Accounting Applications on Computer

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2022

Contents

Part (1)

Introduction to Spreadsheets

Part (1): Introduction to Spreadsheets

Spreadsheet application is a computer program that allows us to record, calculate and compare numerical or financial data. A spreadsheet is a configuration of rows and columns. ***Rows*** are horizontal vectors while ***columns*** are vertical vectors. ***A spreadsheet*** is also known as a worksheet. MS Office Excel, Open Office Spreadsheet, etc. are examples of Spreadsheet software.

1. Basic Concepts of Spreadsheet

A file in spreadsheet is known as a "***Workbook***". ***A workbook*** is a collection of a number of "**Worksheets**". At a time, only one worksheet can be made as active worksheet and that worksheet is available to a user for carrying out operations.

Worksheet names will be shown in the "Sheet Tab" at the bottom left of the window. Additional sheets can be added, and its name can be changed, if required.

A worksheet consists of columns and rows that intersect to form cells. Each cell is identified by a cell reference, which combines the letter of the column and the number of the row.

2. Features of Spreadsheet

A spreadsheet is a grid of rows and columns in which you enter text, numbers, and the results of calculations

3. Major features of Spreadsheets are:

- ✓ It provides functions to create formulas to perform calculations on data.
- ✓ Data can be presented in charts or diagram for easy analysis (e.g. Bar diagram, pie chart etc.)
- ✓ Can be used to store, arrange and filter data.
- ✓ Conditional formatting can be used for Criteria based separation of data.
- ✓ Data validation feature can be used to get the exact data.

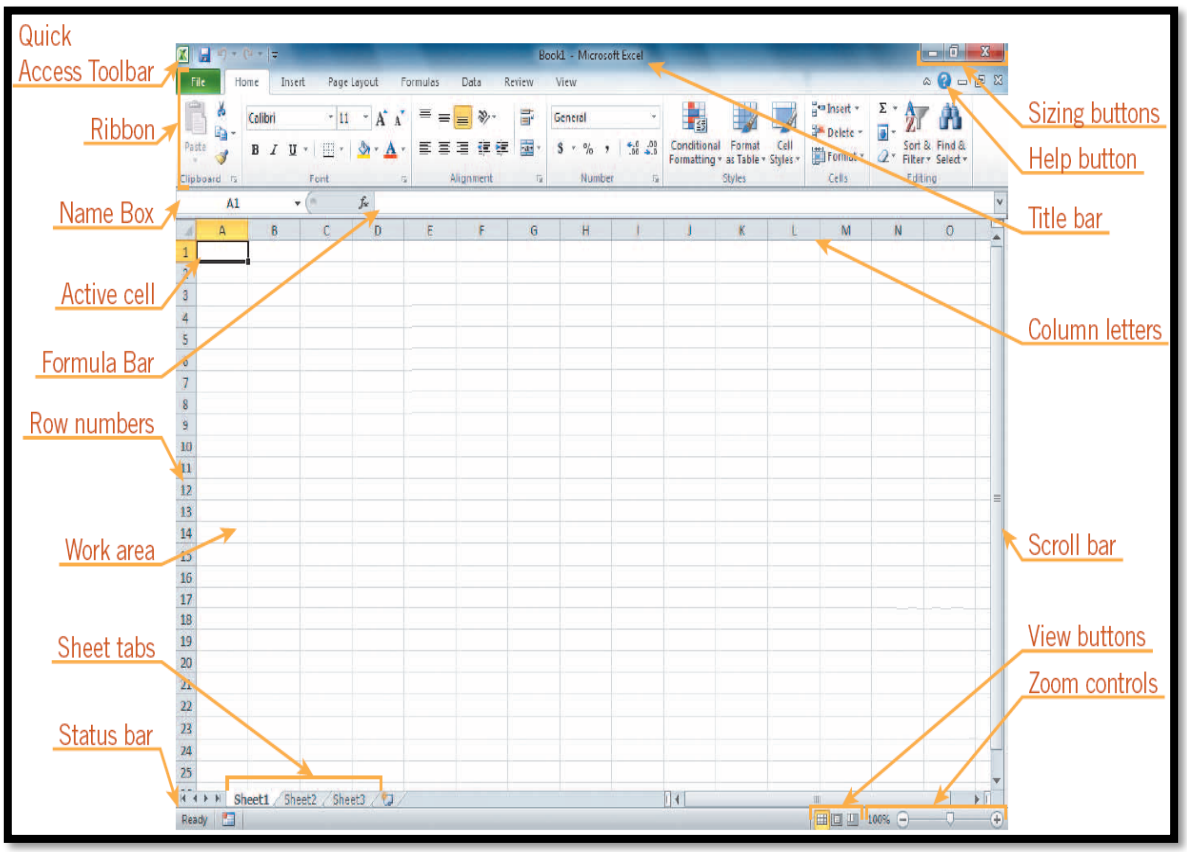
The primary purpose of a spreadsheet is to solve problems involving numbers. The advantage of using a computer spreadsheet is that you can complete complex and repetitious calculations quickly and accurately.

4. MS Office Excel,2010

Microsoft Excel 2010 is the spreadsheet program in Microsoft Office 2010, that you can use to calculate, analyze, and manage data. The no. of columns in MS Excel 2010 is **16384** whereas the no. of rows is **1,048,576.**

5. Starting Excel

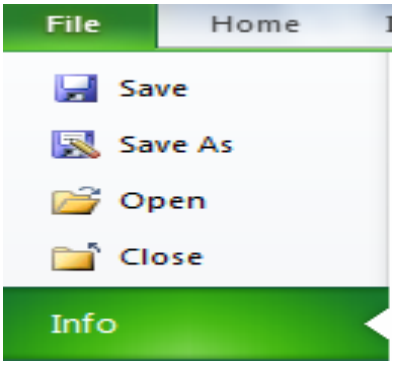
✓ Excel program window

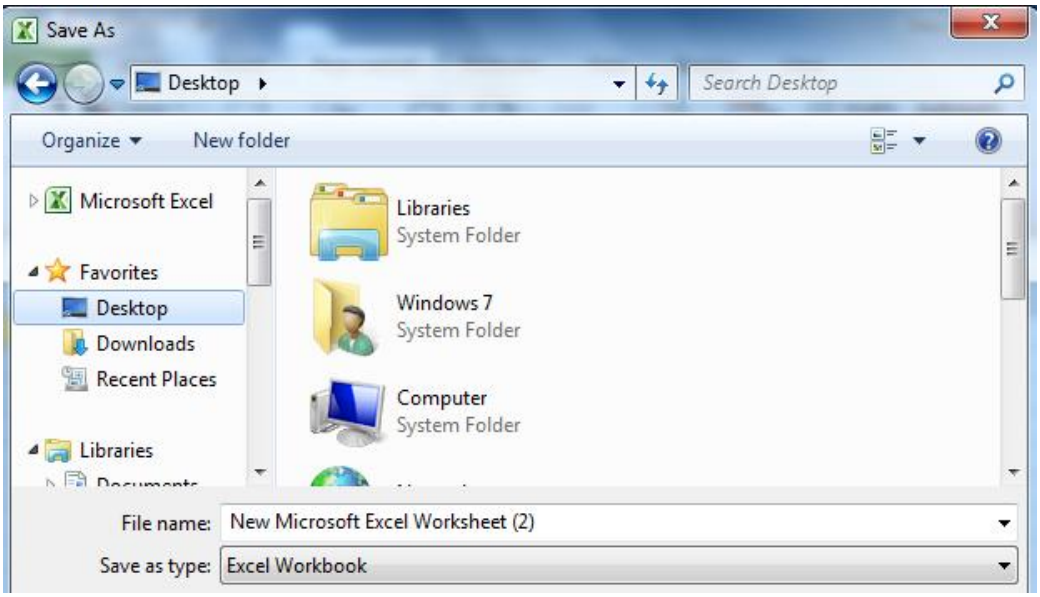


6. Basic Features of Microsoft Excel 2010

A. Saving a Workbook

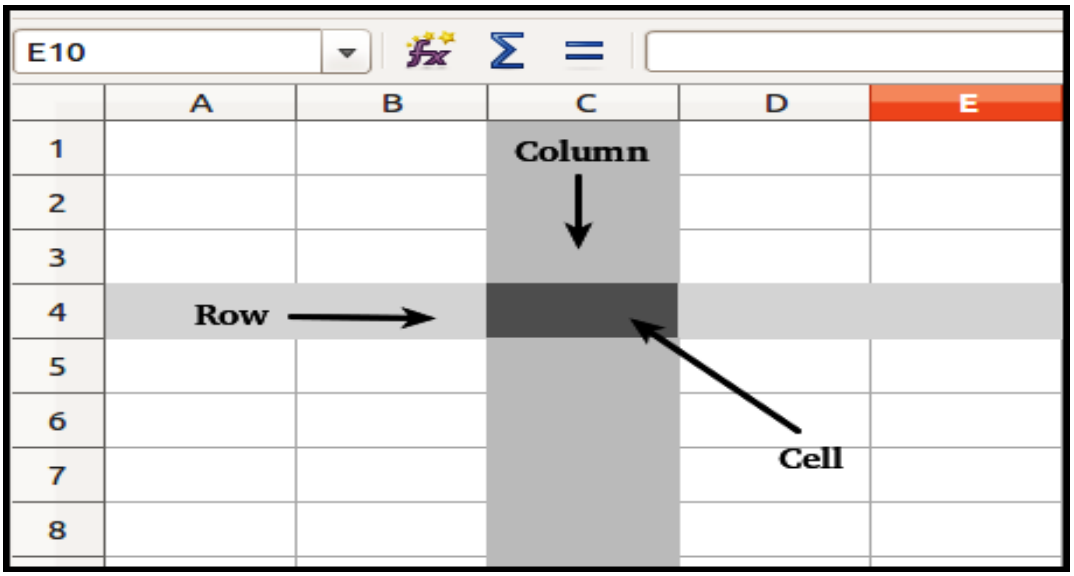
- The Save command saves an existing workbook, using its current name and save location.
- The Save As command lets you save a workbook with a new name or to a new location.





B. Rows and Columns

The Worksheet in **Microsoft Excel 2010** contains Rows and Columns in Table format. Rows are named numerically (1,2, ...) from top to bottom while Columns are referred by alpha characters (A,B,C,D,....) from left to right.



C. Cell

In spreadsheet, a value or function or an arithmetic expression is recorded in cells. The intersection of a Row and a Column is called a cell.

A cell is identified by a combination of a letter (column header) and a number (row header). For example, the first cell of a worksheet is identified as A1 at **column A** and **row 1**. As in the case, the cell having address as G8 is in the G column and 8th row. Each cell thus has a unique identification called as cell address.

D. Inserting Rows and Columns

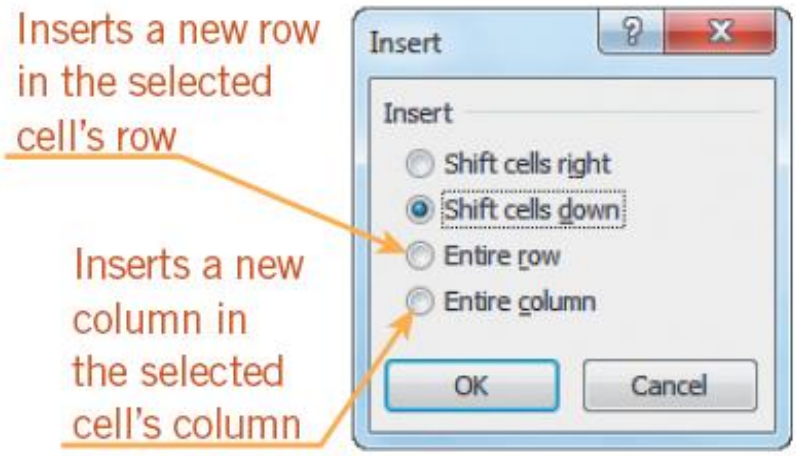
To insert a row:

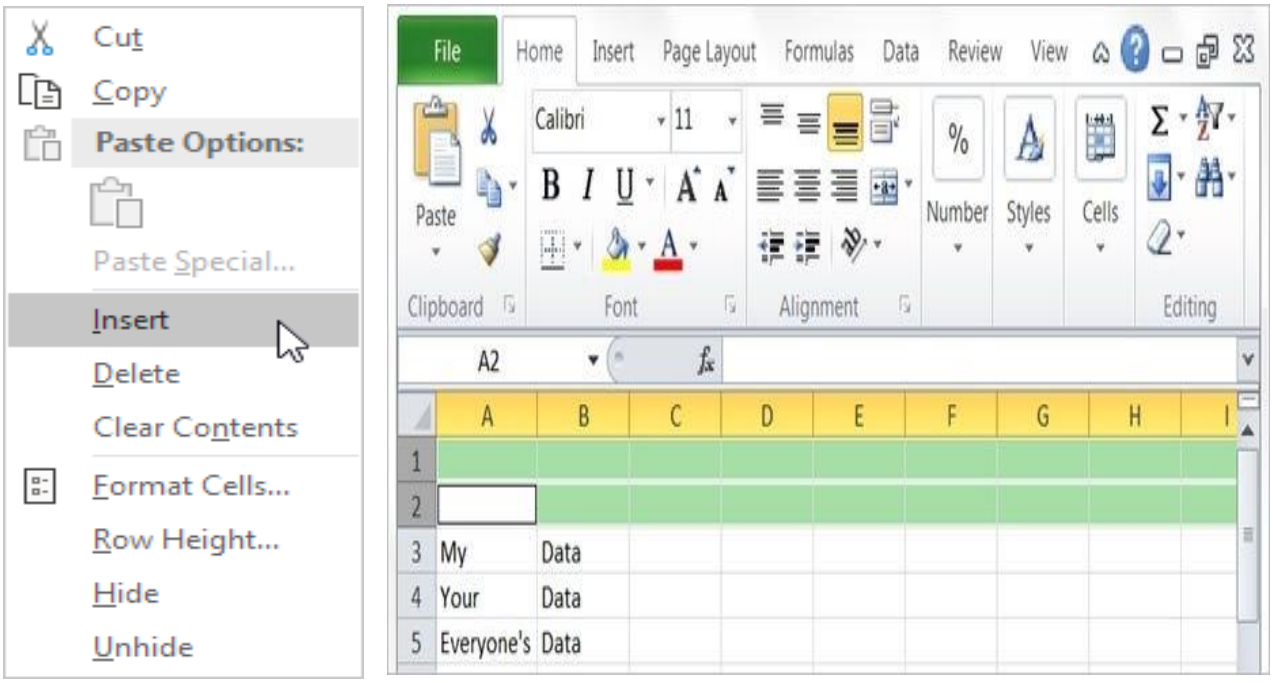
1. Select the row above which you want to insert a new row.
2. On the **Home** tab, in the **Cells** group, click the **Insert** arrow, and then click **Insert Sheet Rows**

To insert a column:

1. Select the column to the left of which you want to insert a new column.
2. On the **Home** tab, in the **Cells** group, click the **Insert** arrow, and then click **Insert Sheet Columns**

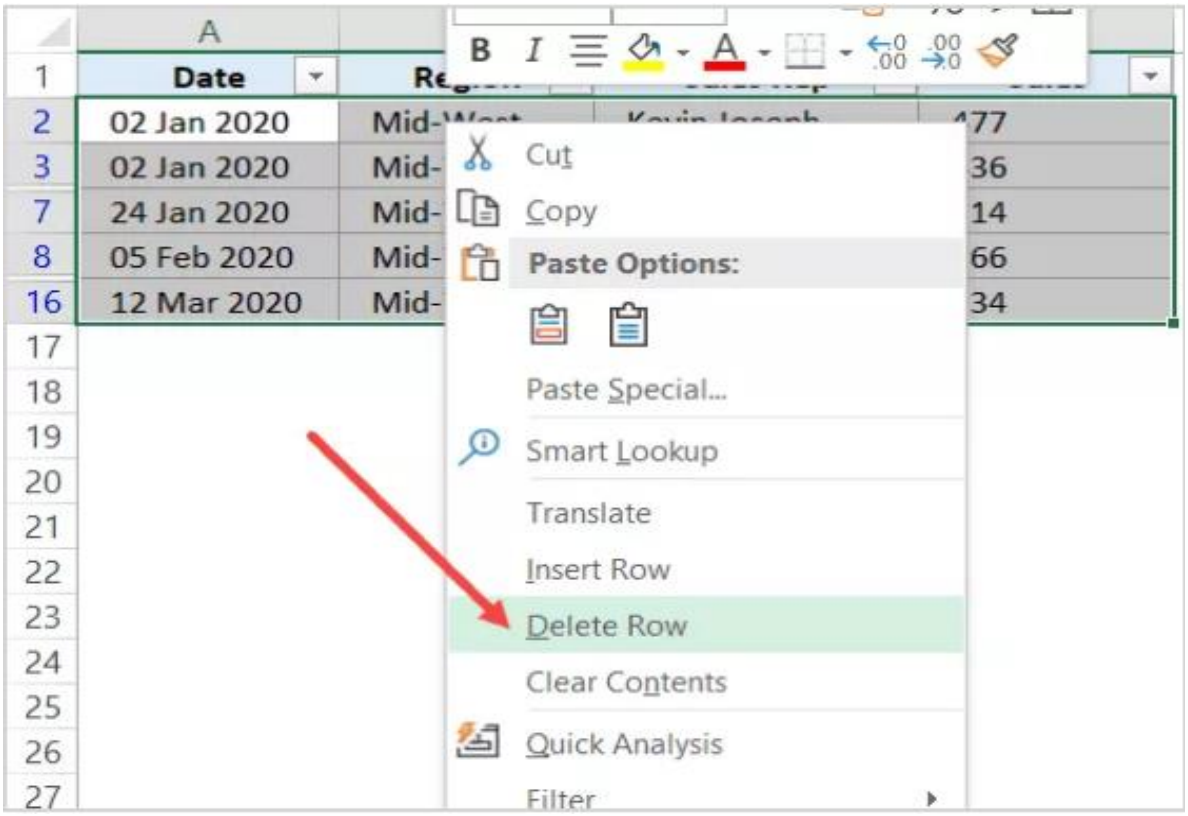
Note: We can add or delete Rows and columns in a Spreadsheet. To add column, click at the column header (right click on the mouse), there we get an option to add column. Likewise, we can add row. To delete column, click at the column header (right click on the mouse), there we get an option to delete column. Likewise, we can remove a row.

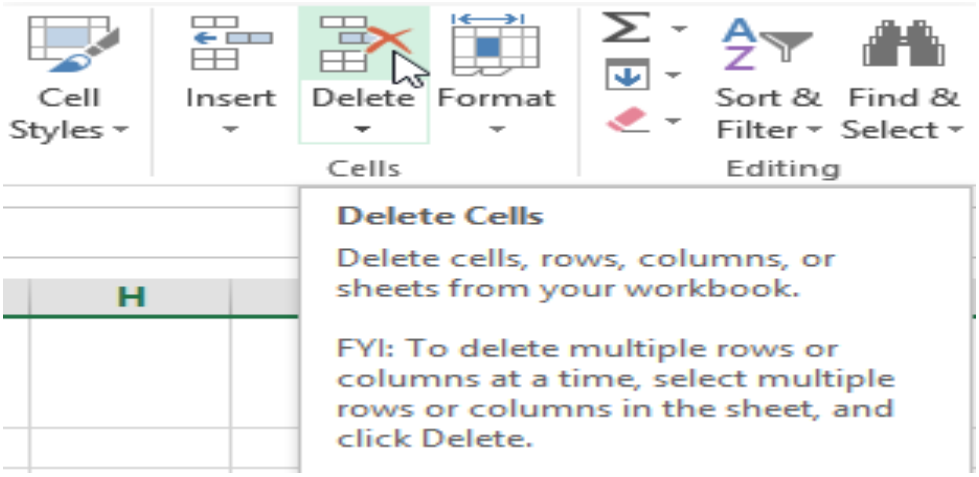




E. **Deleting Rows and Columns**

- To delete a row or column, click the appropriate row or column heading and then click the Delete button on the Home tab.
- Use the buttons in the Cells group on the Home tab to insert and delete cells.





