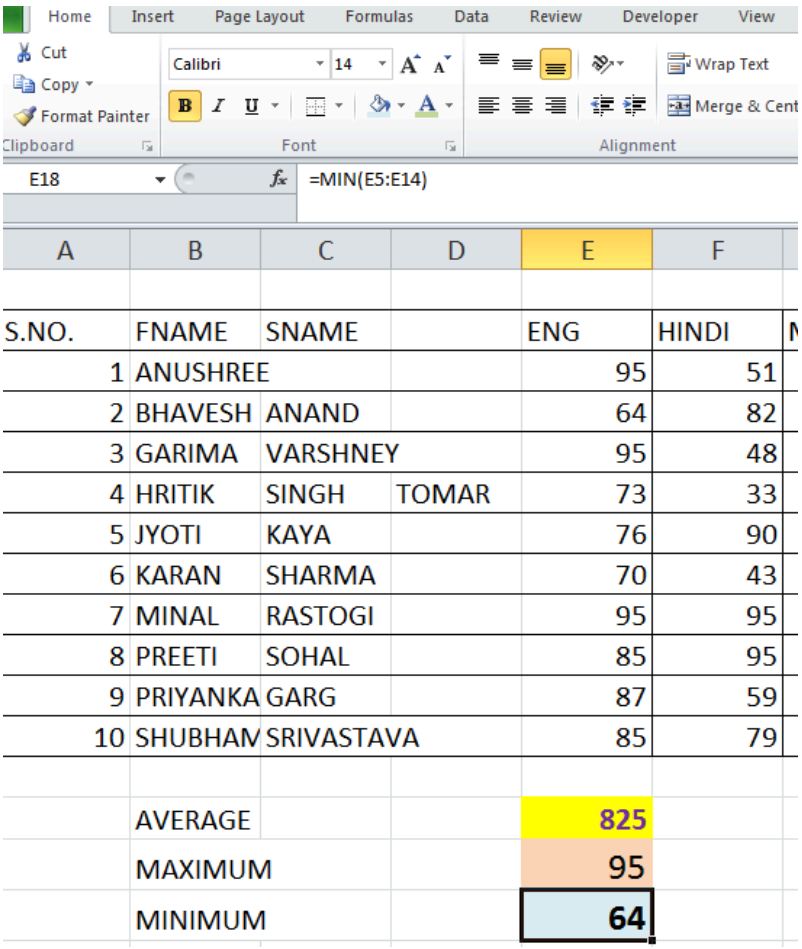
6. Give a name to your macro in the Macro name area and press OK.
7. A keyboard shortcut may also be defined. For example the example the shortcut key defined is CTRL +t.
8. Select 'This Workbook' in 'Store Macro In' option.
9. Click ok.
10. Now click on the cell for calculating average of English (E16 in this example) and write the formula for adding the values

	A	B	C	D	E	F
2	RESULT ANALYSIS					
3						
4	S.NO.	FNAME	SNAME		ENG	HINDI
5	1	ANUSHREE			95	51
6	2	BHAVESH	ANAND		64	82
7	3	GARIMA	VARSHNEY		95	48
8	4	HRITIK	SINGH	TOMAR	73	33
9	5	JYOTI	KAYA		76	90
10	6	KARAN	SHARMA		70	43
11	7	MINAL	RASTOGI		95	95
12	8	PREETI	SOHAL		85	95
13	9	PRIYANKA	GARG		87	59
14	10	SHUBHAM	SRIVASTAVA		85	79
15						
16		AVERAGE			=sum(E5:E14)	
17		MAXIMUM				
18		MINIMUM				

11. Similarly, write the formula for minimum and maximum as shown in the figure.

	A	B	C	D	E	F
2	RESULT ANALYSIS					
3						
4	S.NO.	FNAME	SNAME		ENG	HINDI
5	1	ANUSHREE			95	51
6	2	BHAVESH	ANAND		64	82
7	3	GARIMA	VARSHNEY		95	48
8	4	HRITIK	SINGH	TOMAR	73	33
9	5	JYOTI	KAYA		76	90
10	6	KARAN	SHARMA		70	43
11	7	MINAL	RASTOGI		95	95
12	8	PREETI	SOHAL		85	95
13	9	PRIYANKA	GARG		87	59
14	10	SHUBHAM	SRIVASTAVA		85	79
15						
16		AVERAGE			825	
17		MAXIMUM			=max(E5:E14)	
18		MINIMUM				

