Lab No. 04: Microsoft Excel (Basic Features)

Key Points:

1. Number formatting
2. Formula bar
3. Address bar
4. Cell formatting
5. Sheet formatting
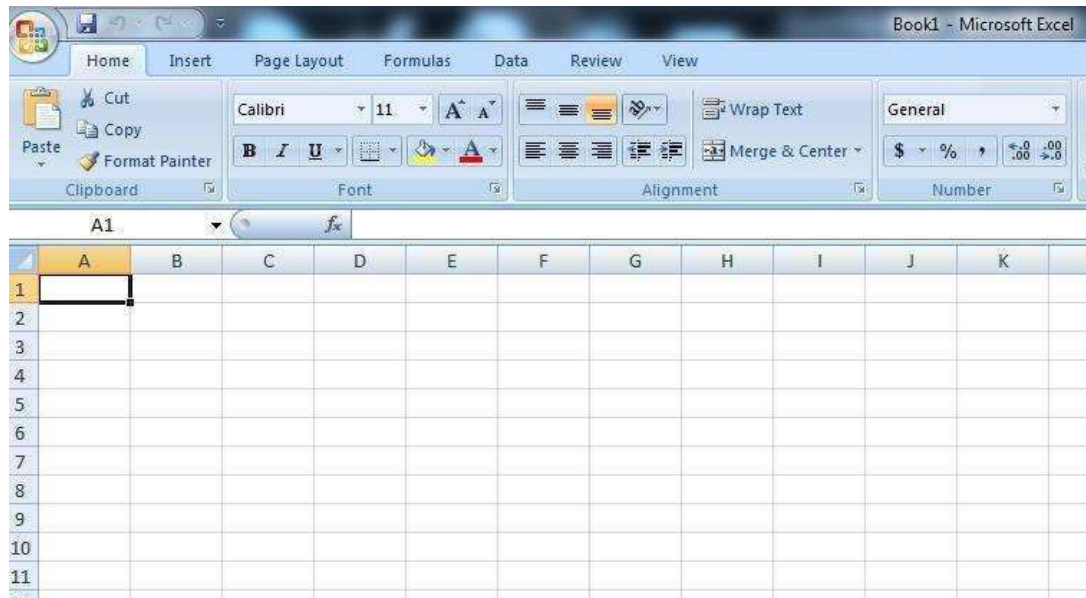6. Performing mathematical calculation

Objective:

- To understand how to work in MS Excel.

CLO's

- CLO: 01, 02
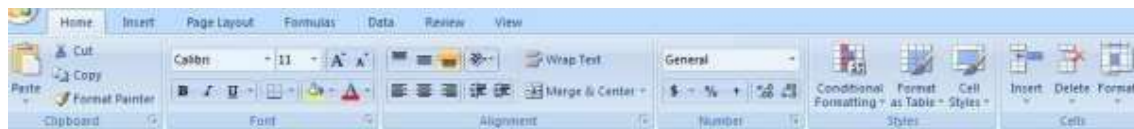
The Microsoft Excel Window
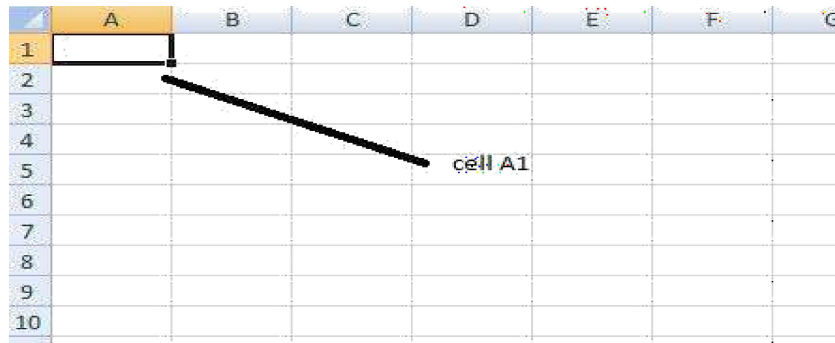

The Title Bar

Toolbars:

The Standard Toolbar & Formatting Toolbar

Worksheets:

Microsoft Excel consists of worksheets. Each worksheet contains columns and rows. The columns are lettered A to IV **(256);** the rows are numbered 1 to **65536. The combination of a column coordinate and a row coordinate make up a cell address.** For example, the cell located in the upper left corner of the worksheet is cell A1, meaning column A, row 1. Cell E10 is located under column E on row 10. You enter your data into the cells on the worksheet.
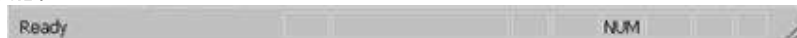
The Formula Bar:

Formula Bar
The cell address displays in the Name box on the left side of the Formula bar. Cell entries display on the right side of the Formula bar
The Status Bar:

Status Bar
Entering Numbers as Labels or Values:

In Microsoft Excel, you can enter numbers as labels or as values.