F. Ranges

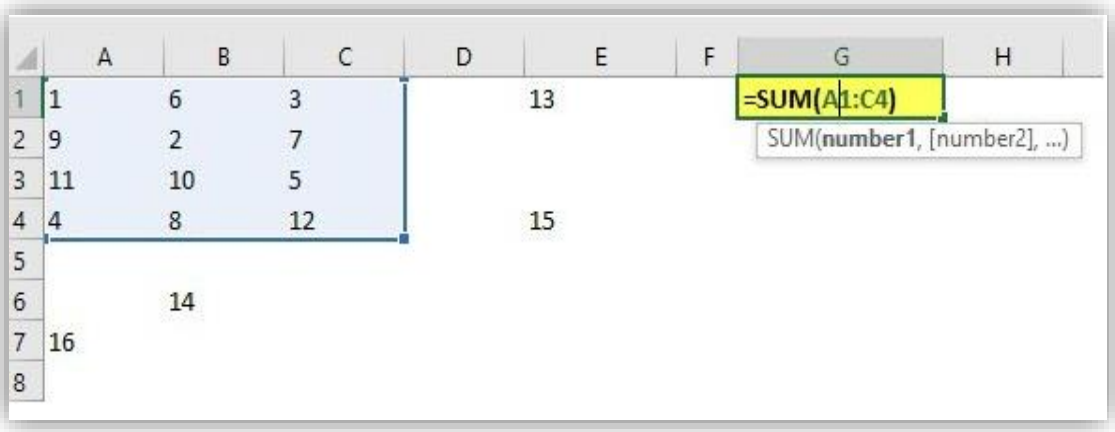
Range is a group of adjacent cells that forms a rectangular area. A range may contain just a single cell, or many cells. **A range** is specified by giving the address for first cell in the range and the last cell in the range. For example, the range starting from B1 to B5 is written as B1:B5, where colon (:) is the range operator.

In **an adjacent range**, all cells touch each other and form a rectangle.

- ✓ To select an adjacent range, click the cell in a corner of the range, drag the pointer to the cell in the opposite corner of the range, and release the mouse button.

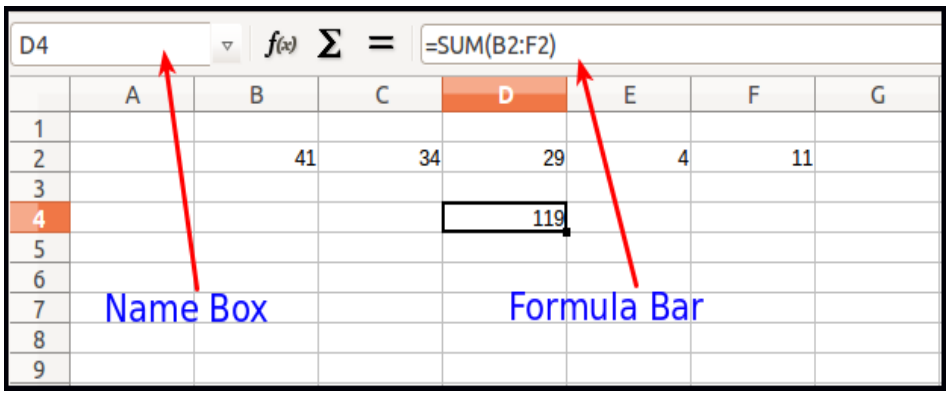
A **nonadjacent range** includes two or more adjacent ranges and selected cells.

- ✓ To select a nonadjacent range, select the first adjacent range or cell, press the Ctrl key as you select the other cells or ranges you want to include, and then release the Ctrl key and the mouse button.



G. Naming Cells and Ranges

Naming ranges in excel 2010 will save time for writing complex formulas. The name can be used in place of cell range whenever reference it e.g. in D4 we have =SUM(B2:F2).

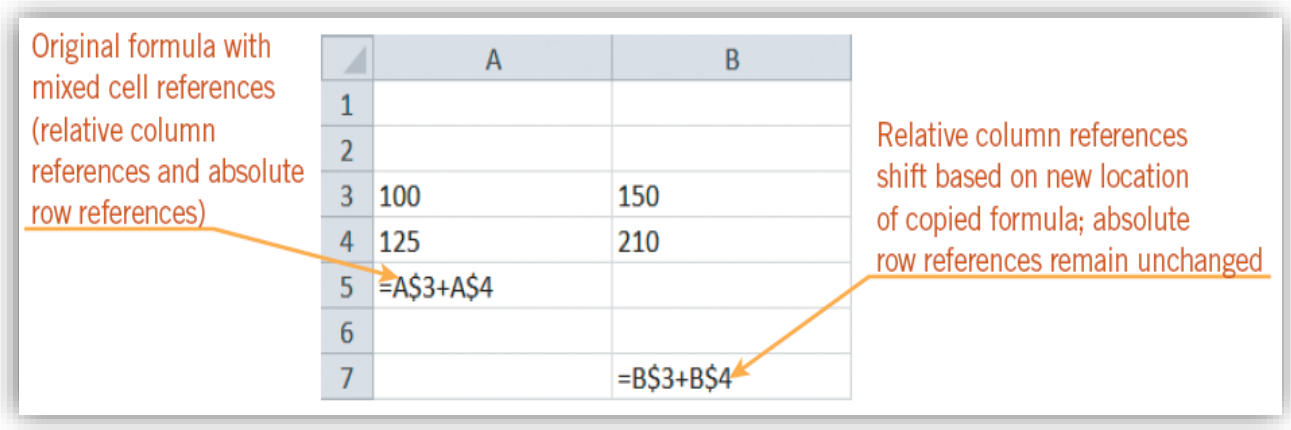


H. Cell Reference

A cell reference identifies the location of a cell or group of cells in the spreadsheet also referred as a cell address. Cell references are used in formulas, functions, charts, other **Microsoft Excel 2010** commands and also refer to a group or range of cells. Ranges are identified by the cell references of the cells in the upper left (cell A1) and lower right (cell E2) corners in. The ranges are identified using colon (:) e.g. A1: E2 which tells **Microsoft Excel 2010** to include all the cells between these start and end points.

- **Relative Cell Reference:** By default, cell reference is relative; which means that as a formula or function is copied and pasted to other cells, the cell references in the formula or function change to reflect the new location.
- **Absolute cell reference:** The other cell reference is absolute cell reference which consists of the column letter and row number surrounded by dollar ($) signs e.g. $C$4. An absolute cell reference is used when we want a cell reference to stay fixed on specific cell, which means that when a formula or function is copied and pasted to other cells, the cell references in the formula or function do not change.
- **Mixed cell reference:** It is a combination of relative and absolute Cell references that holds either row or column constant when the formula or function is copied to another location e.g., $C4 or C$4.
- References preceded by a dollar sign do not change.

Mixed cell references



7. Moving the Active Cell in a Worksheet

We can move around a worksheet through four arrow keys (i.e. left, right, up, down). The mouse can also be used for navigation in Sheet except data entry. Some of the important operations and common navigations can be performed by using keystrokes (Press Key) as shown in Table 1.

Pressing a key is called key stroke but to fulfill one command for operation in the Sheet some time we require pressing two keys together to get one key stroke.

Table (1): Keys for moving the active cell in a worksheet

TO MOVE	PRESS
Left one column	Left arrow key
Right one column	Right arrow key
Up one row	Up arrow key
Down one row	Down arrow key
To the first cell of a row	Home key
To cell A1	Ctrl+Home keys
To the last cell of the column and row that contain data	Ctrl+End keys
Up one window	Page Up key
Down one window	Page Down key

8. Labels

A text or a special character will be treated as labels for rows or columns or descriptive information. Labels cannot be treated mathematically multiplied, subtracted, etc. For example, Name of Employees, Date of birth.

9. Formulas

The formula means a mathematical calculation on a set of cells. Formulas must start with an '= 'sign (equal to sign), e.g. If the cell E3 have formula = D1+E1 which gives the sum of numbers in cell D1 and E1 in E3.

A spreadsheet without any formulas is a collection of data which are arranged in rows and columns (a database) like a calendar, timetable or simple list, etc. There is an input Line (Formula bar) on **Microsoft Excel 2010** toolbar and by using function wizard available in it we can insert any functions in spreadsheet.

10. Entering Data in a Cell

Worksheet cells can contain text, numbers, or formulas.

- ✓ Text is any combination of letters and numbers and symbols.
- ✓ Numbers are values, dates, or times.
- ✓ Formulas are equations that calculate a value.

You enter data in the active cell.

- ✓ The simplest way to enter data is to click a cell and type a value. This method works very well when you're entering a few pieces of data, but it is less than ideal when you're entering long sequences or series of values.

❖ **Data Entry**

a. Repeatedly entering the sequence January, February, March, and so on can be handled by copying and pasting the first occurrence of the sequence, but there's an easier way to do it: use AutoFill.
b. With AutoFill, you enter the first element in a recognized series, click and hold the mouse button down on the fill handle at the lower-right corner of the cell, and drag the fill handle until the series extends far enough to accommodate your data.
c. Using a similar tool, **Fill Series**, you can enter two values in a series and use the fill handle to extend the series in your

worksheet. For example, if you want to create a series starting at 2 and increasing by 2, you can put 2 in the first cell and 4 in the second cell, select both cells, and then use the fill handle to extend the series to your desired end value.

ii. You do have some control over how Excel extends the values in a series when you drag the fill handle. For example, if you drag the fill handle up (or to the left), Excel extends the series to include previous values. If you type January in a cell and then drag that cell's fill handle up (or to the left), Excel places December in the first cell, November in the second cell, and so on.

iii. Another way to control how Excel extends a data series is by holding down the Ctrl key while you drag the fill handle. For example, if you select a cell that contains the value *January* and then drag the fill handle down, Excel extends the series by placing *February* in the next cell, *March* in the cell after that, and so on. If you hold down the Ctrl key while you drag the fill handle, however, Excel repeats the value *January* in each cell you add to the series.

iv. Other data entry techniques you'll use in this section are AutoComplete, which detects when a value you're entering is similar to previously entered values; and Ctrl+Enter, which you can use to enter a value in multiple cells simultaneously.

The following table (2) summarizes these data entry techniques**.**

Method	**Action**
AutoFill	Enter the first value in a recognized series and use the fill handle to extend the series.
Fill Series	Enter the first two values in a series and use the fill handle to extend the series.
AutoComplete	Type the first few letters in a cell, and if a similar value exists in the same column, Excel suggests the existing value.

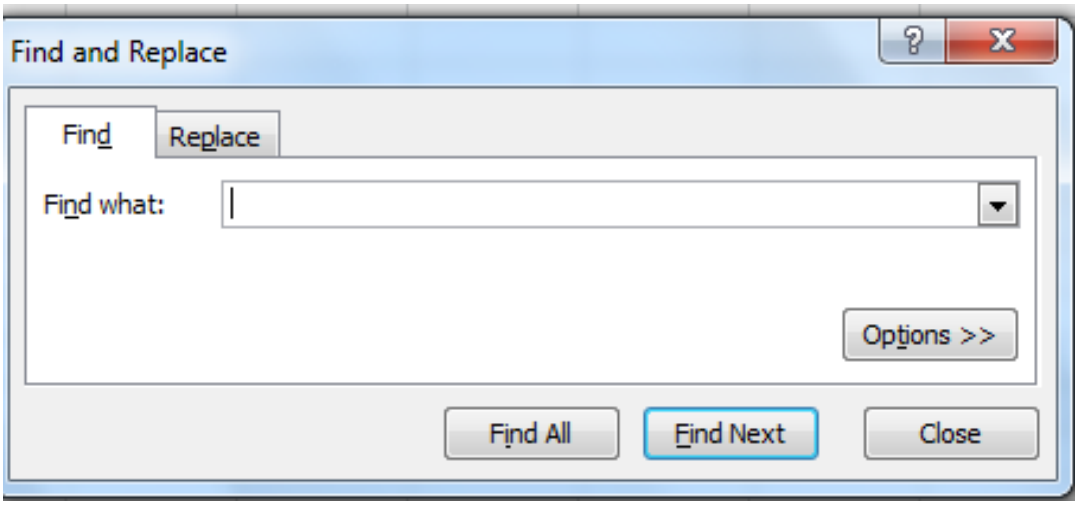
Pick from Drop-Down List	Right-click a cell, and then click Pick From Drop-Down List. A list of existing values in the cell's column is displayed. Click the value you want to enter into the cell.
Ctrl+Enter	Select a range of cells, each of which you want to contain the same data, type the data in the active cell, and press Ctrl+Enter.

11. Changing Data in a Cell

- You can edit, replace, or clear data.
- You can edit cell data in the Formula Bar or in the cell. The contents of the active cell always appear in the Formula Bar.
- To replace cell data, select the cell, type new data, and press the Enter button on the Formula Bar or the Enter key or the keyboard.

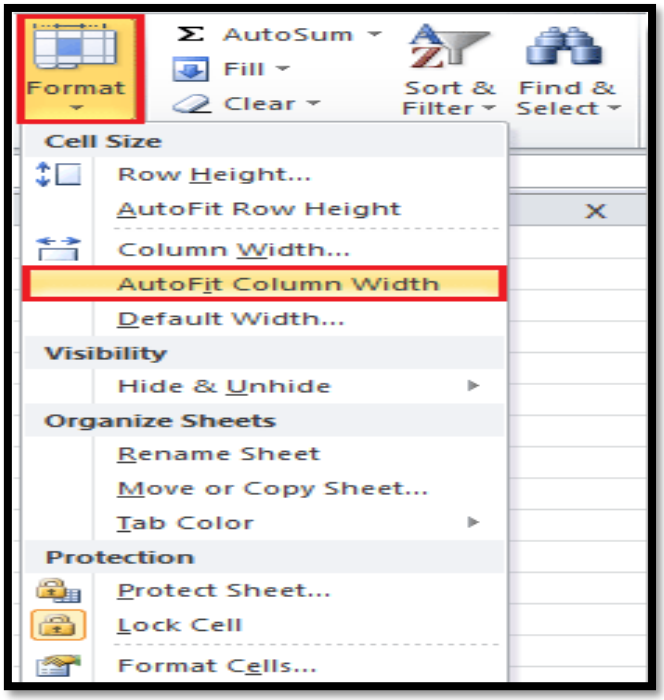
12. Searching for Data

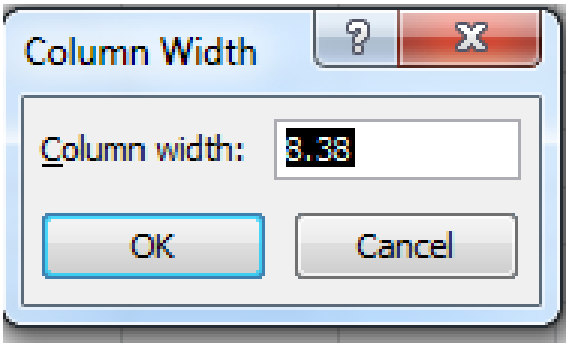
- The Find command locates data in a worksheet, which is particularly helpful when a worksheet contains a large amount of data. You can use the Find command to locate words or parts of words.
- The Replace command is an extension of the Find command. Replacing data substitutes new data for the data that the Find command locates.

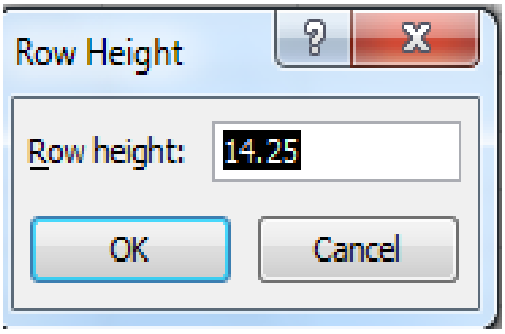


13. Resizing Columns and Rows

- Resize a column by placing the pointer on the right edge of the **column heading** and dragging. For a precise column width, enter the value in the Column Width dialog box.
- To change the row height, drag the border of the **row heading** or enter a height in the Row Height dialog box.
- AutoFit determines the best width for a column or the best height for a row.
- Place the pointer on the right edge of the column heading (or below the row heading) until the pointer changes to a double-headed arrow. Then, double-click to resize the column or row to the best fit.







14. Positioning Data Within a Cell

- By default, text you enter in a cell is lined up along the bottom-left side of the cell, and numbers you enter in a cell are lined up along the bottom-right.
- However, you can position data within a cell in a variety of ways using the buttons on the Home tab of the Ribbon.

Table (3) Positioning data within a cell

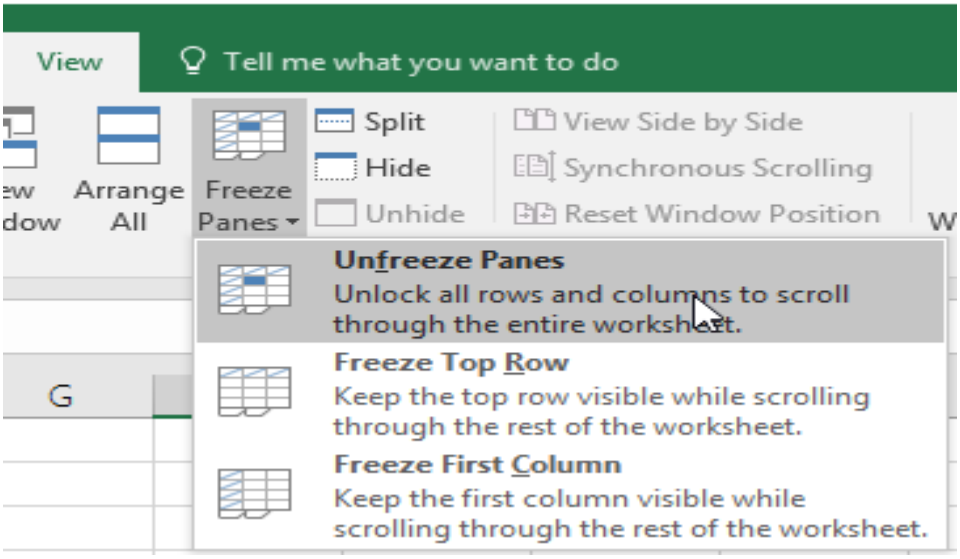
POSITION	DESCRIPTION	BUTTON	EXAMPLE
Alignment	Specifies where data is lined up within the cell		Align Text Left is the default for text
			Align Text Right is the default for numbers
			Center is often used for title text
Indent	Changes the space between the cell border and its content		Increase Indent adds space; used for subheadings
			Decrease Indent removes space
Orientation	Rotates cell contents to an angle or vertically		Labels in a narrow column
Wrap Text	Moves data to a new line when the cell is not wide enough to display all the contents		Long descriptions
Merge	Combines multiple cells into one cell		Title across the top of a worksheet; Merge & Center centers contents in the merged cell

- You can **align** the contents of a cell horizontally and vertically within the cell. To change the **alignment** of a cell, select the cell and then click an alignment button on the Home tab.
- You can also **merge** cells which combines them into one cell.
- **Indent** data within cells by using the Increase Indent and Decrease Indent buttons on the Home tab.

15. Freezing Panes in a Worksheet

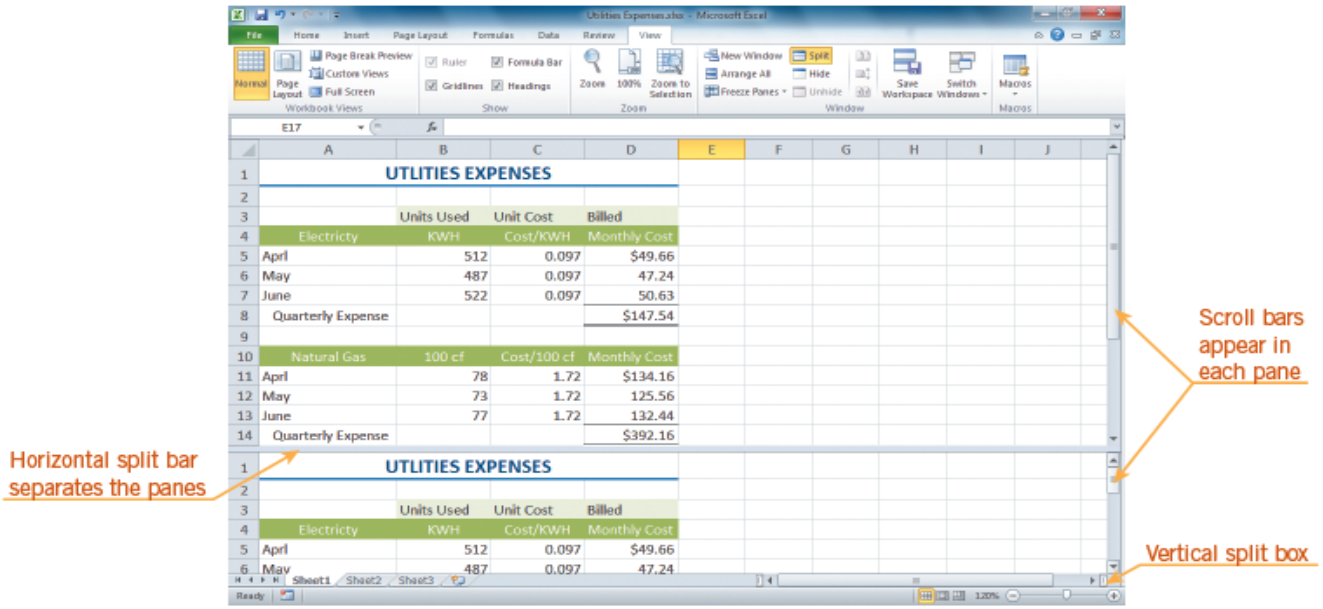
- You can view two parts of a worksheet at once by freezing panes.
- When you **freeze panes**, you select which rows and/or columns of the worksheet remain visible on the screen as the rest of the worksheet scrolls.