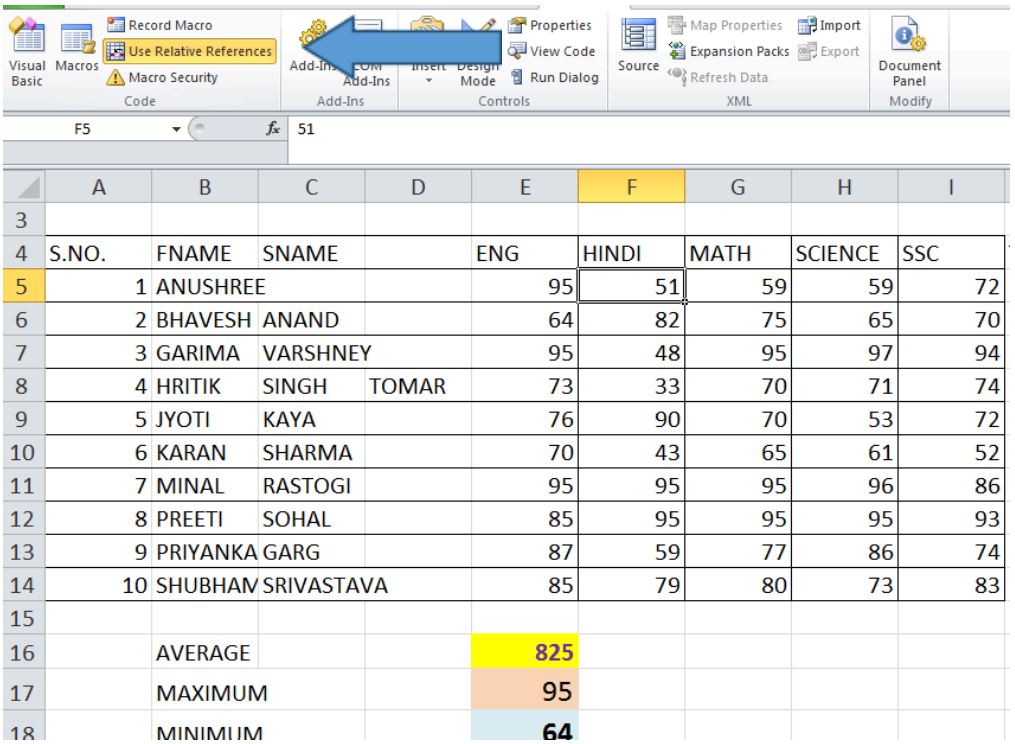
12. Do some formatting in the appearance of the cells as shown in the example. Give some background colour of the cell to highlight the cell as shown



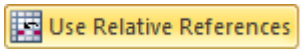
	A	B	C	D	E	F
	S.NO.	FNAME	SNAME		ENG	HINDI
	1	ANUSHREE			95	51
	2	BHAVESH	ANAND		64	82
	3	GARIMA	VARSHNEY		95	48
	4	HRITIK	SINGH	TOMAR	73	33
	5	JYOTI	KAYA		76	90
	6	KARAN	SHARMA		70	43
	7	MINAL	RASTOGI		95	95
	8	PREETI	SOHAL		85	95
	9	PRIYANKA	GARG		87	59
	10	SHUBHAM	SRIVASTAVA		85	79
		AVERAGE			825	
		MAXIMUM			95	
		MINIMUM			64	

13. Click the button ‘Stop Recording’ in Developer tab to complete the macro recording. The macro names ‘Macro8’ in the example has been saved.

14. To apply same formatting and have similar calculations for other subjects, click on the first value of other subject as shown

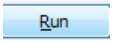


	A	B	C	D	E	F	G	H	I
3									
4	S.NO.	FNAME	SNAME		ENG	HINDI	MATH	SCIENCE	SSC
5	1	ANUSHREE			95	51	59	59	72
6	2	BHAVESH	ANAND		64	82	75	65	70
7	3	GARIMA	VARSHNEY		95	48	95	97	94
8	4	HRITIK	SINGH	TOMAR	73	33	70	71	74
9	5	JYOTI	KAYA		76	90	70	53	72
10	6	KARAN	SHARMA		70	43	65	61	52
11	7	MINAL	RASTOGI		95	95	95	96	86
12	8	PREETI	SOHAL		85	95	95	95	93
13	9	PRIYANKA	GARG		87	59	77	86	74
14	10	SHUBHAM	SRIVASTAVA		85	79	80	73	83
15									
16		AVERAGE			825				
17		MAXIMUM			95				
18		MINIMUM			64				