Labels are alphabetic, alphanumeric or numeric text on which you do not perform mathematical calculations.

Values *are numeric text on which you perform mathematical calculations.* If you have a numeric entry, such as an employee number, on which you do not perform mathematical calculations, enter it as a label by typing a single quotation mark **(')** first.
Formatting Numbers:
You can format the numbers you enter into Microsoft Excel. You can add **commas** to separate thousands, specify the number of decimal places, place a dollar sign in front of the number, or display the number as a percent in addition to several other options.

Before Formatting   After Formatting

1. Move the cursor to cell A5.
2. Type **1234567**.
3. Press Enter.
4. Move the cursor back to cell A5.

5. Choose *Format > Cells* from the menu. The Format Cells dialog box will open.
6. Choose the Number tab.
7. Click Number in the Category box.
8. Type **2** in the Decimal Places box.
9. Place a check mark in the Use 1000 Separator box.
10. Click OK. The number should now display with two decimal places. The thousands should now be separated by commas.

Adding a Dollar Sign to a Numeric Entry:
1. Move the cursor to cell A5.
2. Choose *Format > Cells* from the menu. The Format Cells dialog box opens.
3. Choose the Number tab.
4. Click Currency in the Category box.
5. Make sure there is a "$" in the Symbol box.
6. Click OK. The number displays with a dollar sign.

4	
5	$1,234,567.00
6	

Alternate Method: Formatting Numbers by Using the Toolbar:
1. Move the cursor to cell A6.
2. Type **1234567**.
3. Press Enter.
4. Move the cursor back to cell A6.
5. Click twice on the Increase Decimal icon to change the number format to two decimal places. Clicking on the Decrease Decimal icon decreases the decimal places.
6. Click once on the Comma Style icon to add commas to the number.
7. To change the number to a currency format, click Accounting Number format.
8. Move the cursor to cell A7.
9. Type **.35** (note the decimal point).
10. Press Enter.
11. Move the cursor back to cell A6.
12. Click the percent Style icon to turn .35 to a percent.

Performing mathematical calculations:
Making Numeric Entries

In Microsoft Excel, you can enter numbers and mathematical formulas into cells. When a number is entered into a cell, you can perform mathematical calculations such as addition, subtraction, multiplication, and division. When entering a mathematical formula, precede the formula with an equal sign. Use the following to indicate the type of calculation you wish to perform:

+ Addition

- Subtraction

* Multiplication

/ Division

^ Exponential

Performing Mathematical Calculations

The following exercises demonstrate how to perform mathematical calculations.

Addition

1. Move your cursor to cell A1.
2. Type **1**.
3. Press Enter.
4. Type **1** in cell A2.
5. Press Enter.
6. Type **=A1+A2** in cell A3.
7. Press Enter. Cell A1 has been added to cell A2, and the result is shown in cell A3. .

Subtraction

1. Press F5. The Go to dialog box opens.
2. Type **B1** in the Reference field.
3. Press Enter. The cursor should move to cell B1.
4. Type **5** in cell B1.
5. Press Enter.
6. Type **3** in cell B2.
7. Press Enter.
8. Type **=+B1- B2** in cell B3.
9. Press Enter. Cell B1 has been subtracted from B2, and the result is shown in cell B3.
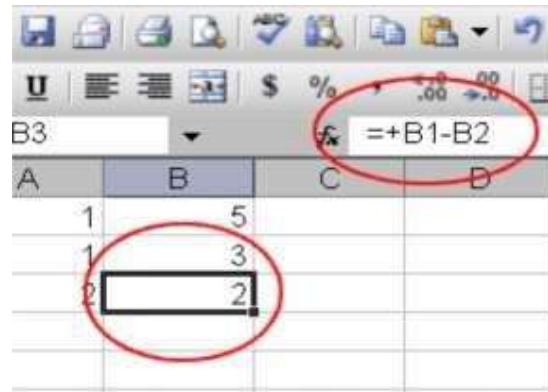
Multiplication