On the **View** tab > **Window** > **Unfreeze Panes**.



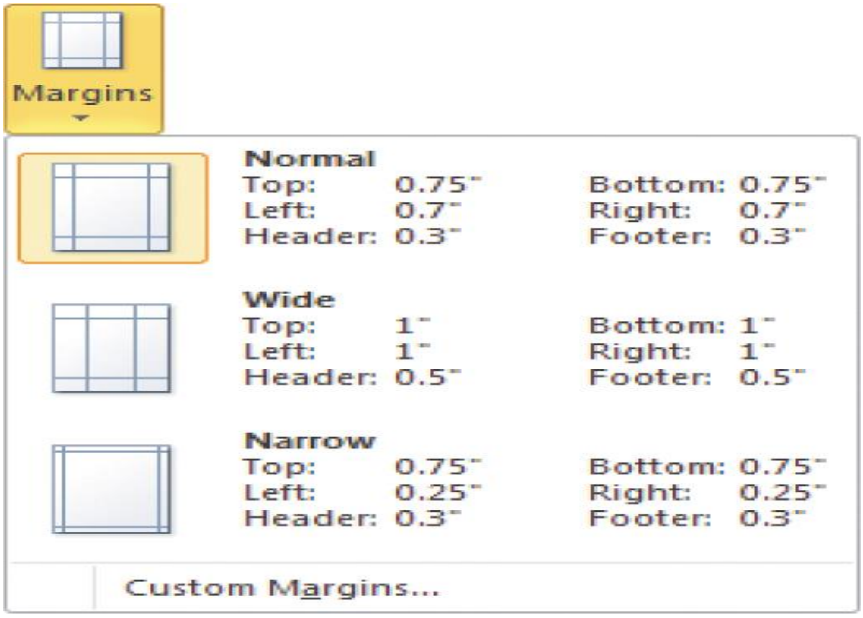
16. Splitting a Worksheet Window

- **Splitting** divides the worksheet window into two or four panes that you can scroll independently.
- This enables you to see different parts of a worksheet at the same time.
- Worksheet window split into horizontal panes.



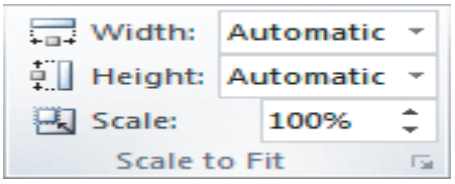
17- Preparing a Worksheet for Printing

- So far, you have worked in **Normal view**, which is the best view for entering and formatting data in a worksheet.
- **Page Layout view** shows how the worksheet will appear on paper, which is helpful when you prepare a worksheet for printing.
- The **margin** is the blank space around the top, bottom, left, and right sides of a page.
- Margins menu



- By default, Excel is set to print pages in portrait orientation. Worksheets printed in portrait orientation are longer than they are wide. In contrast, worksheets printed in landscape orientation are wider than they are long.
- The **print area** consists of the cells and ranges designated for printing.
- Excel inserts an **automatic page break** whenever it runs out of room on a page. You can also insert a **manual page break** to start a new page.
- The simplest way to adjust page breaks is in **Page Break Preview**. On the status bar, click the Page Break Preview button to switch to this view.
- Scaling resizes a worksheet to print on a specific number of pages. The Scale to Fit group contains the three options shown below.

Scale to Fit group on the Page Layout tab



- By default, gridlines, row numbers, and column letters appear in the worksheet but not on the printed page. You can choose to show or hide gridlines and headings in a worksheet or on the printed page.
- **Print titles** are designated rows and/or columns in a worksheet that are printed on each page.

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Exercises

1. What is Spreadsheet?
2. Mention the purpose of Spreadsheet.
3. What are the features of spreadsheet?
4. What is range?
5. What is cell Reference?
6. What do you mean by Relative cell reference?
7. What do you mean by Absolute cell reference?
8. What do you mean by Mixed cell reference?
9. Name box displays……
10. The intersection of a Row and a Column is called.....
11. .....must start with an '= 'sign in **Microsoft Excel 2010** (equal to sign)
12. Input Line is also known as .....

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Part (2)

Using Formulas (Functions)

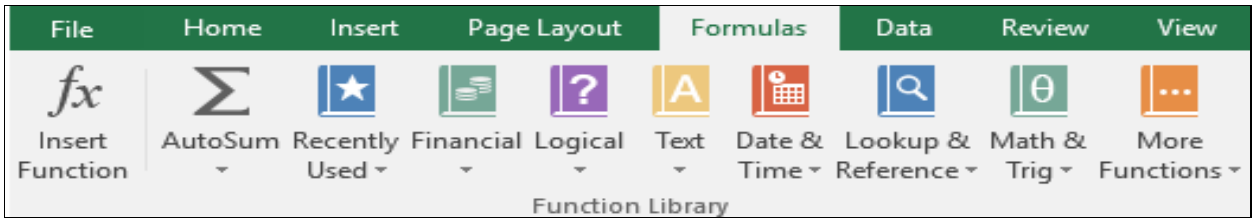
Part (2): Using Formulas (Functions)

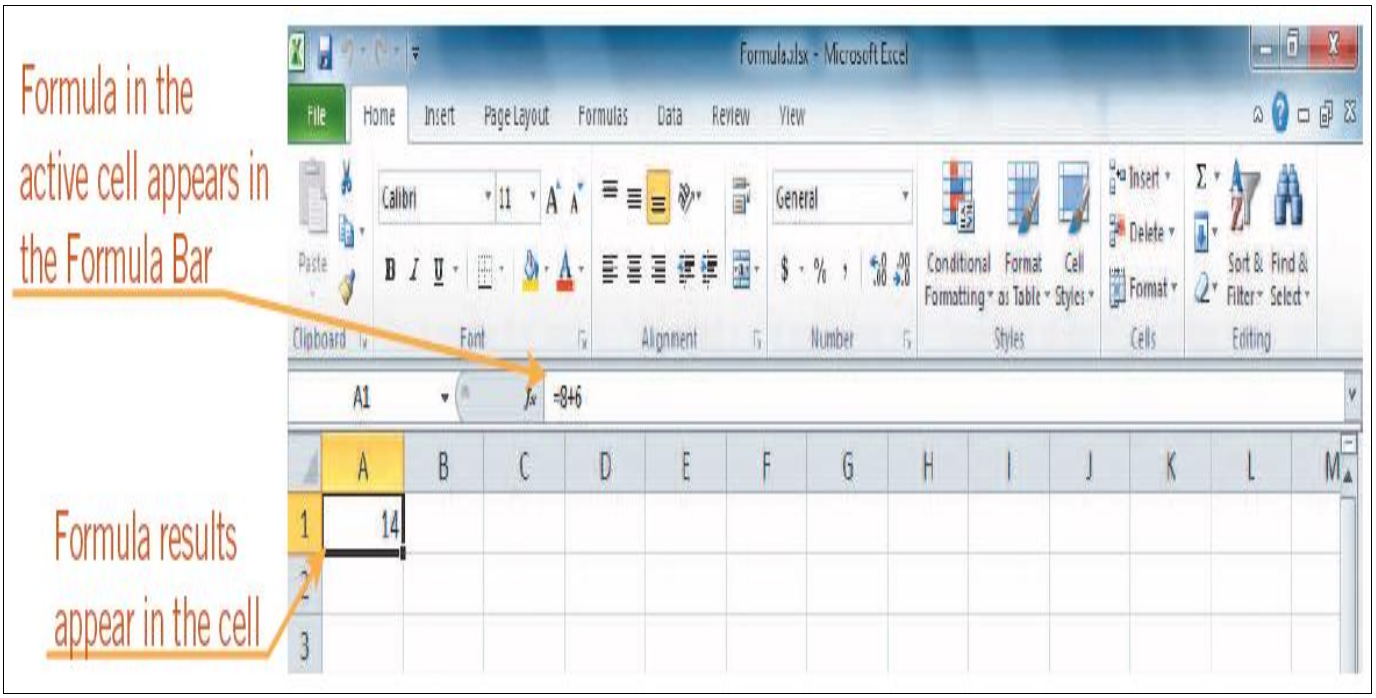
Introduction:

A **function** is a special key word which can be entered into a cell in order to perform and process the data which is appended within brackets. There is a function button ***f(x)*** on the formula bar. When we click on it, function offers assistance through function wizard. Alternatively, we can enter the function directly into the formula bar.

A function is a built in set of formulas which starts with an 'equal to sign' (=) such as = Function Name (Data). The data or argument includes a range of cells.

1. **What Are Formulas?**
   - The equation used to calculate values based on numbers entered in cells is called a formula.
   - Each **formula** begins with an equal sign (=).
   - The results of the calculation appear in the cell in which the formula is entered.
   - Formula and formula reset.





2.Entering a Formula

- Worksheet formulas consist of two components:
  - ✓ operands
  - ✓ operators
- An **operand** is a constant (text or number) or cell reference used in a formula.
- An **operator** is a symbol that indicates the type of calculation to perform on the operands, such as a plus sign (+) for addition.
- Mathematical operators

OPERATOR	OPERATION	EXAMPLE	MEANING
+	Addition	B5+C5	Adds the values in cells B5 and C5
–	Subtraction	C8–232	Subtracts 232 from the value in cell C8
*	Multiplication	D4*D5	Multiplies the value in cell D4 by the value in cell D5
/	Division	E6/4	Divides the value in cell E6 by 4
^	Exponentiation	B3^3	Raises the value in cell B3 to the third power

- A formula with multiple operators is calculated using the **order of evaluation**.
  - ✓ Contents within parentheses (beginning with innermost) are evaluated first.
  - ✓ Mathematical operators are evaluated in a specific order. (Shown in table on next slide).

✓ If operators have the same order of evaluation, the equation is evaluated from left to right.

- Order of evaluation

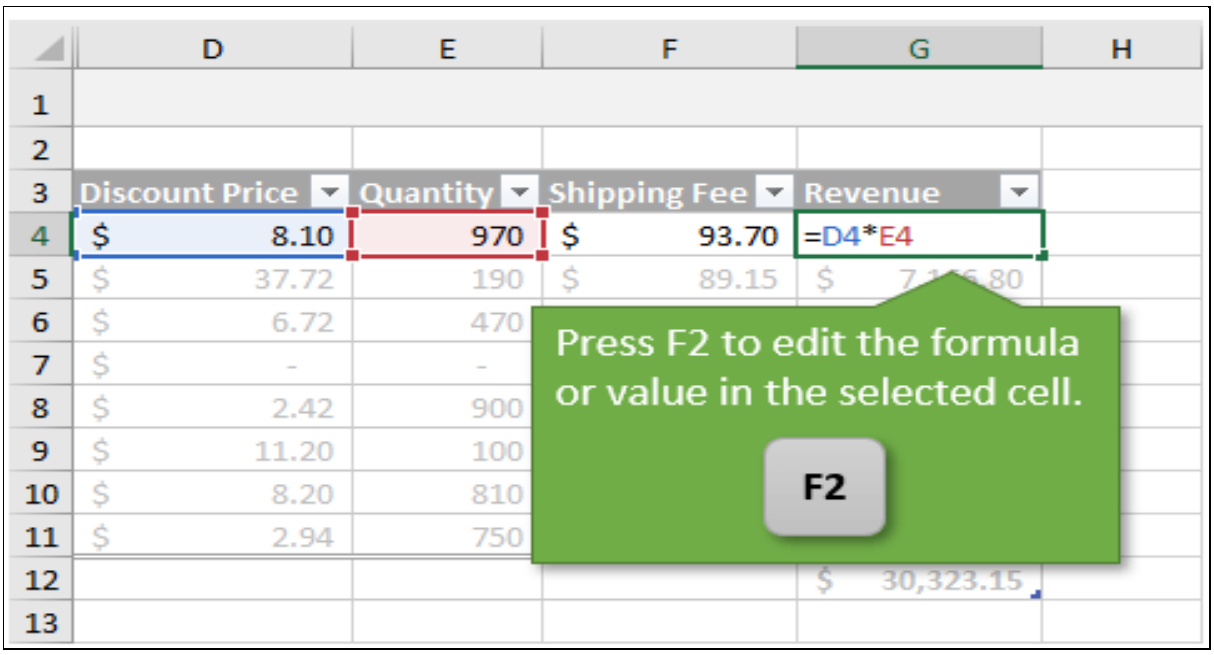
ORDER OF EVALUATION	OPERATOR	SYMBOL
First	Exponentiation	^
Second	Positive or negative	+ or –
Third	Multiplication or division	* or /
Fourth	Addition or subtraction	+ or –

3. Editing Formulas

- If you enter a formula with an incorrect structure in a cell, Excel opens a dialog box that explains the error and provides a possible correction.

Formula error message

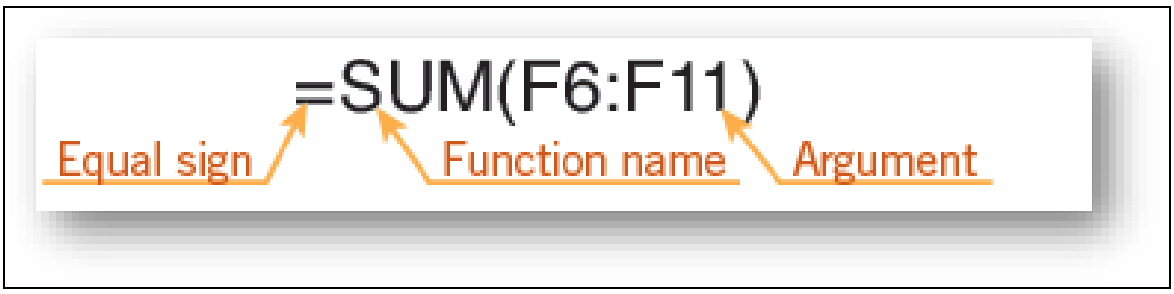
- If you discover that you need to make a correction, you can edit the formula.
- Click the cell with the formula you want to edit. Press the F2 key or double-click the cell to enter editing mode or click in the Formula Bar.



4. What Are Functions?

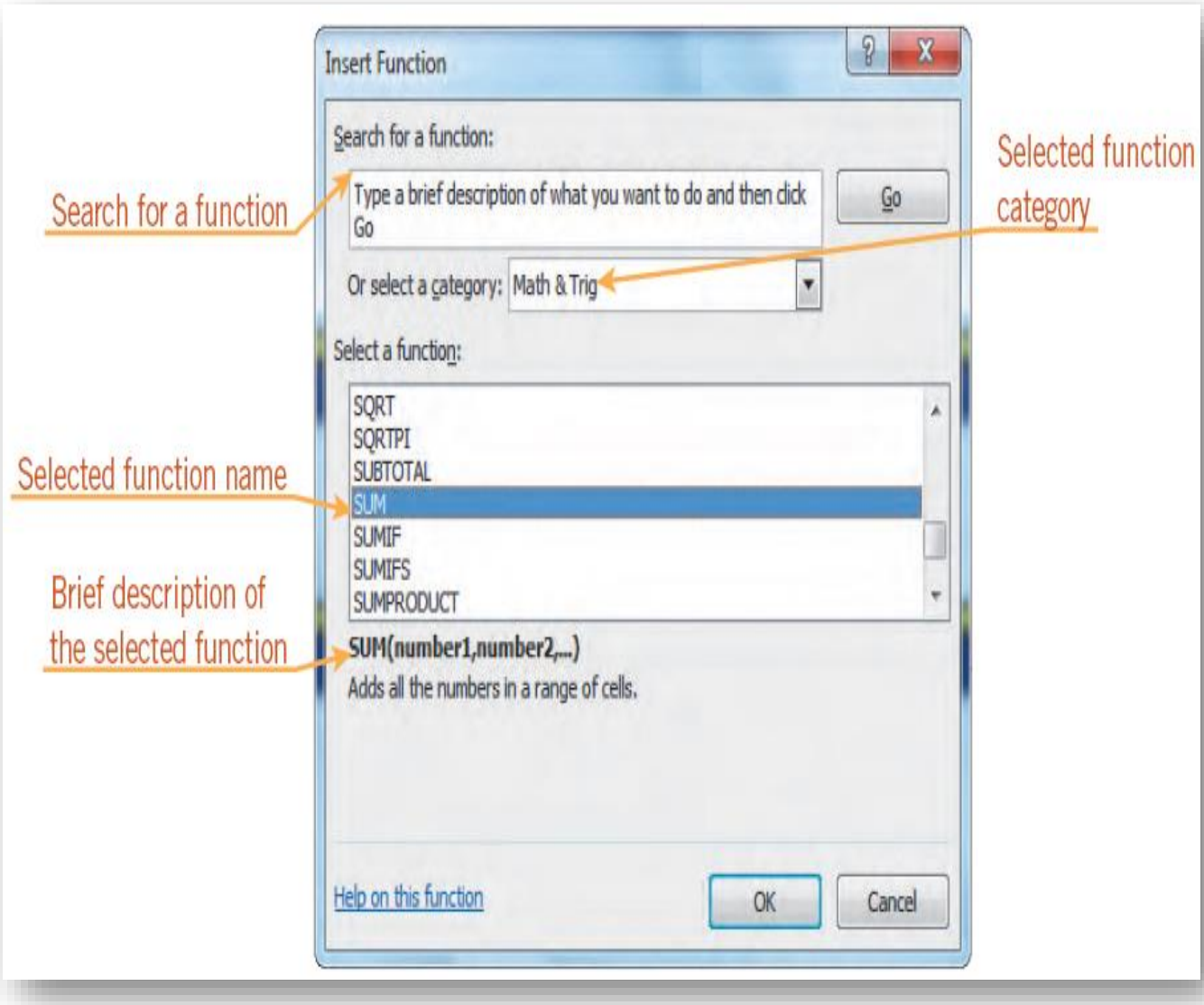
- A function is a shorthand way to write an equation that performs a calculation.
- A formula with a function has three parts:
  - ✓ The equal sign identifies the cell contents as a formula.
  - ✓ The function name identifies the operation to be performed.
  - ✓ The argument is the value the function uses to perform a calculation.

- Parts of a function

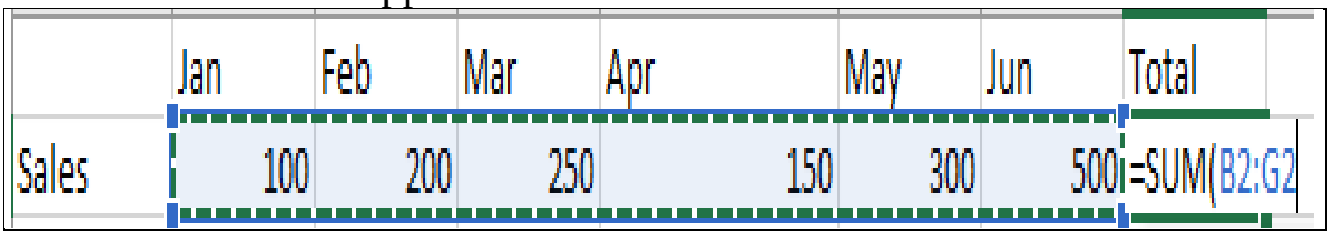


☒ ***Entering Formulas with Functions***

- To enter a formula with a function, you need to do the following.
  - ✓ Start the formula with an equal sign.
  - ✓ Select or enter the function you want to use.
  - ✓ Select or enter the arguments.
  - ✓ Enter the completed formula.
- To open the Insert Function dialog box, click the Insert Function button on the Formula Bar.
- Insert Function dialog box



- You can also enter a formula with a function directly in a cell by typing an equal sign, the function name, and the argument.
- **Formula AutoComplete** helps you enter a formula with a valid function name and arguments.
    - ✓ As you begin to type the function name, a list of function names appears below the active cell.



5. Types of Functions

- Mathematical functions and trigonometric functions manipulate quantitative data in a worksheet.
- Some mathematical operations, such as addition and subtraction, do not require functions.
- Mathematical and trigonometric functions are particularly useful when you need to determine values such as logarithms, factorials, and sines.