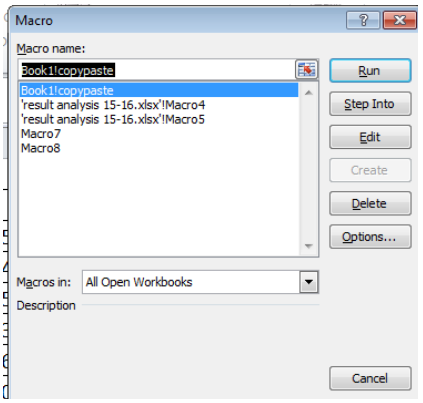
15. Click on 

icon to set the relative position of cells where formula is to be applied.

16. Click on the Macro button 

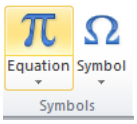
and a dialog window showing the existing macros will appear.
17. Select the option Macro8 from the list and press Run button 

.
18. On clicking the button, the average, minimum and maximum of marks in Hindi will be calculated and formatted according to the recording done in macro.
19. Similarly run the macro using shortcut key Ctrl + t, by placing the cursor on the math subject marks.
20. Now you can run the macro either using the shortcut or using the mouse selection method.
21. Click on Edit button to make any changes within the macro.

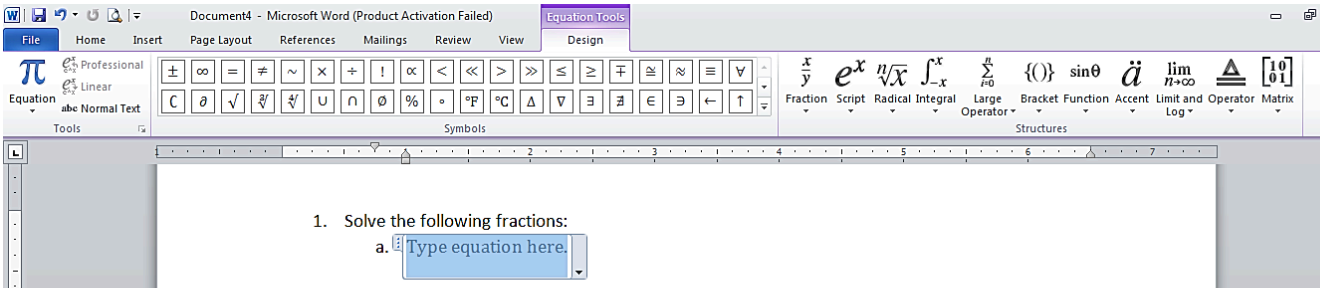


Writing formula/ equations in MS Word

Writing equations in the MS –word while typing the equations or mathematical expression can be easily done using Equation option on Symbols Group under Insert Tab.

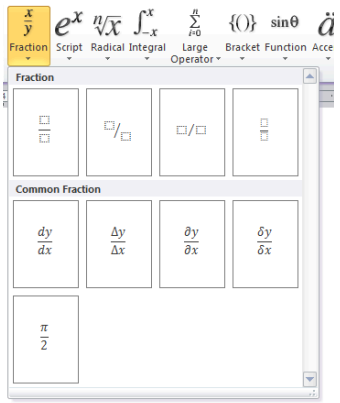
To write a mathematical expression, click on 

under Insert tab and the following window appears:



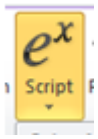
Under the equation tools a wide range of options for writing equations are available. Select

is used to choose the type of fraction

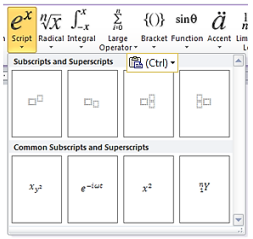


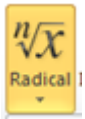
Select the appropriate type and

Click on the 'type equation here' area to write the equation.

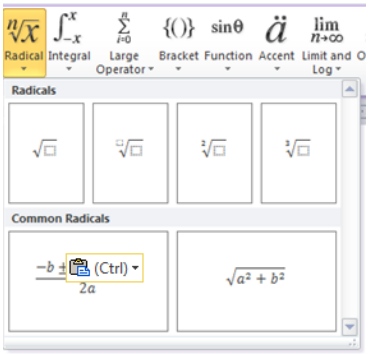


is used for different types of superscripts and subscript.





provides with the available options to type a radical.



Similarly there are options for integral equations, summation, pi equations, trigonometric functions etc.