A. Some Mathematical functions

Function	Description
ABS function	Returns the absolute value of a number
CEILING function	Rounds a number to the nearest integer or to the nearest multiple of significance
FLOOR function	Rounds number down, toward zero, to the nearest multiple of significance
INT function	Rounds a number down to the nearest integer

ROUND function	Rounds a number to a specified number of digits
SUM function	Adds its arguments
SUMIF function	Adds the cells specified by a given criteria

✓ **Example on SUMIF function**

1. Calculate the total sales amounts for this week?
2. Calculate the total sales for days that the sales amount exceeds 500?
3. Calculate the sales amount for days in which the quantity sold exceeds 5 units?

Day	Quantity	Sales Amount
Saturday	1	234
Sunday	3	144
Monday	6	367
Tuesday	5	674
Wednesday	8	1099
Thursday	3	233
Friday	7	869

	A	B	C
1	**Day**	**Quantity**	**Sales Amount**
2	Saturday	1	234
3	Sunday	3	144
4	Monday	6	367
5	Tuesday	5	674
6	Wednesday	8	1099
7	Thursday	3	233
8	Friday	7	869

- The total sales amounts for this week = 3620

	A	B	C
1	**Day**	**Quantity**	**Sales Amount**
9	Total Sales For The Week		= SUM(C2:C8)

- The total sales for days that the sales amount exceeds 500= 2642

	A	B	C
1	**Day**	**Quantity**	**Sales Amount**
10	Total Sales For Days that Sales Amount Exceed 500		=SUMIF(C2:C8;">500";C2:C8)

- The sales amount for days in which the quantity sold exceeds 5 units= 2335

	A	B	C
1	**Day**	**Quantity**	**Sales Amount**
11	Sales Amount for Days in Which the Q sold Exceed 5 Units		=SUMIF(B2:B8;">5";C2:C8)

Statistical functions

- **Statistical functions** are used to describe quantities of data.
- For example, *statistical functions can determine:*
  - ✓ the average, standard deviation, or variance of a range of data.
  - ✓ the number of values in a range, the largest value in a range, and the smallest value in a range.

Function	Description
AVERAGE function	Returns the average of its arguments
COUNT function	Counts how many numbers are in the list of arguments
COUNTA function	Counts how many values are in the list of arguments
COUNTIF function	Counts the number of cells within a range that meet the given criteria
MAX function	Returns the maximum value in a list of arguments
MEDIAN function	Returns the median of the given numbers
MIN function	Returns the minimum value in a list of arguments
VAR.P function	Calculates variance based on the entire population.
Rank	Returns the rank of a number in a list of numbers
STDEV.P function	Calculates standard deviation based on the entire population

Exercise

The following table shows students marks in 3 subjects:

NAME	ACCOUNTING	MANAGEMENT	STATISTICS
A	61	55	55
B	ABSENT	40	ABSENT
C	92	65	80
D	85	45	ABSENT
E	67	29	17
F	52	ABSENT	65
G	35	17	6
H	68	83	90
I	71	ABSENT	86
J	61	50	ABSENT

Required:

1. Calculate the number of students in each subject?
2. Calculate the number of students that attended the exam for each subject?
3. Calculate the number of passed students in each subject?
4. Calculate the number of students who got excellent and those who got v. good in each subject?
5. Determine the student who got the best mark in each subject and the one who got the worst mark?
6. What is the average mark in each subject?

	A	B	C	D
1	NAME	ACCOUNTING	MANAGEMENT	STATISTICS
2	A	61	55	55
3	B	ABSENT	40	ABSENT
4	C	92	65	80
5	D	85	45	ABSENT
6	E	67	29	17
7	F	52	ABSENT	65
8	G	35	17	6
9	H	68	83	90
10	I	71	ABSENT	86
11	J	61	50	ABSENT

✓ **The number of students in each subject**

ACCOUNTING MANAGEMENT STATISTICS
10 10 10

	A	B	C	D
1	NAME	ACCOUNTING	MANAGEMENT	STATISTICS
12	NO.OF STUDENTS	=COUNTA(B2:B11)	=COUNTA(C2:C11)	=COUNTA(D2:D11)

✓ **The number of students that attended the exam for each subject.**

ACCOUNTING MANAGEMENT STATISTICS
9 8 7

	A	B	C	D
1	NAME	ACCOUNTING	MANAGEMENT	STATISTICS
13	NO.OF STUDENTS ATTENDEED	=COUNT(B2:B11)	=COUNT(C2:C11)	=COUNT(D2:D11)

✓ **The number of passed students in each subject**

ACCOUNTING	MANAGEMENT	STATISTICS
8	4	5

	A	B	C	D
1	NAME	ACCOUNTING	MANAGEMENT	STATISTICS
14	NO.OF STUDENTS WHO PASSED	=COUNTIF(B2:B11;">=50")	=COUNTIF(C2:C11;">=50")	=COUNTIF(D2:D11;">=50")

✓ **The number of students who got excellent and in each subject.**

ACCOUNTING	MANAGEMENT	STATISTICS
1	0	1

	A	B	C	D
1	NAME	ACCOUNTING	MANAGEMENT	STATISTICS
15	EXCELLENT	=COUNTIF(B2:B11;">=90")	=COUNTIF(C2:C11;">=90")	=COUNTIF(D2:D11;">=90")

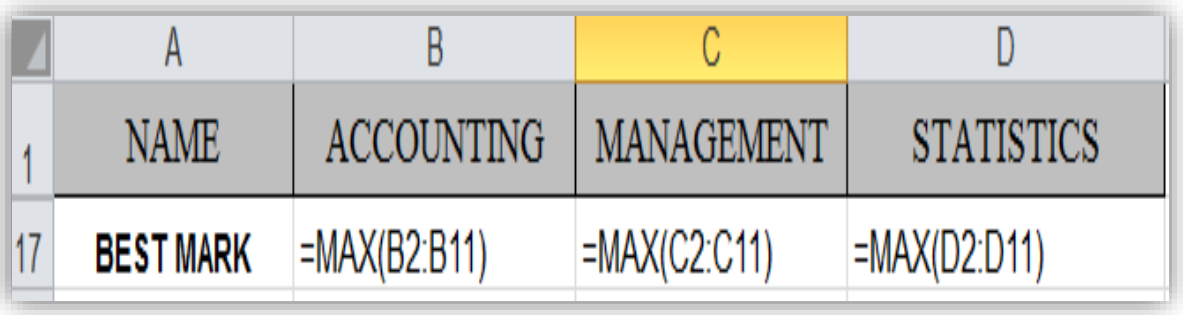
✓ **The number of students who got v.good in each subject**

ACCOUNTING	MANAGEMENT	STATISTICS
1	1	2

	A	B	C	D
1	NAME	ACCOUNTING	MANAGEMENT	STATISTICS
16	VERY GOOD	=COUNTIFS(B2:B11;">=80";B2:B11;"<90")	=COUNTIFS(C2:C11;">=80";C2:C11;"<90")	=COUNTIFS(D2:D11;">=80";C2:C11;"<90")

✓ **The number of students who got the best mark in each subject.**

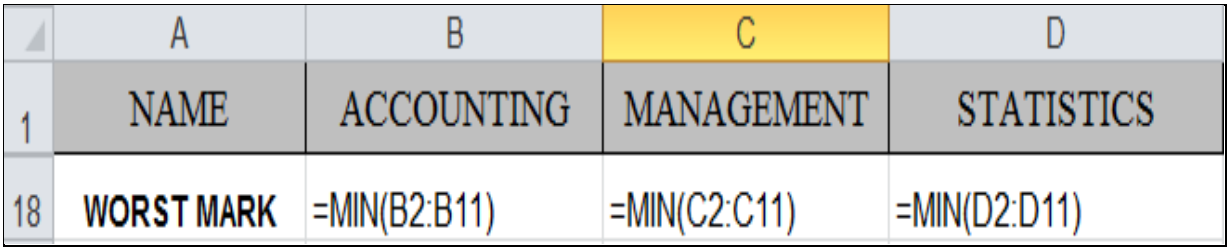
ACCOUNTING	MANAGEMENT	STATISTICS
92	83	90



	A	B	C	D
1	NAME	ACCOUNTING	MANAGEMENT	STATISTICS
17	BEST MARK	=MAX(B2:B11)	=MAX(C2:C11)	=MAX(D2:D11)

✓ **The number of students who got the worst mark in each subject.**

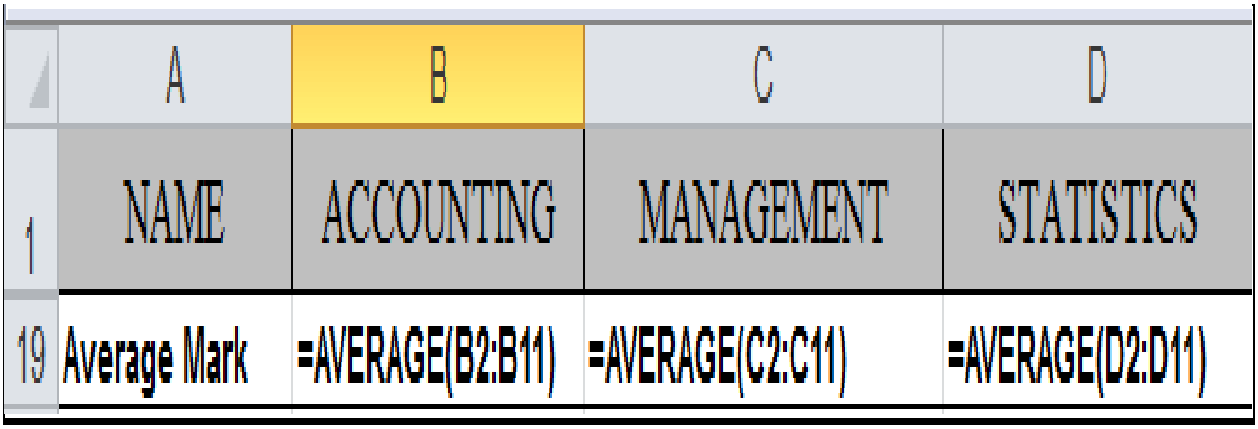
ACCOUNTING	MANAGEMENT	STATISTICS
35	17	6



	A	B	C	D
1	NAME	ACCOUNTING	MANAGEMENT	STATISTICS
18	WORST MARK	=MIN(B2:B11)	=MIN(C2:C11)	=MIN(D2:D11)

✓ **The average mark in each subject**

ACCOUNTING	MANAGEMENT	STATISTICS
65.77777778	48	57



	A	B	C	D
1	NAME	ACCOUNTING	MANAGEMENT	STATISTICS
19	Average Mark	=AVERAGE(B2:B11)	=AVERAGE(C2:C11)	=AVERAGE(D2:D11)

B. Financial Functions

These functions perform many of the common financial calculations, such as the calculation of interest rates, duration, valuation and depreciation.

Function	Description
FV function	Returns the future value of an investment
PV function	Returns the present value of an investment
PMT function	Returns the periodic payment for an annuity
RATE function	Returns the interest rate per period of an annuity
SLN function	Returns the straight-line depreciation of an asset for one period
DB function	Returns the depreciation of an asset for a specified period by using the fixed-declining balance method
DDB function	Returns the depreciation of an asset for a specified period by using the double-declining balance method or some other method that you specify
SYD function	Returns the sum-of-years' digits depreciation of an asset for a specified period

Examples

1. Calculate the future value for a series of L.E. 50 monthly deposits that last for five years assuming 12% annual interest rate?

Note: **To show FV in positive you should enter the value of periodical payments in negative.**

2. If you have two options for buying a car:
   A. By it on cash for L.E. 52,000.
   B. By it on quarterly installments over three years. The value of each one is L.E. 5000. The first payment is due in three months. Interest rate is 12%.

Which option you should select?

3. Suppose that you got L.E. 30,000 loan from a bank to be repaid on equal monthly payments over three years. What is the value of monthly installments assuming 7% interest rate? Assume that the installments are due at the beginning of each month?
4. Solve the previous example if the interest rate is the unknown value?

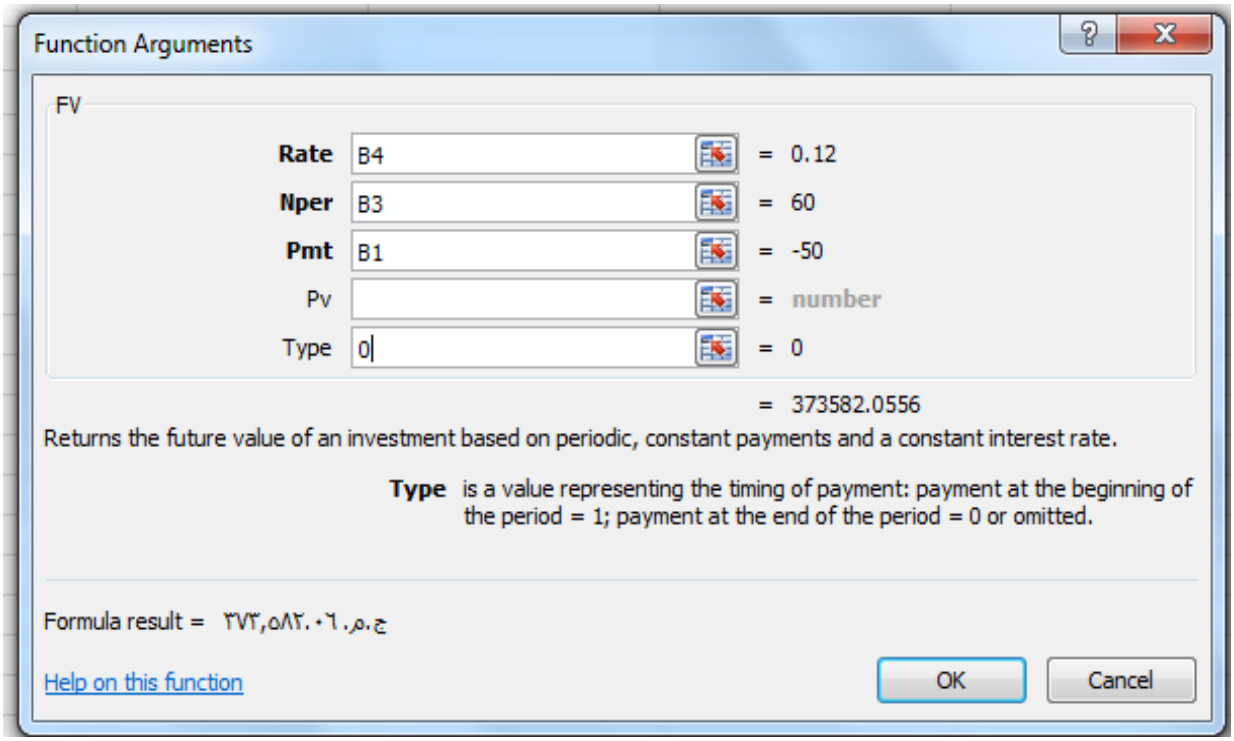
Solution Example (1)

Step by Step:

1. Open a new book in Microsoft Excel 2010.
2. In cell B1 write the value of annuity (50).
3. In cell B2 enter the number of years (5)
4. In cell B3 write the number of periods by entering the formula "=B2*12.
5. In cell B4 enter the value of interest rate (12%/12).

	A	B
1	**Value of Annuity**	50
2	**Number of Years**	5
3	**Number of Periods**	=B2*12
4	**Interest Rate**	0.12
5	**Future Value of Annuity**	=FV(B4;B3;B1;0)

6. In cell B5 enter the function FV and enter the following values in the Function argument box:
   A. Refer to cell B4 to enter the value of Rate box.
   B. Refer to cell B3 to enter the value of Nper box.
   C. Refer to cell B1 to enter the value of Pmt box.
   D. Leave the value of Pv box empty.
   E. Write zero in the type box or leave it empty.
   F. Press enter key on keyboard or OK in the Function argument box.



Note: *To show FV in positive you should enter the value of periodical payments in negative.*

Solution Example (2)

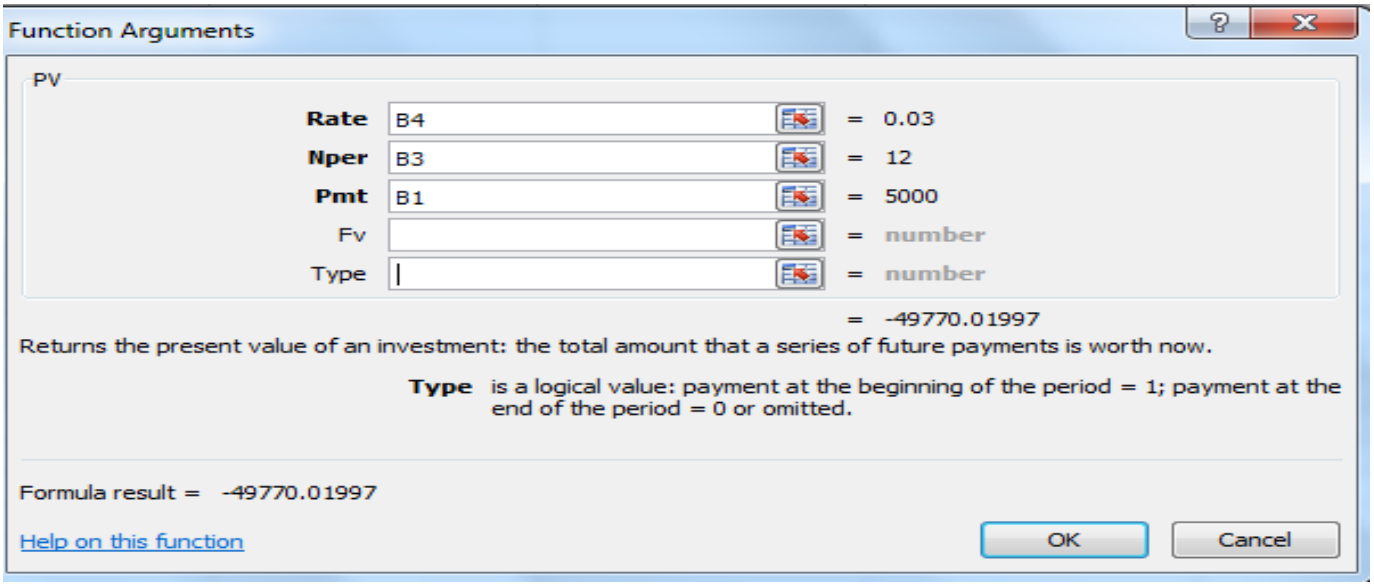
Step by Step:

1. Open a new book in Microsoft Excel 2010.
2. In cell B1 write the value of annuity (5000).
3. In cell B2 enter the number of years (3)
4. In cell B3 write the number of periods by entering the formula (=B2*4).
5. In cell B4 enter the value of interest rate (3%) Or (=12%/4).

	A	B
1	**Value of Annuity**	5000
2	**Number of Years**	3
3	**Number of Periods**	=B2*4
4	**Interest Rate**	=12%/4
5	**present Value of Annuity**	=PV(B4;B3;B1)

6. In cell B5 enter the function PV and enter the following values in the Function argument box:
   A. Refer to cell B4 to enter the value of Rate box.
   B. Refer to cell B3 to enter the value of Nper box.
   C. Refer to cell B1 to enter the value of Pmt box.
   D. Leave the value of Fv box empty.
   E. Write zero in the type box or leave it empty.

   Press enter key on keyboard or OK in the Function argument box.



Solution Example (3)

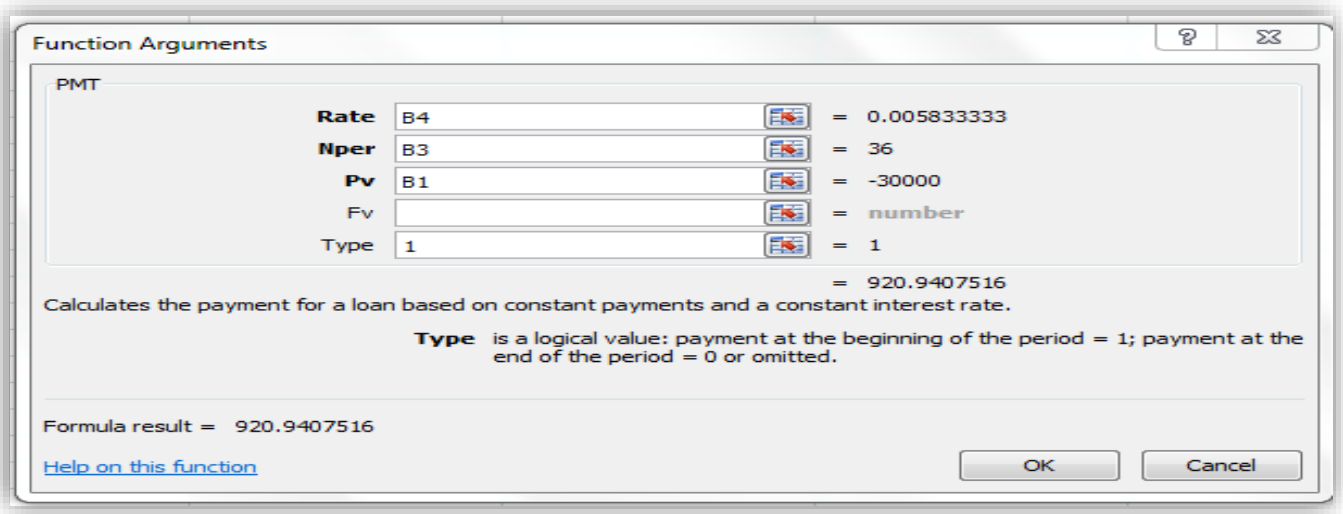
Step by Step:

1. Open a new book in Microsoft Excel 2010.
2. In cell B1 write the value of annuity (-30000).
3. In cell B2 enter the number of years (3)
4. In cell B3 write the number of periods by entering the formula (=B2*12).
5. In cell B4 enter the value of interest rate (=7%/12).

	A	B
1	PV of Single SUM	-30000
2	Number of Years	3
3	Number of Periods	=B2*12
4	Interest Rate	=7%/12
5	Value of Monthly Installments	=PMT(B4;B3;B1;;1)

6. In cell B5 enter the function (PMT) and enter the following values in the Function argument box:
   A. Refer to cell B4 to enter the value of Rate box.
   B. Refer to cell B3 to enter the value of Nper box.
   C. Refer to cell B1 to enter the value of PV box.
   D. Leave the value of FV box empty.
   E. Write zero in the type box or leave it empty.

   Press enter key on keyboard or OK in the Function argument box.



Solution Example (4)

Step by Step:

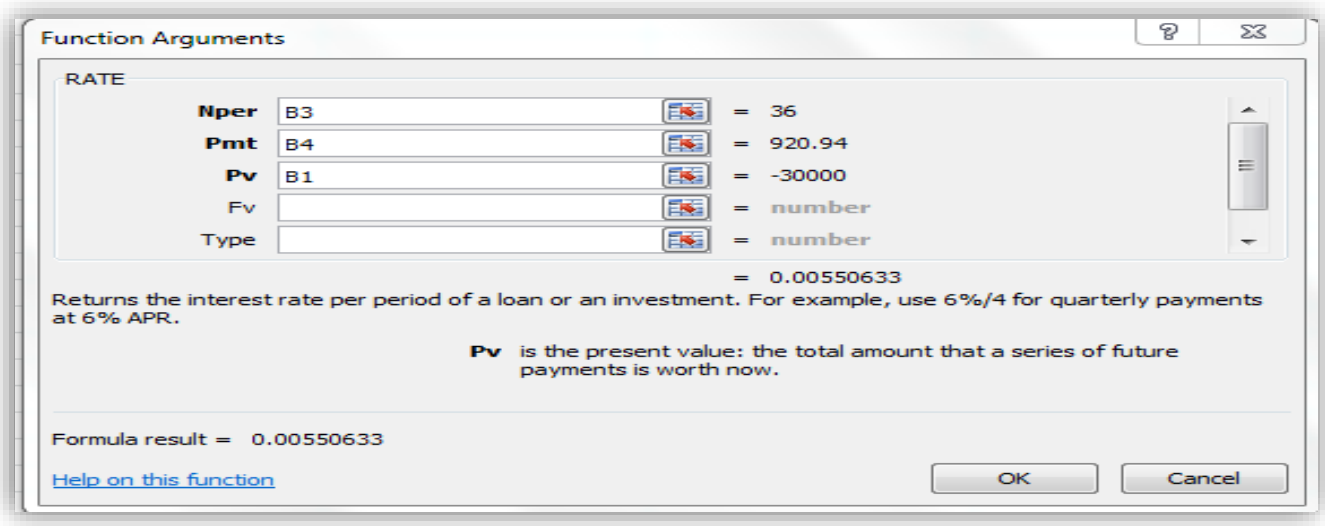
1. Open a new book in Microsoft Excel 2010.
2. In cell B1 write the value of annuity (-30000).
3. In cell B2 enter the number of years (3)
4. In cell B3 write the number of periods by entering the formula (=B2*12).
5. In cell B4 enter the value of monthly installments (920.94)

	A	B
1	**PV of Single SUM**	-30000
2	**Number of Years**	3
3	**Number of Periods**	=B2*12
4	**Value of Monthly Installments**	920.94
5	**Interest Rate**	=RATE(B3;B4;B1)

5. In cell B5 enter the function (RATE) and enter the following values in the Function argument box:

   A. Refer to cell B3 to enter the value of NPER box.
   B. Refer to cell B4 to enter the value of PMT box.
   C. Refer to cell B1 to enter the value of PV box.
   D. Leave the value of FV box empty.
   E. Write Zero in the type box or leave it empty.

   Press enter key on keyboard or OK in the Function argument box.



Example on Depreciation Function

ABC company purchased a machine for L.E. 50,000, the estimated useful life is 4 years and the estimated residual value is L.E. 10,000. Calculate the annual depreciation expenses using the following depreciation methods:

A. Straight Line
B. Declining Balance (assuming Dep. Rate is 33.1%)
C. Double Declining Balance
D. Sum of the Year Digits

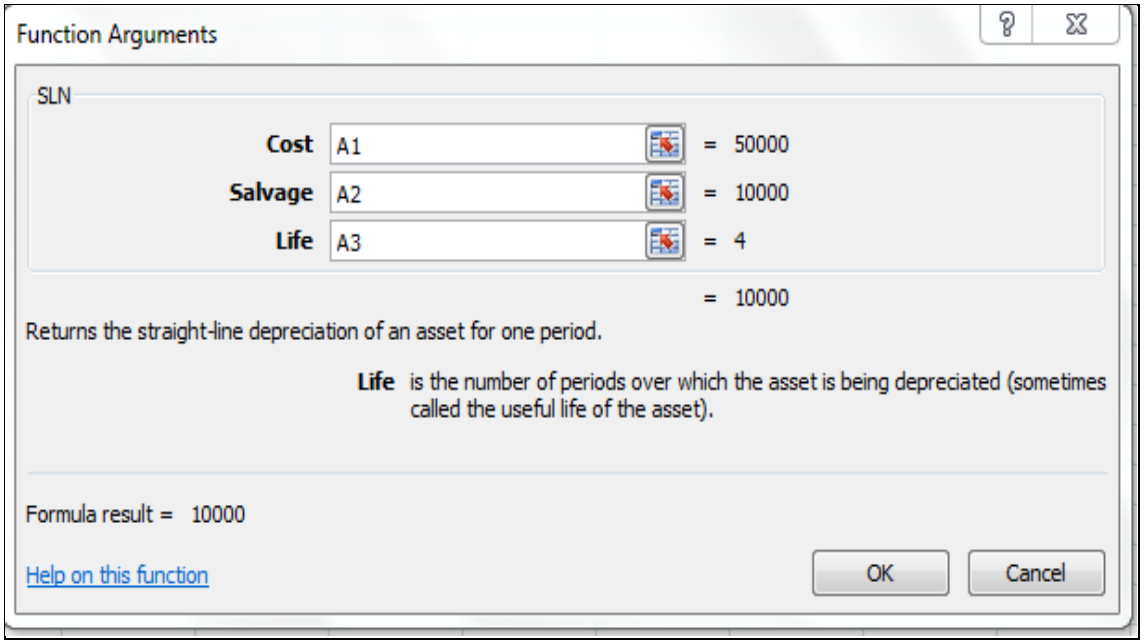
Using Microsoft Excel 2010, show theoretically,the steps of calculating the following:

A. Straight Line Depreciation

1. Open a new book in Microsoft Excel 2010.
2. In cell **A1** enter the cost of the machine **(50,000)**
3. In cell **A2** enter the salvage value (10,000).
4. In cell **A3** enter the useful life (4)
5. In cell **B1** insert **SLN** function from **financial formulas menu**.

	A	B
1	**50000**	=SLN(A1;A2;A3)
2	**10000**	
3	**4**	

6. In function argument box refer to cell **A1** in the cost box, refer to cell **A2** for the salvage value box, and refer to cell **A3** in the useful life box.



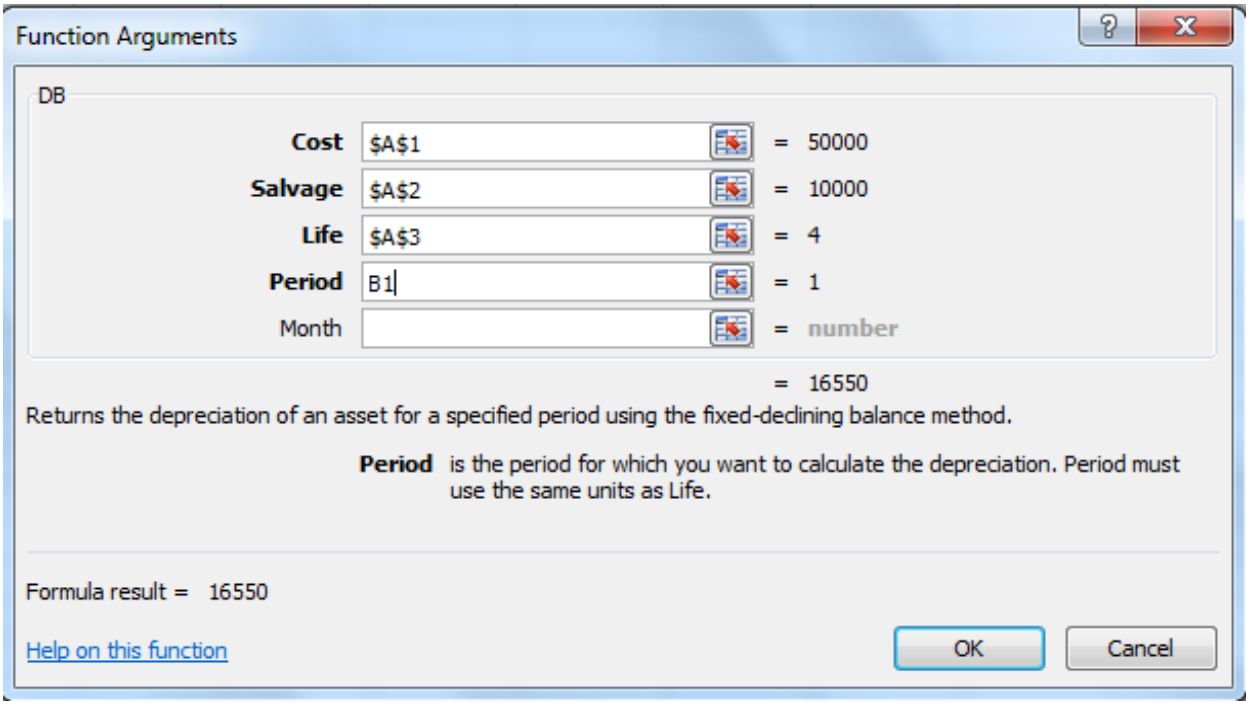
7. press enter from the keyboard or press OK tab on the function argument box.

B. Declining Balance Method

1. Open a new book in Microsoft Excel 2010.
2. In cell **A1** enter the cost of the machine **(50,000)**
3. In cell **A2** enter the salvage value **(10,000)**
4. In cell **A3** enter the useful life **(4)**
5. In the range **B1: B4** enter the years of asset's life **1,2,3,4**
6. In cell C1 enter the function **DB** from **financial functions**.

	A	B	C
1	50000	1	=DB($A$1;$A$2;$A$3;B1)
2	10000	2	=DB($A$1;$A$2;$A$3;B2)
3	4	3	=DB($A$1;$A$2;$A$3;B3)
4		4	=DB($A$1;$A$2;$A$3;B4)

7. **<u>In the function argument box:</u>**
   i. refer to cell **A1** on the cost box with making it as an absolute reference not relative, by inserting the dollar sign before the row number or before both column and row numbers.
   ii. refer to cell **A2** on the salvage value box with making it as an absolute reference.
   iii. refer to cell **A3** on the life box with making it as an absolute reference.
   iv. refer to cell **B1** in the period box but keep it as a relative reference.
   v. for the month box leave it empty meaning the depreciation period in the first year is 12 months as it did not mention in the question the exact date of purchasing the asset.



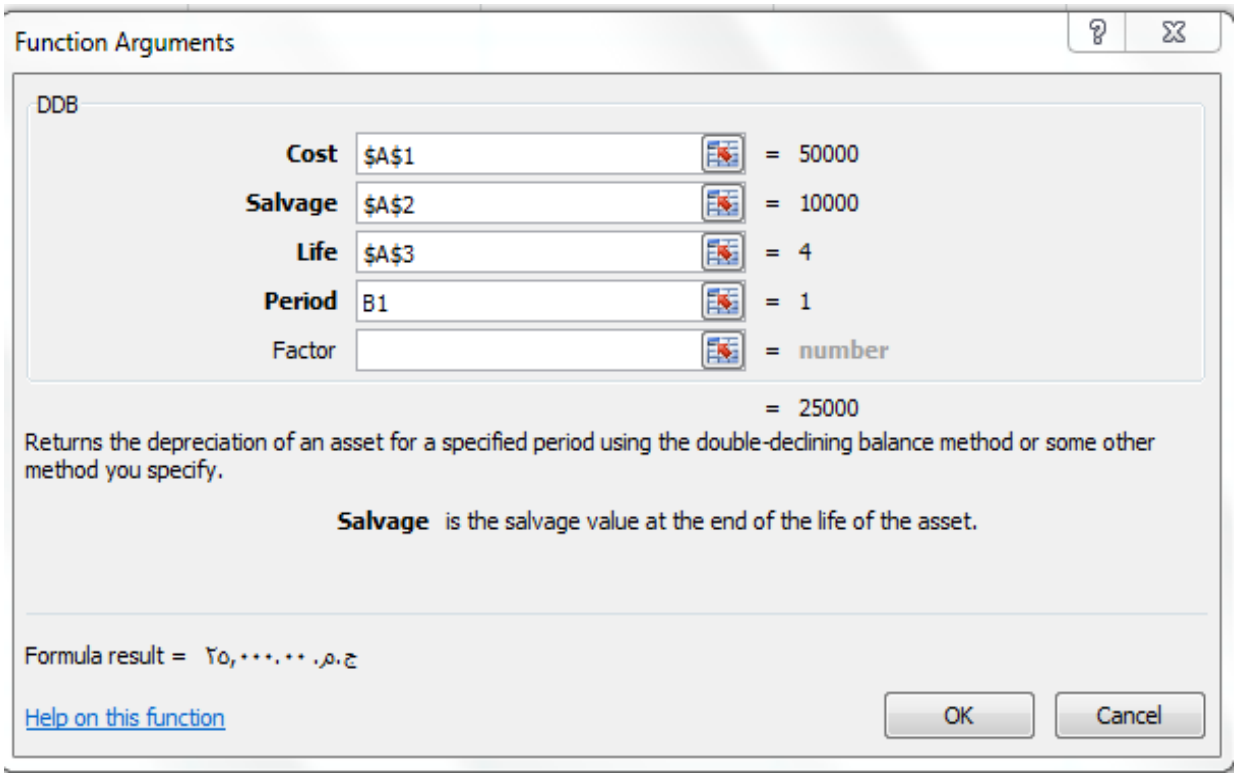
8. calculate the value of depreciation in the first year by pressing enter from the keyboard or press **OK** tab on the function argument box.
9. Use Autofill to get the value of depreciation expense for year 2, 3, and 4

C. Double Declining Balance Method

1. Open a new book in Microsoft Excel 2010.
2. In cell **A1** enter the cost of the machine **(50,000)**
3. In cell **A2** enter the salvage value (10,000)
4. In cell **A3** enter the useful life **(4)**
5. In the range **B1: B4** enter the years of asset's life 1,2,3,4
6. In cell **C1** enter the function **DDB** from **financial functions.**

	A	B	C
1	50000	1	=DDB($A$1;$A$2;$A$3;B1)
2	10000	2	=DDB($A$1;$A$2;$A$3;B2)
3	4	3	=DDB($A$1;$A$2;$A$3;B3)
4		4	=DDB($A$1;$A$2;$A$3;B4)

7. **<u>In the function argument box:</u>**
    i. Refer to cell **A1** on the cost box with making it as an **absolute reference** not relative, by inserting the dollar sign before the row number or before both column and row numbers.
    ii. Refer to cell **A2** on the salvage value box with making it as an absolute reference.
    iii. Refer to cell **A3** on the life box with making it as an absolute reference.
    iv. Refer to cell B1 in the period box but keep it as a relative reference.
    v. For the factor box leave it empty meaning to use double the normal depreciation rate.



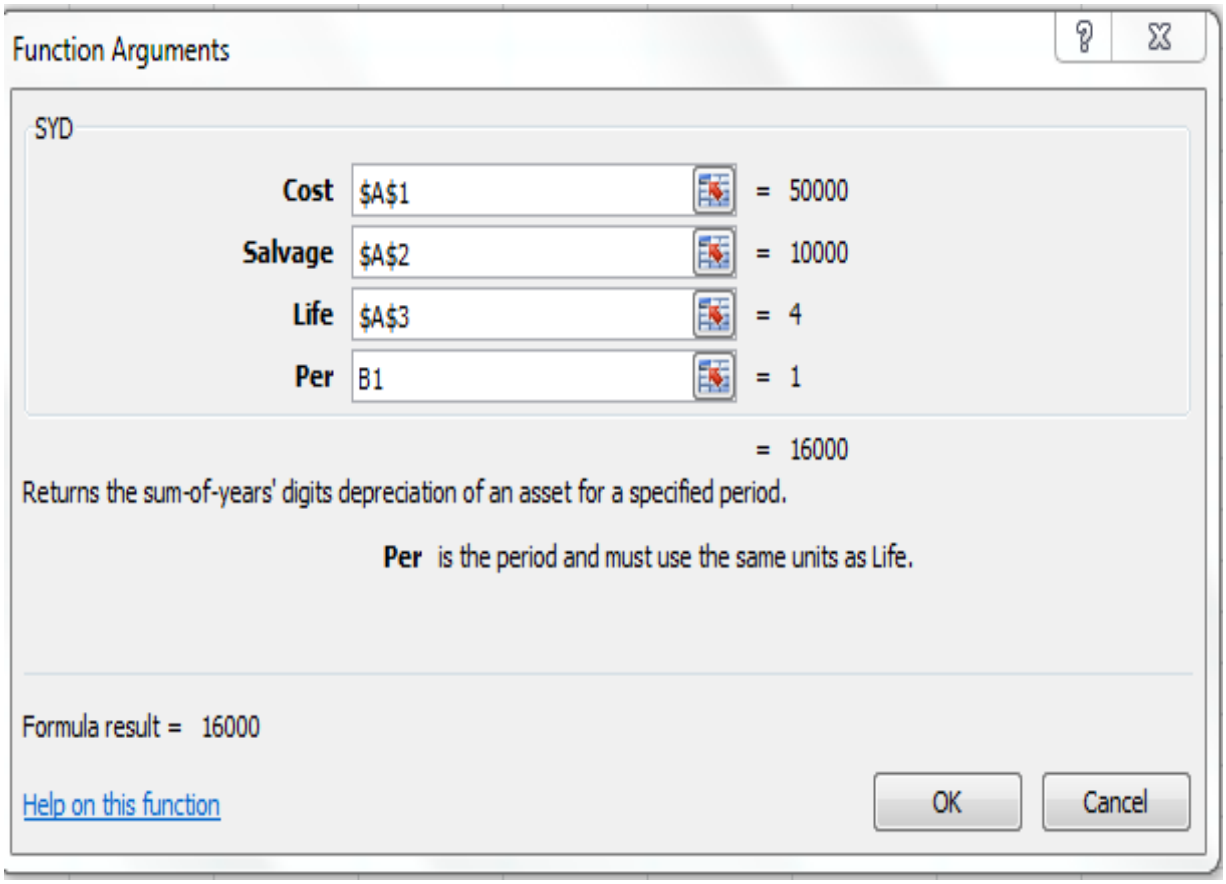
8. Calculate the value of depreciation in the first year by pressing enter from the keyboard or press **OK** tab on the function argument box.
9. Use Autofill to get the value of depreciation expense for year 2, 3, and 4.

D. Sum of the Year Digits Method

1. Open a new book in Microsoft Excel 2010.
2. In cell **A1** enter the cost of the machine (50,000)
3. In cell **A2** enter the salvage value (10,000)
4. In cell **A3** enter the useful life (4)
5. In the range B1: B4 enter the years of asset's life 1,2,3,4
6. In cell **C1** enter the function **SYD** from **financial functions**.

	A	B	C
1	50000	1	=SYD($A$1;$A$2;$A$3;B1)
2	10000	2	=SYD($A$1;$A$2;$A$3;B2)
3	4	3	=SYD($A$1;$A$2;$A$3;B3)
4		4	=SYD($A$1;$A$2;$A$3;B4)

7. **<u>In the function argument box:</u>**
    i. refer to cell **A1** on the cost box with making it as an absolute reference not relative, by inserting the dollar sign before the row number or before both column and row numbers.
    ii. refer to cell **A2** on the salvage value box with making it as an absolute reference.
    iii. refer to cell **A3** on the life box with making it as an absolute reference.
    iv. refer to cell **B1** in the period box but keep it as a relative reference.
8. calculate the value of depreciation in the first year by pressing enter from the keyboard or press OK tab on the function argument box.
9. Use Autofill to get the value of depreciation expense for year 2, 3, and 4.



A. Logical Functions

IF function	Specifies a logical test to perform
AND function	Returns TRUE if all of its arguments are TRUE
OR function	Returns TRUE if any argument is TRUE

✓ Example for Using IF Function

The following table represents the sales revenues for goods sold through company's agents during the month of January:

Agent	Sales
Sami	50000
Hani	25000
Fadi	30000
Shadi	27000
Rami	39000

Example (1)

Compute the sales commissions for each agent if you know that the agents who achieve more than 30,000 monthly sales get 10% commission, whereas those who achieve 30000 or less gets only 5%?

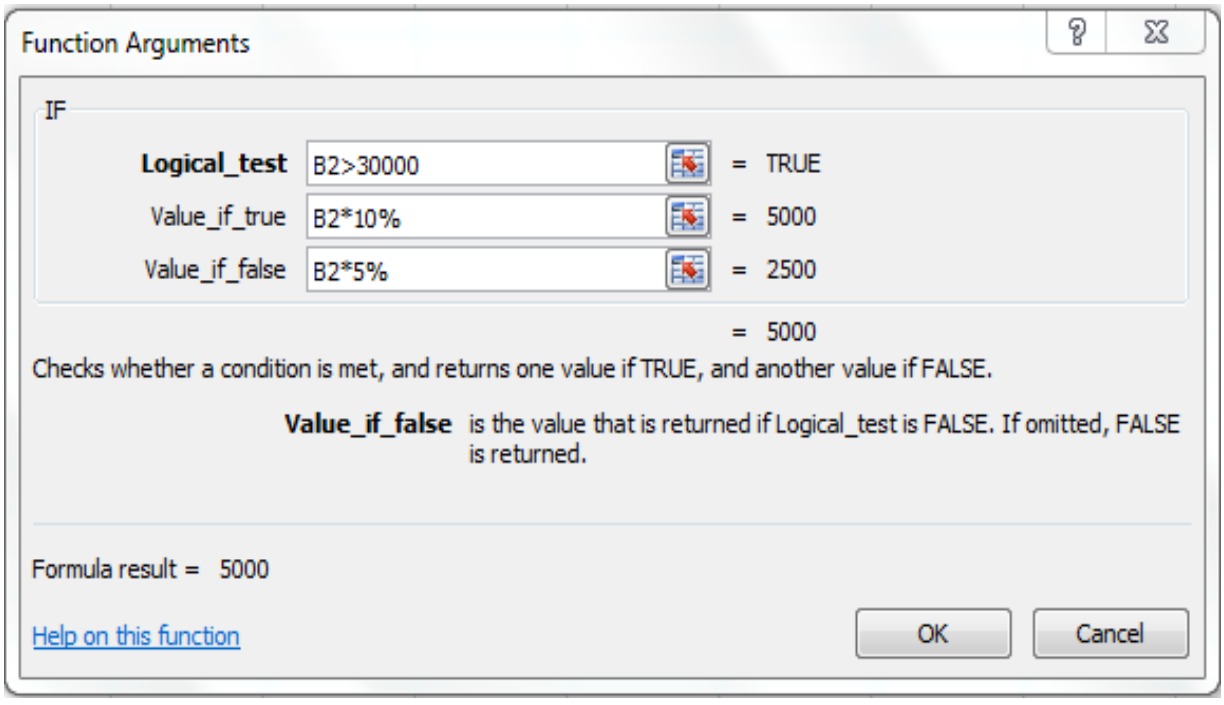
Step by Step:

1. Open a new book in Microsoft Excel 2010.
2. In cell **A1** write the company's Agents.
3. In cell **A2:A6** enter the Agents names.
4. In cell **B1** write the sales.

5. In cell **B2:B6** enter the value of monthly sales revenues.

	A	B	C	D
1	**Agent**	**Sales**	**Commission**	**Commission**
2	Sami	50000	=IF(B2>30000;B2*10%;B2*5%)	5000
3	Hani	25000	=IF(B3>30000;B3*10%;B3*5%)	1250
4	Fadi	30000	=IF(B4>30000;B4*10%;B4*5%)	2500
5	Shadi	27000	=IF(B5>30000;B5*10%;B5*5%)	1350
6	Rami	39000	=IF(B6>30000;B6*10%;B6*5%)	3900

6. In cell **C1** enter the function **IF** and enter the following values in the function argument box:
   i. Refer to cell **B2** and write the condition **>30000** in the logical test box.
   ii. Refer to cell **B2** and multiply it by 10% commission **B2*10%** in the value- If-true box.
   iii. Refer to cell **B2** and multiply it by 5% commission **B2*5%** in the value- If- flase box.
   iv. Press OK in the Function argument box.



✓ Example for Combining IF function with AND Function

By itself, the AND function has limited usefulness. By combining it with another function, such as the IF function, the AND function can increase the capabilities of your spreadsheet.

Example (2)

The following is the data for a group of persons who apply to a job in Red Sea governorate:

	A	B	C	D
1	**Name**	**Grade**	**Birth Place**	**Residence**
2	Soha	V.Good	Red Sea	Red Sea
3	Noha	Good	Red Sea	Red Sea
4	Doha	V.Good	Qena	Qena
5	Maha	V.Good	Qena	Red Sea

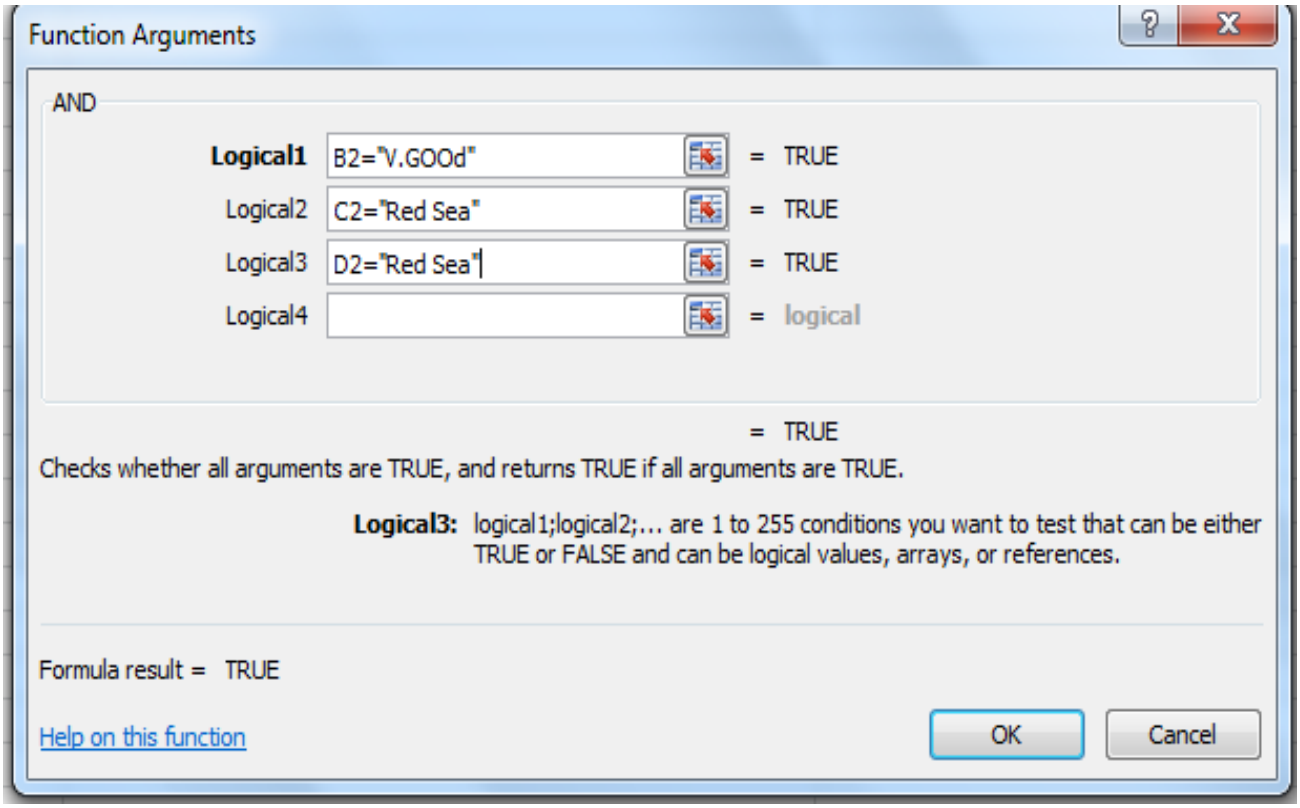
Determine the accepted persons if the job requires that applicant should have a V. Good grade, and his birthplace and residence is Red Sea?

Step by Step:

1. Open a new book in Microsoft Excel 2010.
2. In cell (**A1, B1, C1, &D1)** write (Name, Grade, Birthplace& Residence) respectively.
3. In cell **(A2:A5**) enter the applicants names.
4. In cell **(B2:B5)** enter the applicants' Grade.
5. In cell **(C2: C5)** enter the applicants Birthplace.
6. In cell **(D2:D3)** enter the applicants Residence.

	A	B	C	D	E	F
1	**Name**	**Grade**	**Birth Place**	**Residence**	**Result**	**Result**
2	Soha	V.Good	Red Sea	Red Sea	=IF(AND(B2="v.good";C2="red sea";D2="red sea");"Accepted"	Accepted
3	Noha	Good	Red Sea	Red Sea	=IF(AND(B3="v.good";C3="red sea";D3="red sea");"Accepted"	Rejected
4	Doha	V.Good	Qena	Qena	=IF(AND(B4="v.good";C4="red sea";D4="red sea");"Accepted"	Rejected
5	Maha	V.Good	Qena	Red Sea	=IF(AND(B5="v.good";C5="red sea";D5="red sea");"Accepted"	Rejected

7. In cell **E1** enter the function **AND** and enter the following values in the function argument box:
   i. Refer to cell **B2** and write the condition (B2="V.Good") in the (logical1) test box.
   ii. Refer to cell **C2** and write the condition (C2="Red Sea") in the (logical2) test box
   iii. Refer to cell **D2** and write the condition (B2="Red Sea") in the (logical3) test box
   iv. Press OK in the Function argument box.



Combining IF function with OR Function

✓ By itself, the OR function has limited usefulness. By combining it with another function, such as the IF function, the AND function can increase the capabilities of your spreadsheet.

Example (3)

Suppose in the previous example, the applicants who got less than V. Good have been excluded, so now all applicants have V. Good grade.

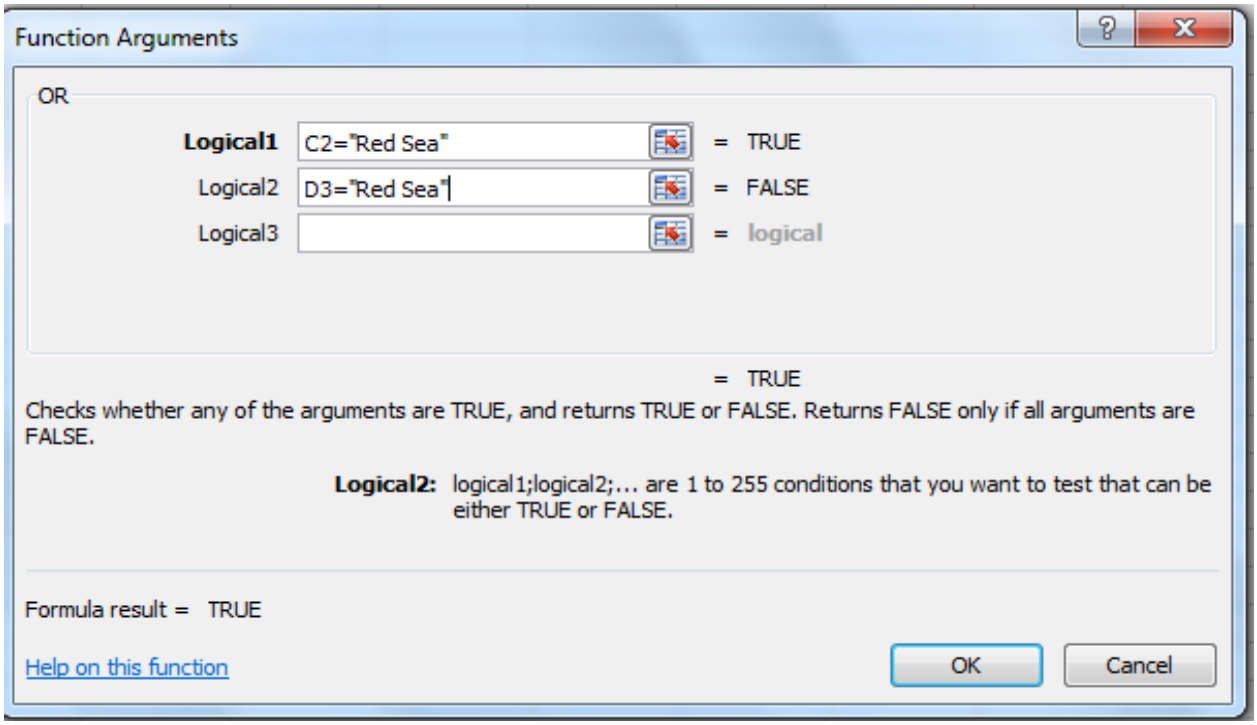
❖ Determine the accepted persons if the conditions modified so that the applicant should be either born or residing in Red Sea?

Step by Step:

1. Open a new book in Microsoft Excel 2010.
2. In cell (**A1, B1, C1, &D1)** write (Name, Grade, Birthplace& Residence) respectively.
3. Delete the applicant with Grade less than very good.
4. In cell **(A2:A4**) enter the applicants names.
5. In cell **(B2:B4)** enter the applicants' Grade.
6. In cell **(C2: C4)** enter the applicants Birthplace.
7. In cell **(D2:D4)** enter the applicants Residence.

	A	B	C	D	E
1	Name	Grade	Birth Place	Residence	OR Test
2	Soha	V.Good	Red Sea	Red Sea	=OR(C2="Red Sea";D2="Red Sea")
3	Doha	V.Good	Qena	Qena	=OR(C3="Red Sea";D3="Red Sea")
4	Maha	V.Good	Qena	Red Sea	=OR(C4="Red Sea";D4="Red Sea")

8. In cell **E2** enter the function **OR** and enter the following values in the function argument box:
   i. Refer to cell **C2** and write the condition (C2=" Red Sea") in the (logical1) test box.
   ii. Refer to cell **D2** and write the condition (D2="Red Sea") in the (logical2) test box
   iii. Press OK in the Function argument box.



Combining IF function with OR Function

✓ By itself, the OR function has limited usefulness. By combining it with another function, such as the IF function, the AND function can increase the capabilities of your spreadsheet.

✓= IF(AND Function, "Accepted","Rejected)

In cell E2 edit and combine IF function with OR function as follow: =IF (OR Function,"Accepted",Rejected).

i. Write (IF) after equal (=) sign, then open "bracket ("before OR function.
ii. Write (IF) after AND function, then write ("Accepted")&(Rejected").
iii. Close the "bracket & press enter
iv. Use Autofill to Get the accepted and rejected applicants.

	A	B	C	D	E	F
1	**Name**	**Grade**	**Birth Place**	**Residence**	**Result**	**Result**
2	Soha	V.Good	Red Sea	Red Sea	=IF(OR(B2="v.good";C2="Red Sea";D2="Red Sea");"Accepted";"Rejected")	Accepted
3	Noha	Good	Red Sea	Red Sea	=IF(OR(B3="v.good";C3="Red Sea";D3="Red Sea");"Accepted";"Rejected")	Accepted
4	Doha	V.Good	Qena	Qena	=IF(OR(B4="v.good";C4="Red Sea";D4="Red Sea");"Accepted";"Rejected")	Accepted
5	Maha	V.Good	Qena	Red Sea	=IF(OR(B5="v.good";C5="Red Sea";D5="Red Sea");"Accepted";"Rejected")	Accepted

Part (3)

Application of Cost-Volume-Profit Analysis (CVP)

Part (3): Application of Cost-Volume-Profit Analysis (CVP)

What is CVP?

CVP analysis explores the relationship between revenue, cost, and volume and their effect on profits.

☒ The Income Statement

Profit Equation

$$\text{Profit Equation} = \frac{\text{Total revenues} - \text{Total costs}}{\text{Operating profit}}$$

☒ The Income Statement written horizontally

Operating profit	=	Total revenues	-	Total costs
Profit	=	TR	-	TC

Total revenue *(TR)*	=	Average selling price per unit *(P)*	×	Units of output produced and sold *(X)*
TR	=			PX

$$\text{Total cost (TC)} = \left(\text{Variable cost per unit (V)} \times \text{Units of output (X)}\right) + \text{Fixed costs (F)}$$

$$TC = VX + F$$

Profit = Total revenue – Total costs

$= TR - TC$

$TC = VX + F$

Therefore, Profit = $PX - (VX + F)$

Profit = (Price – Variable costs) × Units of output – Fixed costs

$= X(P - V) - F$

☒ Contribution Margin

This is the difference between price and variable cost

- It is what is leftover to cover fixed costs and then add to operating profit.

Contribution margin = Price per unit – Variable cost per unit

$= P - V$

CVP Example

U-Develop

Income Statement

For the Month Ending March 20XX

Sales (12,000 prints at $0.60)		$7,200
Less:		
Variable costs of goods sold (12,000 × $0.30)	$3,600	
Variable selling costs (12,000 × $0.06)	720	4,320
Contribution margin		$2,880
Less: Fixed costs		1,500
Operating profit		$1,380

- Contribution margin per unit = $2,880 ÷ 12,000 = $0.24

☒ Break-Even Volume in Units

This is the volume level at which profits equal zero

Profit 0 = X (P – V) – F

If profit = 0, then X = F ÷ (P – V)

$$\text{Break-even volume (in units)} = \frac{\text{Fixed costs}}{\text{Unit contribution margin}}$$

$$= \$1{,}500 \div \$0.24$$

$$= 6{,}250 \text{ prints}$$

☒ Break-Even Volume in Sales Dollars

Contribution margin percentage (contribution margin ratio) is the contribution margin as a percentage of sales revenue.

✓ **What is the contribution margin percentage?**

$0.24 ÷ $0.60 = 0.40 (or 40%)

$1,500 ÷ 0.40 = $3,750

Assume that management wants to have a profit of $1,800.

✓ **How many prints must be sold?**

($1,500 + $1,800) ÷ $.24 = 13,750

✓ **What is the target dollar sales?**

($1,500 + $1,800) ÷ 0.40 = $8,250

✓ **Assuming 5000 units volume; what price do U-Develop needs to charge to break even?**

$$\text{B.E. (units)} = \frac{\text{FC}}{\text{CM}}$$

$$\text{B.E. (units)} = \frac{\text{FC}}{(\text{P} - \text{V})}$$

$$5000 = \frac{1500}{(\text{P} - 0.36)}$$

$$5000\,(\text{P} - 0.36) = 1500$$

$$5000\,\text{p} - 1800 = 1500$$

$$5000\,\text{p} = 3300$$

$$\text{P} = 3300 \div 5000 = \$0.66$$

☒ **CVP Summary: Break-Even**

$$\text{Break-even volume (units)} = \frac{\text{Fixed costs}}{\text{Unit contribution margin}}$$

$$\text{Break-even volume (sales dollars)} = \frac{\text{Fixed costs}}{\text{Contribution margin ratio}}$$

☒ CVP Summary: Target Volume

$$\text{Target volume (units)} = \frac{\text{Fixed costs + Target profit}}{\text{Unit contribution margin}}$$

$$\text{Target volume (sales dollars)} = \frac{\text{Fixed costs + Target profit}}{\text{Contribution margin ratio}}$$

☒ CVP Analysis with Spreadsheets

› CVP can be done using Microsoft Excel. It can be done using **Goal Seek** Command from **What IF Analysis Menu.**

Example

U-Develop company data were as follows:

Price =$0.60

Variable Cost /unit=$0.36

Total Fixed Costs= $1500

Required

Using the Goal Seek function in Microsoft Excel,

a. What number must U-Develop sell to break even? What is the dollar sales break even?

b. What number must U-Develop sell to make an operating profits t of $300 per month?

c. Assuming 5000 units volume; what price do U-Develop needs to charge to break even?

Solution

(a) What number must U-Develop sell to break even? What is the dollar sales break even?

1. Open Microsoft Excel worksheet
2. Enter the unit price ($0.60) in cell B3; Variable cost per unit ($0.36) in cell B4; total Fixed Costs ($1500) in cell B5; Volume in cell B8.
3. Enter the formula of profits in cell B7 which is as follows:"=B8*(B3-B4)-B5"
4. With the spreadsheet open, choose the "Data" tab and select "What-If Analysis" from the ribbon. Then select "Goal Seek" from the drop-down box.
5. In the "Set cell:" edit field, enter the cell address for the target profit calculation (B7).
6. In the "**To value**:" edit field, enter the target profit (in this example, the target profit is zero because we are looking for the break-even point).
7. In the "By changing cell:" edit field, enter the cell address of the volume variable ($B$8).
8. Click "OK" and the program will find the break-even volume

	A	B	C
1			
2	**CVP ANALYSIS**		
3	P	0.6	0.6
4	VC (UNIT)	0.36	0.36
5	FC	1500	1500
6			
7	PROFIT	=B8*(B3-B4)-B5	-1500
8	VOLUME		

(b) What number must U-Develop sell to make an operating profits of $300 per month?

1. Repeat steps from 1 to 5.
2. In the "**To value:"** edit field, enter the target profit which is **3000**.
3. In the "**By changing cell:"** edit field, enter the cell address of the volume variable **($B$8)** and make it absolute reference**.**
4. Click "**OK**" and the program will find the volume that achieves **$3000** profits.

	A	B	C
1	**CVP ANALYSIS**		
2			
3	P	0.6	0.6
4	VC (UNIT)	0.36	0.36
5	FC	1500	1500
6			
7	PROFIT	=B8*(B3-B4)-B5	3000
8	VOLUME	18750	18750

(c) Assuming 5000 units volume; what price do U-Develop needs to charge to break even?

1. Repeat Steps 1 to 5 for Q (a)
2. In the "To value:" edit field, enter the target profit (in this example, the target profit is zero because we are looking for the break-even point).
3. In the "By changing cell:" edit field, enter the cell address of the price variable ($B$3).
4. Click "OK" and the program will find the break-even price.

	A	B	C
1	**CVP ANALYSIS**		
2			
3	P		0.66
4	VC (UNIT)	0.36	0.36
5	FC	1500	1500
6			
7	PROFIT	=B8*(B3-B4)-B5	0
8	VOLUME	5000	5000

Exercises

1. Cambridge, Inc., is considering the introduction of a new calculator with the following price and cost characteristics:

   Sales price . . . . . $ 18 each

   Variable costs . . . . . 10 each

   Fixed costs . . . . . 20,000 per month

Required

Using the Goal Seek function in Microsoft Excel,

a) What number must Cambridge sell to break even?
b) Assuming a volume of 3000 units; what the price that Cambridge, Inc. must set in order to break even?
c) What number must Cambridge sell to make an operating profit of $6,000 per month?

2. Balance, Inc., is considering the introduction of a new energy snack with the following price and cost characteristics:

   Sales price . . . . . $ 1.00 per unit

   Variable costs . . . . . 0.20 per unit

   Fixed costs . . . . . 400,000 per month

Required

Using the Goal Seek function in Microsoft Excel,

a) What number must Balance, Inc., sell to break even?
b) Assuming a volume of 600000 units; what the price that Balance, Inc. must set in order to break even.
c) What number must Balance, Inc., sell to make an operating profit of $8,000 per month?

Part (4)

Using A worksheet

Part (4): Using A worksheet

Preparing Financial Statements from a worksheet:

When numerous adjustments are necessary or other complicating factors are present, companies often use a worksheet to assemble and classify the data that will appear on the statement of cash flows. The worksheet is merely a device that aids in the preparation of the statement. Its use is optional.

Steps in preparing an Expanded End-of-Period Spreadsheet:

- Step (1): Enter the title.
- Step (2): Enter the unadjusted trial balance.
- Step (3): Enter the Adjustments.
- Step (4): Enter the adjusted trial balance.
- Step (5): Extend the accounts to the income statement and Balance Sheet Columns.
- Step (6): Total the Income Statement and Balance Sheet Columns, compute the net income or net loss, and complete the spreadsheet.

Example:

Brushstroke Art Studio unadjusted trial balance Dec ,31 ,2019		
	Dr	**Cr**
Cash	22380	
Client Fees Receivable	71250	
Supplies	6000	
Prepaid Studio Rent	2500	
Studio Equipment	96000	
Accumulated Depreciation: Studio Equipment		52000
Accounts Payable		6420
Note Payable		24000
Interest Payable		480
Unearned Client Fees		8000
Income Taxes Payable		5000
Capital		70000
Client Fees Earned		82310
Supply Expense	4000	
Salary Expense	17250	
Interest Expense	480	
Studio Rent Expense	11250	
Utilities Expense	3300	
Depreciation Expense: studio equipment	8800	
Income Taxes Expense	5000	
Total	**248210**	**248210**

Other Data:

1. Supplies on hand at December 31,2019, total $ 1000.
2. The studio pays rent quarterly (every 3 months). The last payment was made November 1,2019. the next payment will be made early in February 2020.
3. Studio equipment is being depreciated over 120 months (10 years).
4. On October 1,2002, the studio borrowed $24000 by signing a 12-month ,12%, note payable. The entire amount, plus interest, is due on September 30,2020.

5. At December 31,2019, $3000 of previously unearned client fees had been earned.
6. Accrued, but unrecorded and uncollected client fees earned total $ 690 at December 31,2019.
7. Accrued, but unrecorded and unpaid salary expense totals $750 at December 31,2019.
8. Accrued income taxes payable for entire year ending December 31,2019, total $7000.the full amount is due early in 2020.

	A	B	C	D	E	F	G	H	I	J	K
1	Brushstroke Art Studio										
2	Worksheet										
3	For the Year Ended December 31, 20xx										
4		**Unadjusted**				**Adjusted**					
5		**Trial Balance**		**Adjustments**		**Trial Balance**		**income statement**		**Balance Sheet**	
6	**Balance Sheet Accounts**	**Dr**	**Cr**	**Dr**	**Cr**	**Dr**	**Cr**	**Dr**	**Cr**	**Dr**	**Cr**
7	Cash	22380				22380				22380	
8	Client Fees Receivable	71250		690		71940				71940	
9	Supplies	6000			5000	1000				1000	
10	Prepaid Studio Rent	2500			1250	1250				1250	
11	Studio Equipment	96000				96000				96000	
12	Acc. depreciation: studio equipment		52000		800		52800				52800
13	Accounts Payable		6420				6420				6420
14	Note Payable		24000				24000				24000
15	Interest Payable		480		240		720				720
16	Unearned Client Fees		8000	3000			5000				5000
17	Income Taxes Payable		5000		2000		7000				7000
18	Salary Payable				750		750				750
19	Capital		70000				70000				**70000**
20	Client Fees Earned		82310		3690		86000		86000		
21	Supply Expense	4000		5000		9000		9000			
22	Salary Expense	17250		750		18000		18000			
23	Interest Expense	480		240		720		720			
24	Studio Rent Expense	11250		1250		12500		12500			
25	Utilities Expense	3300				3300		3300			
26	Dep. Expense: Studio Equipment	8800		800		9600		9600			
27	IncomeTaxes Expense	5000		2000		7000		7000			
28	Total	**248210**	**248210**	**13730**	**13730**	**252690**	**252690**	**60120**	**86000**	**192570**	**166690**
29	Net income							25880			25880
30	Total							**86000**	**86000**	**192570**	**192570**

The difference between the income statement column totals is the net income (or net loss) for the period. The difference between the balance sheet column totals is also the net income (or net loss) for the period.

Selecting the Best Alternative Using Scenario Manager Tool

Scenario manager is a part of What-If Analysis menu in Excel. Scenario is a group of commands that are saved and replaced automatically by Microsoft Excel in the worksheet. It can be used to forecasting the results in case of changing the data used in attaining these results.

Scenario manager tool can be used to differentiate among alternatives. This is known in managerial accounting as Differential Analysis, where the company compares different alternatives for solving a specific problem with the aim of getting the best alternative for solving this problem.

Example

Suppose that a company produces and sells only one product and that it faces sequential losses. The following data represents the activities of this company:

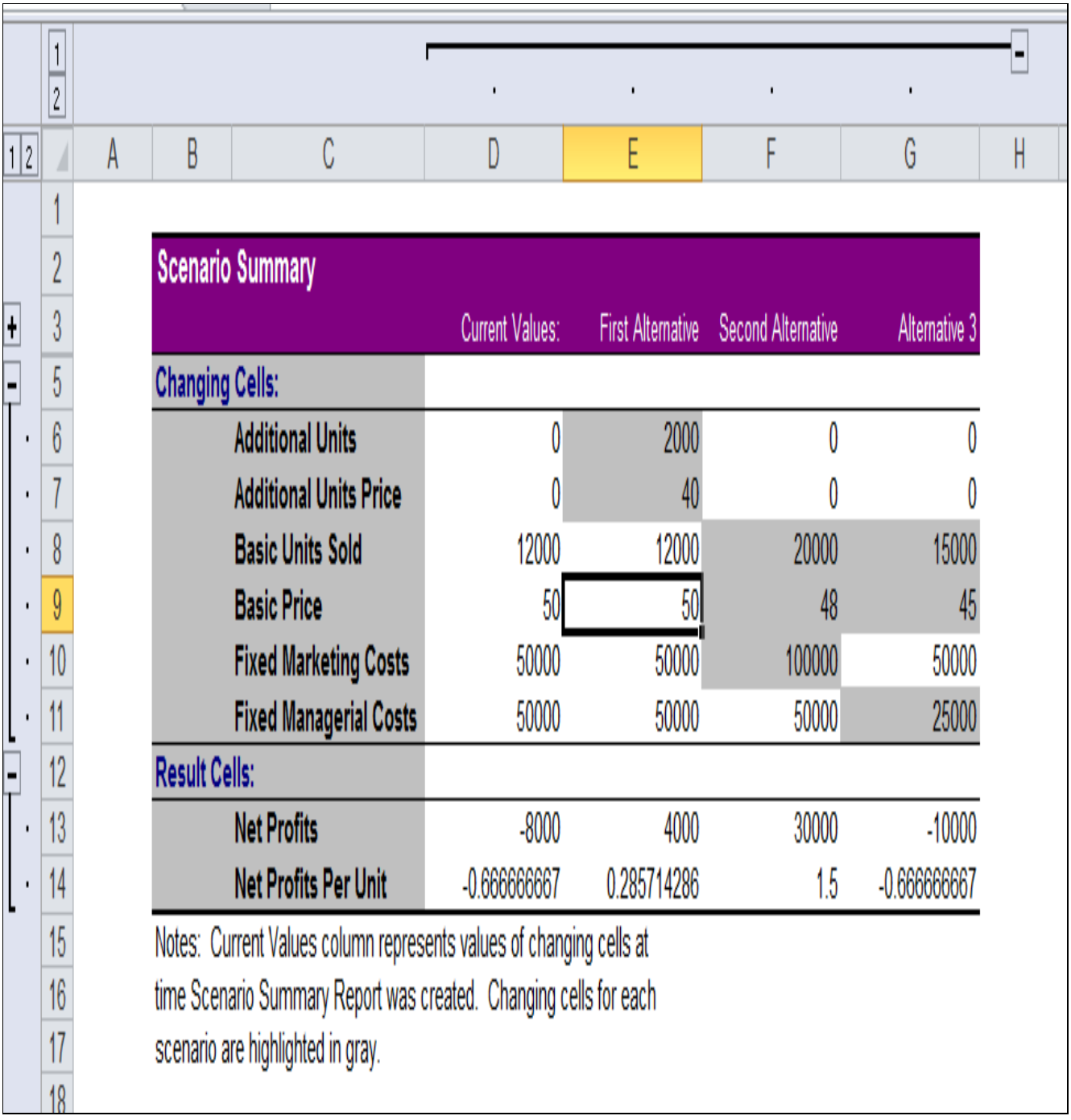
- ✓ **Variable Costs per unit:**
  - DM $22
  - DL $5
- ✓ **Marketing Costs:**
  - Direct Marketing Costs $4
  - Indirect (variable) Marketing Costs $3
- ✓ **Fixed Costs:**
  - Fixed Manufacturing Costs $100,000
  - Fixed Marketing Costs $50,000
  - Fixed Managerial Costs $50,000

- ✓ The company sold 12,000 units during August 2014 at $50 per unit.
- ✓ The company evaluates the following alternatives to overcome the losses that achieved during August 2014:
- ✓ The special offer of selling additional 2000 units for a customer at $40 per unit. The company will not incur any additional marketing costs other than the direct marketing costs associated with these units.
- ✓ Making advertising campaign leading to increasing fixed marketing costs by $50,000, with decreasing unit selling price to $48. Sales will be increased to 20,000 units.
- ✓ Decreasing Fixed Managerial costs to $25,000, and decreasing selling price to $45. This will increase sales to 15000 units without incurring any additional manufacturing or marketing costs.

Solution

1. Open a new worksheet
2. Prepare an income statement for the current position. Consider the accounting principles during preparing it, meaning that sales should be calculated by multiplying the no. of units sold by sales price, variable cost items are calculated by multiplying the cost per units by the no. of units sold, finally, the fixed costs per unit are calculated by dividing the total fixed costs over the no. of units. The following table shows the income statement for the current position (you have to make this in your answer sheet). Note: You have to insert a row for the additional units and insert their values as zeros.
3. From What-If Analysis menu select the command Scenario Manager.
4. On the scenario manager tabulate click the "Add" button to add the variables of the first scenario.
5. On the "Add Scenario" screen write a name for the first scenario, e.g. First Alternative.
6. In the changing cells refer to cells B5 & B6 (the no. of additional units and their price). Then click "OK".
7. A new screen appears to determine the values of the first scenario, you should write 2000 and 40 for the no. of additional units and the price for them, then click "OK".
8. "Scenario Manager" screen appears again, click "Add" to add the variables of the second scenario.

9. “Scenario Manager” screen appears again to add the variables of the second scenario. Write “Second Alternative as a name for the second scenario and refer to the cells of the basic units no., the basic selling price, and the fixed marketing costs. Then click OK.
10. Insert the values of the second scenario which are 20000, 48, and 100000 for the basic selling price, and the fixed marketing costs respectively. then click “OK”.
11. Add the variables of the third scenario, write “Third Alternative” as the name of the third scenario. Refer to cells of basic units no., basic selling price, and fixed manufacturing costs, then click “OK”.
12. Insert the values 15000, 45, and 25000 for basic units no., basic selling price, and fixed manufacturing costs respectively.
13. After inserting all scenarios, click on “Summary” button to show the results of the differentiation among the three scenarios. On results cells refer to the cell of net income (loss). After clicking “OK” the scenario summary worksheet appears on the excel file. The scenario summary sheet includes the cells that are changing among alternatives in addition to the result cell which is the net income(loss) cell. You have to show this table in your answer sheet.
14. It is clear that the second alternative represents the best option for the company. You can show the income statement using the values of this scenario by highlighting the name of the second scenario which is “Second Alternative” and clicking show button on the scenario manager screen. (You have to show this in your answer sheet).



Scenario Summary	Current Values:	First Alternative	Second Alternative	Alternative 3
Changing Cells:				
Additional Units	0	2000	0	0
Additional Units Price	0	40	0	0
Basic Units Sold	12000	12000	20000	15000
Basic Price	50	50	48	45
Fixed Marketing Costs	50000	50000	100000	50000
Fixed Managerial Costs	50000	50000	50000	25000
Result Cells:				
Net Profits	-8000	4000	30000	-10000
Net Profits Per Unit	-0.666666667	0.285714286	1.5	-0.666666667

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

F22 f_x

	A	B	C	D	E	F	G
1	**Item**		**No. of units**		**Per Unit Value**		**Total**
2	Sales	12000	12000	50	50	=B2*D2	600000
3	Additional units	0	0	0	0	=B3*D3	0
4	Total Sales	=B2+B3	12000			=F2+F3	600000
5							
6	(-) Variable Costs						
7	DM			22	22	=D7*B4	264000
8	DL			5	5	=D8*B4	60000
9	D. Marketing			4	4	=D9*B4	48000
10	Ind. Marketing			3	3	=D10*B4	36000
11	Total Variable Costs			=SUM(D7:D10)	34	=SUM(F7:F10)	408000
12	Contribution Margin			=F12/B4	16	=F4-F11	192000
13	(-) Fixed Costs						
14	Manufacturing			=F14/B4	8.33333333333333	100000	100000
15	Marketing			=F15/B4	4.16666666666667	50000	50000
16	Managerial			=F16/B4	4.16666666666667	50000	50000
17	Total Fixed Costs			=SUM(D14:D16)	16.6666666666667	=SUM(F14:F16)	200000
18	Net Profits (Losses)			=D12-D17	-0.666666666666668	=F12-F17	-8000

Part (5)

Questions

Answer the following questions:

Question one:

Determine whether each one of the following statements is true or false:

1. The term “spread” comes from ledger sheets that spread across facing pages in a journal used many years ago by bookkeepers and accountants.
2. To select an adjacent range, click the cell in a corner of the range, drag the pointer to the cell in the opposite corner of the range, and release the mouse button.
3. You can change the location of the Quick Access toolbar and customize it to include commands that you use frequently.
4. If you want to create a series starting at 2 and increasing by 2, you can put 2 in the first cell and 4 in the second cell, select both cells, and then use the fill handle to extend the series to your desired end value.
5. The contents of the active cell always appear in the Formula Bar.
6. By default, gridlines, row numbers, and column letters appear in the worksheet but not on the printed page.

7. A formula with multiple operators is calculated using the order of evaluation.
8. The result of the following equation in Excel: 8 – 16/ 2 ^3 is 6.
9. To make Excel show FV in positive you should enter the value of periodical payments in negative
10. When a cell contains a function or a formula, the Fill handle acts as a copy tool.
11. The Save As command saves an existing workbook, using its current name and save location.
12. In Excel 2010, the view shortcuts toolbar displays various messages as well as the status of the Num Lock, Caps Lock, and Scroll Lock keys on the keyboards
13. To use the AutoFill technique, Type the first few letters in a cell,

and if a similar value exists in the same column, Excel suggests the existing value.

14. To begin a formula in a cell, first type the # symbol
15. If the column is too narrow, part of the data you enter in the cell will get deleted.
16. An operand is a symbol that indicates the type of calculation to perform on the operands, such as a plus sign (+) for addition.
17. Statistical functions manipulate quantitative data in a worksheet.

18. CEILING function is a statistical function that rounds a number to the nearest integer or to the nearest multiple of significance.
19. COUNT function is a mathematical function that counts how many numbers are in the list of argument.
20. AND function Returns TRUE if any argument is TRUE.
21. A range is identified by the addresses of the cells in the upper-left and lower-right corners of the selected block of cells, separated by a colon.
22. Only one cell can be active at a time.
23. In the relative reference, the cell value is changed as the formula is copied.
24. In an adjacent range, all cells touch each other and form a rectangle.
25. Some mathematical operations, such as addition and subtraction, do not require functions.
26. Status bar displays the active cell address or the name of the selected cell, range, or object.
27. File menu Contains commands that affect the overall appearance of a worksheet, including some settings that deal with printing.
28. To move the active cell to the last used cell in the worksheet, you should click Alt+ Page Down.
29. The Save command lets you save a workbook with a new name or to a new location
30. Each formula is considered as a function, but the opposite is not true.
31. You can create an Excel workbook without starting the Excel application.

32. The Quick Access toolbar contains frequently used commands that are independent of the tab displayed on the Ribbon.
33. Insert menu contains commands used to insert a forum, name a cell or a rage, audit a formula, or control how Excel performs calculations.
34. You must select the cell (activate the cell) before you add information to it.
35. You cannot add or remove commands from the quick access toolbar.
36. Copying duplicates the cell or range in another location, while also leaving the cell in its original location.
37. Split window allows the user to work in multiple areas of a large spread sheet and focus the view on specific cell ranges.
38. By default, when a formula is created, references to cells or ranges are usually based on their position relative to the cell that contains the formula.
39. Excel performs the operations from right to left according to the order of operator precedence.
40. When a cell contains a function or a formula, the Fill handle acts as a copy tool.
41. By default, new workbooks contain three worksheets.
42. An Excel workbook can be created without starting the Excel application.
43. Each worksheet consists of 1,048,576 columns (numbered 1 through 1,048,576) and 16,384 rows (labeled A through XFD).
44. The active cell as a thick black border around it and its address appears in the formula bar.
45. In excel application, the title bar displays the active cell address or the name of the selected cell, range, or object.
46. In the excel application, the status bar is used to display the worksheet in a variety of views, each suited to a specific purpose.
47. A non-adjacent range consists of separate blocks of cells that are selected at the same time.
48. When a range of cells is selected, every cell in the range is highlighted, except for the active cell.
49. To begin a formula in a cell, first type the # symbol.

50. If the column is too narrow, part of the data you enter in the cell will get deleted.
51. Changing the Format of a cell changes the value of the number stored in the cell.
52. If a long value doesn't fit in a cell. Excel displays a row of * characters.
53. The label classification is used for cells that contain text or for numbers that will not be used in calculations.
54. Fill Series is used to fill a column or row with consecutive data.
55. IRR function returns the internal rate of return where positive and negative cash flows are financed at different rates.
56. DB function Returns the depreciation of an asset for a specified period by using the double-declining balance method or some other method that you specify.
57. The order of the elements in a formula does not affect the final result of the calculation.
58. If the value for C7 is 2; C8 is 4; and F4 is 2, then the result of the equation =C7+C8*F4 is 12.
59. STDEV.P function Estimates standard deviation based on a population.
60. If the value for A2 is 10 and the value of A3 is 2, then, =A2+A3 is a better formula than =10+2 because of flexibility

<u>Question Two</u> Select the best answer:

1. Which cell becomes active when you press the "Enter" key?
   A) Cell A1. B) The cell at the bottom of the next column.
   C) The next cell down.
   D) The cell at the end of the current row.

2. Auto Fill (as it applies to Excel 2010)
   A) enables you to copy the contents of a cell or to continue a sequence by dragging the fill handle.
   B) is the fastest way to type A1 in the name box.
   C) is adjustable so you can display more or less characters in a column.
   D) helps carry over the fill to the remaining worksheets.

3. A nonadjacent range
   A) is the best tool to use to decide which numbers to select.
   B) is selected with the "Ctrl + Alt + Delete" key combination.
   C) contains two or more cells or ranges that are not touching each other.
   D) isn't possible in Excel 2010.

4. If you type January in a cell and then drag that cell's fill handle up (or to the left), Excel places:
   A) December in the first cell, November in the second cell, and so on.
   B) February in the first cell, March in the second cell, and so on.
   C) Copy January on all the selected cells.
   D) Excel gives error message.

5. To move data to a new line when the cell is not wide enough to display all the contents, you should use the following button:
   A) Alignment B) Orientation
   C)Wrap text D) Merge

6. To move to the next worksheet in Excel workbook you should use the shortcut keys:
   A) Ctrl + Page Down B) Ctrl + Page Up
   C) Ctrl + Right Arrow C) Ctrl + Left Arrow

7. If you have sales data for a given month and you want to calculate the sales amount for days in which the quantity sold exceeds specific number of units. The proper function to be used is:
   A) SUM B) SUMIF
   C) COUNTA D) COUNTIF

8. The result of the following formula" = (2+8)/4*2^3" on Microsoft Excel is:
   A) 2.333 B) 20
   C) 18 D) Another value

9. The tool that is used to allocate limited resources among competitive demands is called:
   A) Goal Seek B) Scenario Manager
   C) Data Table D) Another tool

10. The scenario summary table produces by scenario manager tool includes all the following items *except:*
   A) Changing cells B) Result Cells
   C) Current Values D) Slack

11. When you enter text into a cell, which Excel feature works behind the scenes to recognize and correct common mistakes?
A. Auto Change
B. AutoText
C. Spelling & Grammar Check
D. Auto Correct

12. The Formula Bar (as it applies to Excel 2010)
A. Displays the name of a worksheet within a workbook.
B. Is at the intersection of a column and a row.
C. Identifies the address of the current cell.
D. displays the content of the active cell

13. To go to the last cell of the column and row that contain data you should use the following keys:
A. Page up key
B. Page Down Key
C. Ctrl+ Home key
D. None of the above

14. The result of the formula: 2X7+(8-5)^2/4 is:
A. 64
B. 15.4
C. 15
D. Another Value

15. Which of the following causes Excel 2010 to recognize data entered into a cell as text rather than number format?

A. Parentheses ( )
B. Forward Slash (/)
C. Percent sign (%)
D. A space

16. ---------- contains all the commands related to managing workbooks and working with workbook content

A. Ribbon
B. Quick Access toolbar
C. Workbook window
D. None of the above

17. To calculate the total of a series of daily sales that exceeds specific amount, the most appropriate function is:

A. SUMIF
B. SUM
C. ADD
D. Another Function

18. ---------- function Rounds number down, toward zero, to the nearest multiple of significance.

A. FLOOR
B. CEILING
C. ROUND
D. ABS

19. The tab that displays the backstage view containing commands related to managing files and customizing the program is:

A. File
B. Insert
C. Home
D. View

20. Which of the following do you use to move down one cell in an Excel 2010 worksheet?
A. Enter key
B. Right arrow key
C. Page Up key
D. Home key

21. What function adds all of the numbers in a range of cells?
A. Calculate
B. Sum
C. Compute
D. Add

22. Which is an example of a formula?
A. =add(A1:A2)
B. =A1+A2
C. A1+A2
D. SUM(A1:A2)

23. ---------- function counts how many values in argument that are not empty.
A. COUNT
B. COUNTA
C. COUNTIF
D. None of the above

24. Cost-Volume-Profit Analysis (CVP) can be done using ---------- function:
A. WHAT IF
B. GOAL SEEK
C. SCENARIO MANAGER
D. None of the above

25. Which of the following do you use to move up one window in an Excel 2010 worksheet?
A. Right arrow key
B. Enter key
C. Page Up key
D. Home key

26. The Formula Bar (as it applies to Excel 2010)
A. displays the name of a worksheet within a workbook.
B. is at the intersection of a column and a row.
C. identifies the address of the current cell.
D. displays the content of the active cell.

27. A cell (as it applies to Excel 2010)
A. must have formulas entered into it.
B. cannot be used for labels or headings.
C. must have text entered into it.
D. is the intersection of a column and a row

28. One of the methods of data entry is to enter the first value in a recognized series and use the fill handle to extend the series. This method is called:
A. AutoFill B. Fill Series
B. AutoComplete D. None of the above

29. The result of the following formula"=2+8/4*2^3" on Microsoft Excel is"
A. 2.333 B. 56
C. 18 D. Another value

30. The function that rounds a number down to the nearest integer is:
A. ROUND B. INT
C. CEILING D. FLOOR

31. The function that counts how many values in a range is:
A. COUNTA B. COUNT
C. COUNTIF D. SUM

32. If you have a list of students in a specific subject and you want to calculate the number of passed students in each subject. What is the most suitable function that should be used?
A. SUMIF B. COUNT
C. COUNTIF D. COUNTA

33. Suppose that you got L.E. 30,000 loan from a bank to be repaid on equal monthly payments over three years. What is the suitable formula that should be used to calculate the value of monthly installments assuming 7% interest rate?

A. FV B. PV

C. RATE D. PMT

34. The function that returns TRUE if all arguments are satisfied is:

A. IF B. AND

C. OR D. a combination of IF & OR functions

35. A spreadsheet PROGRAM is defined as

A) a software application used to create and modify a database.

B) a software application used to create and modify text-based documents.

C) a software application used to create and modify video presentations.

D) a software application used to create and modify spreadsheets.

36. A spreadsheet

A) is the core of a slide presentation.

B) is an electronic file that is used to write text and graphics on the web.

C) is an electronic file that contains a grid of columns and rows for related data.

D) is another word for a letter written on a computer.

37. A worksheet is defined as

A) the background color of a cell.

B) a single spreadsheet that often contains formulas, functions, values, text, and visual aids.

C) the current cell location of the insertion points as indicated by a dark border.

D) an unfinished project.

38. A workbook is defined as
A) a file containing related worksheets
B) an un-editable "picture" of data.
C) the address of the current cell.
D) similar to a spreadsheet but bound rather than electronic.

39. To select an entire column in MS-EXCEL, press?
A) CTRL + C
B) CTRL + Arrow key
C) CTRL + S
D) None of the above

40. In excel worksheet the “title bar”:
A) Displays the data or formula stored in the active cell. It can also be used to enter or edit a formula, a function, or data in a cell.
B) Displays the active cell address or the name of the selected cell, range, or object.
C) Displays the name of the workbook and the program.
D) None of the above

41. Which of the following is not a term of MS-Excel?
A) Cells
B) Document
C) Columns
D) Non of the above

42. What happens when dollar signs ($) are entered in a cell address? (ex. $B$2:$B$10)?
A) An absolute cell address is created.
B) Cell address will change when it is copied to another cell.
C) The sheet tab is changed.
D) The status bar does not display the cell address.

43. Which of the following causes Excel 2010 to recognize data entered into a cell as text rather than number format?
A) A space
B) Parentheses ( )
C) Forward Slash (/)
D) Percent sign (%)

44. Which is an example of a formula?
A) =add(A1:A2)
B) =A1+A2
C) A1+A2
D) SUM(A1:A2)

45. Which is an example of a function?
A) =add(A3:A4)
B) =A3+A4
C) =SUM(A3:A4)
D) A1+A2

46. Which of the following syntax is correct regarding to SUM function in Excel?
A) =SUM (A3, C2)
B) =SUM (A1:C9)
C) =SUM (A3:A11, C2:C10)
D) All of the above

47. Which of the following function will use to find the highest number in a series of number?
A) MAX(B1:B3)
B) MAXIMUM (B1:B3)
C) HIGH (B1:B3)
D) HIGHEST(B1:B3)

48. Which function Returns the future value of an initial principal after applying a series of compound interest rates
A) FV function
B) FVSCHEDULE function
C) DURATION function
D) EFFECT function

49. What does COUNTA () function do?
A) Counts cells having alphabets
B) Counts how many numbers are in the list of arguments
C) Counts how many values are in the list of arguments
D) Counts the number of blank cells within a range

50. The Ofunction that returns TRUE if any argument is TRUE is:
A) AND Function
B) TRUE Function
C) IF Function
D) OR Function

51. The function that rounds a number down to the nearest integer is:
A) CEILING Function
B) FLOOR Function
C) ABS Function
D) INT function

52. The PMT Function:
A) Returns the number of periods for an investment
B) Returns the payment on the principal for an investment for a given period
C) Returns the periodic payment for an annuity
D) None of the above

53. The function that Estimates standard deviation based on the entire population is:
A) STDEV.S
B) STDEV.P
C) MODE
D) MEDIAN

54. The function that returns the most common value in a data set
A) MODE.SNGL function
B) MODE.MULT function
C) MEDIAN function
D) None of the above

55. If you have a data for group of applicants and you want to determine the selected applicant that passed two requirment out of three, the appropriate function here is:
A) IF B) AND
C) OR D) IF in combination wit OR

Question Three:

1. On March 1, 2020, Ayman Ahmed, an accountant, opened his own accounting & auditing office, to be known as Ayman Ahmed Accounting & Auditing Office. The business adjusts and closes its accounts at the end of each month. The following trial balance was prepared at May 31, 2020, after 3 months of operations:

Ayman Ahmed Accounting & Auditing Office
Trial Balance
May 31, 2020

Account Titles	**Dr L.E.**	**Cr L.E.**
Cash	20,000	
Accounting Fees Receivables	2500	
Unexpired Insurance	2,000	
Prepaid Rent	3,200	
Office Supplies	1,400	
Office Equipment	60,000	
Accumulated Depreciation: Office Equipment		1000
Notes Payable		16,000
Interest Payable		0
Salaries Payable		0
Unearned Accounting Fees Revenue		16,000
Capital		60,000
Drawings	4,000	
Accounting Fees Revenue		4000
Salaries Expense	2,800	
Utilities Expense	1,100	
Rent Expense	0	
Office Supplies Expense	0	
Depreciation Expense: Office Equipment	0	
Interest Expense	0	
Insurance Expense	0	
Total	**53,600**	**53,600**

Additional Information:

1- No interest has yet been paid on note payable. Accrued interest at May 31 amounts to L.E. 300.

2- Accrued Salaries that have not yet recorded or paid amounted to L.E. 4,200 at May 31.

3- Many clients are asked to make an advance payments for the accounting services to be rendered in future months. These advance payments are credited to the Unearned Accounting Fees Revenue account. During May, L.E. 8,000 of these advances were earned by the business.

4- Some clients are not billed until all services relating to their matter have been rendered. As of May 31, services priced L.E. 4,000 had been rendered to these clients but had not yet been recorded in the accounting records.

5- An insurance policy was pasurchased on March 1. The premium of L.E. 3,000 for the first six months was paid and recorded as Unexpired Insurance.

6- On April 1, L.E. 4,800 three months rent was paid in advance and charged to the Prepaid Rent account.

7- Office supplies consumed during May amounted L.E. 400.

8- The office equipment was purchased on March 1.

Required

Prepare a 5-columns worksheet including the following:

- Trial Balance
- Adjustments
- Adjusted Trial Balance
- Income Statement
- Balance Sheet

2. Using Microsoft Excel 2010, show, theoretically, the steps of calculating the following:

First:(Show the results for this question in your answer sheet):

Al-Yasmin Company purchased a machine for L.E. 85,000, the estimated useful life is 5 years and the estimated residual value is L.E. 10,000. Calculate the annual depreciation expenses using the following depreciation methods:

A- Straight Line

B- Sum of the Year Digits.

Second:(Show steps only)

Mahmoud Co. produces two types of products X & Y. The price of X is $9 per unit whereas the price of Y is $17.5 per unit. The co. uses three production resources; materials, labor, and machines. The available amounts of these resources are limited.

Information:

1-Each unit of X needs 2 kg materials half an hour of DL and one machine hour. Each unit of Y needs 2 kg materials, 2 DL hours and 3 machine hours.

2- The cost of materials is $2 per kg, the cost of labor is $1 per hour, and the cost of machines is $1.5 per hour.

3- The available resources are 4000 kg of materials, 2500 labor hours and 4800 machine hours.

Required

What are the optimum mix of these products that maximizes the company's profits?

3. On March 1, 2020, Israa & Sara, accountants, opened their own accounting and auditing practice, to be known as Aswanko accounting Office. The business adjusts and closes its accounts at the end of each month. The following trial balance was prepared at March 31, 2020, after 1 month of operations:

Aswanko Accounting Office
Trial Balance
March 31, 2020

Account Titles	**Dr L.E.**	**Cr L.E.**
Cash	100,600	
Accounting Fees Receivable	0	
Unexpired Insurance	30,000	
Prepaid Rent	48,000	
Office Supplies	14,600	
Office Equipment	264,000	
Accumulated Depreciation: Office Equipment		0
Notes Payable		160,000
Interest Payable		0
Salaries Payable		0
Unearned Accounting Fees Revenue		160,200
Capital		200,000
Drawings	40,000	
Accounting Fees Revenue		15,800
Salaries Expense	26,800	
Utilities Expense	12000	
Rent Expense	0	
Office Supplies Expense	0	
Depreciation Expense: Office Equipment	0	
Interest Expense	0	
Insurance Expense	0	
Total	536,000	536,000

Additional Information:

1- No interest has yet been paid on note payable. Accrued interest at March 31 amounts to L.E. 1800.

2- Salaries earned by the office staff but not yet recorded or paid amounted to L.E. 34,700 at March 31.

3- Many clients are asked to make an advance payment for the accounting and auditing services to be rendered in future months. These advance payments are credited to the Unearned Accounting Fees Revenue account. During March, L.E. 77,000 of these advances were earned by the business.

4- Some clients are not billed until all services relating to their matter have been rendered. As of March 31, services priced L.E. 47,800 had been rendered to these clients but had not yet been recorded in the accounting records.

5- A professional liability insurance policy was purchased on March 1. The premium of L.E. 30,000 for the first 15 months was paid and recorded as Unexpired Insurance.

6- On March 1, L.E. 48,000 12 months rent was paid in advance and charged to the Prepaid Rent account.

7- Office supplies remaining on hand on March 31 amounted L.E. 11,000.

8- The office equipment was purchased on March 1 and is being depreciated over an estimated useful life of 10 years.

Required

Prepare a 5-columns worksheet including the following:

A. Trial Balance
B. Adjustments
C. Adjusted Trial Balance
D. Income Statement
E. Balance Sheet

4. Using Microsoft Excel 2010, show, theoretically, the steps of calculating the following:

First:(Show the results for this question in your answer sheet):

Al-Samah Company purchased a machine for L.E. 100,000, the estimated useful life is 5 years and the estimated residual value is L.E. 10,000. Calculate the annual depreciation expenses using the following depreciation methods:

A. Straight Line
B. Double Declining Balance

Second:(Show steps only)

Balance, Inc. is considering the introduction of a new energy snack with the following price and cost characteristics:

Sales price . . . . . $ 1.00 per unit
Variable costs . . . . . 0.20 per unit
Fixed costs . . . . . 400,000 per month

Required

Using the Goal Seek function in Microsoft Excel:

A. What number must Balance, Inc., sell to break even?
B. What number must Balance; Inc. sell to make an operating profit of $8,000 per month?
C. Assuming a volume of 600000 units; what the price that Balance, Inc. must set in order to break even.

5. On June 1, 2020, Alsohagy, an attorney, opened his own legal practice, to be known as Alsohagy Law Office. The business adjusts and closes its accounts at the end of each month. The following trial balance was prepared at June 30, 2020, after 1 month of operations:

Alsohagy Law Office
Trial Balance
June 30, 2020

Account Titles	**Dr L.E.**	**Cr L.E.**
Cash	10,060	
Legal Fees Receivable	0	
Unexpired Insurance	3,000	
Prepaid Rent	4,800	
Office Supplies	1,460	
Office Equipment	26,400	
Accumulated Depreciation: Office Equipment		0
Notes Payable		16,000
Interest Payable		0
Salaries Payable		0
Unearned Legal Fees Revenue		16,020
Capital		20,000
Drawings	4,000	
Legal Fees Revenue		1,580
Salaries Expense	2,680	
Utilities Expense	1,200	
Rent Expense	0	
Office Supplies Expense	0	
Depreciation Expense: Office Equipment	0	
Interest Expense	0	
Insurance Expense	0	
Total	53,600	53,600

Additional Information:

1- No interest has yet been paid on note payable. Accrued interest at June 30 amounts to L.E. 180.

2- Salaries earned by the office staff but not yet recorded or paid amounted to L.E. 3,470 at June 30.

3- Many clients are asked to make an advance payment for the legal services to be rendered in future months. These advance payments are credited to the Unearned Legal Fees Revenue account. During June, L.E. 7,700 of these advances were earned by the business.

4- Some clients are not billed until all services relating to their matter have been rendered. As of June 30, services priced L.E. 4,780 had been rendered to these clients but had not yet been recorded in the accounting records.

5- A professional liability insurance policy was purchased on June 1. The premium of L.E. 3,000 for the first six months was paid and recorded as Unexpired Insurance.

6- On June 1, L.E. 4,800 three months rent was paid in advance and charged to the Prepaid Rent account.

7- Office supplies remaining on hand on June amounted L.E. 1,100.

8- The office equipment was purchased on June 1 and is being depreciated over an estimated useful life of 10 years.

Required

Prepare a 5-columns worksheet including the following:

A. Trial Balance
B. Adjustments
C. Adjusted Trial Balance
D. Income Statement
E. Balance Sheet

6. Suppose that a company produces and sells only one product and that it faces sequential losses. The following data represents the activities of this company:

- Variable Costs per unit: DM $22; DL$5
- Marketing Costs: Direct Marketing Costs $4; Indirect (variable) Marketing Cost $3.
- Fixed Costs: Fixed Manufacturing Costs $100,000; - Fixed Marketing Costs $50,000- Fixed Managerial Costs $50,000.
- The company sold 12,000 units during August 2014 at $50 per unit.

* The company evaluates the following alternatives to overcome the losses that achieved during August 2020:

1- A special offer of selling additional 2000 units for a customer at $40 per unit. The company will not incur any additional marketing costs other than the direct marketing costs associated with these units.

2- Making advertising campaign leading to increasing fixed marketing costs by $50,000, with decreasing unit selling price to $48. Sales will be increased to 20,000 units.

3- Decreasing Fixed Managerial costs to $25,000, and decreasing selling price to $45. This will increase sales to 15000 units without incurring any additional manufacturing or marketing costs.

Required

A. Using Microsoft Excel, show the therotical steps to the analyze the current position of the company and to analyze the three possible alternatives.
B. Show the following tables:
   i. The income statement for the current position.
   ii. Scenario Summary
   iii. The income statement for the best possible alternative

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