1. Hold down the Ctrl key while you press "g" (Ctrl-g). The Go To dialog box opens.
2. Type **C1** in the Reference field.
3. Press Enter. You should now be in cell C1.
4. Type **2** in cell C1.
5. Press Enter.
6. Type **3** in cell C2.
7. Press Enter.
8. Type **=C1*C2** in cell C3.
9. Press Enter. Cell C1 is multiplied by cell C2 and the result is displayed in cell C3
10.
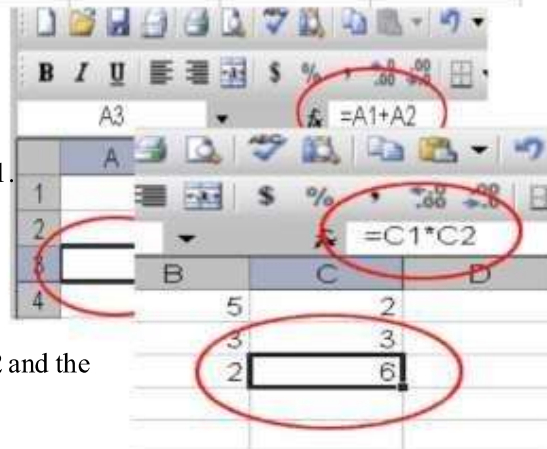
Division

1. Press F5.
2. Type **D1** in the Reference field.
3. Press Enter. You should now be in cell D1.
4. Type **6** in cell D1.
5. Press Enter.
6. Type **3** in cell D2.
7. Press Enter.
8. Type **=D1/D2** in cell D3.
9. Press Enter. Cell D1 is divided by cell D2 and the result is displayed in cell D3.
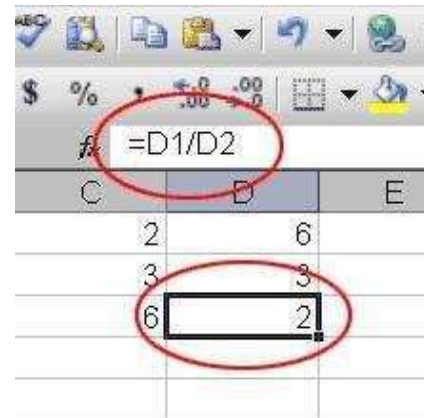
Lab Task:

1. Take any five numbers then find
   * sum
   * average
   * min
   * max
   * division
2. Create the worksheet for academic record of 10 students. Type in the labels, the student numbers, the test results (which are out of 100). The total marks and the class averages for each test must be calculated. The class average for test 1 is simply the average of the marks obtained in that test.
3. Display the result of task 2 in Graph form available in excel.

Functions:

Microsoft Excel has a set of prewritten formulas called *functions*. Functions differ from regular formulas in that you supply the value but not the operators, such as +, -, *, or /. For example, you can use the SUM function to add. When using a function, remember the following:

• Use an equal sign to begin a formula.
• Specify the function name.
• Enclose arguments within parentheses.
• Use a comma to separate arguments.

CELL REFERENCES	REFER TO VALUES IN
A10	the cell in column A and row 10
A10,A20	cell A10 and cell A20
A10:A20	the range of cells in column A and rows 10 through 20
B15:E15	the range of cells in row 15 and columns B through E
A10:E20	the range of cells in columns A through E and rows 10 through 20

Here is an example of a function: =**SUM (2, 13, A1, B27)** in this function:

• The equal sign begins the function.
• SUM is the name of the function.
• 2, 13, A1, and B27 are the arguments.
• Parenthesis enclose the arguments.
• A comma separates the arguments.

Typing a Function:
1. **Open** Microsoft Excel.
2. Type **12** in cell B1.
3. Press Enter.
4. Type **27** in cell B2.
5. Press Enter.
6. Type **24** in cell B3.
7. Press Enter.
8. Type **=SUM (B1:B3)** in cell A4.

9. Press Enter. Microsoft Excel sums cells B1 to B3

Alternate Method: Entering a Function by Using the Menu :

1. Type **150** in cell C1.
2. Press Enter.
3. Type **85** in cell C2.
4. Press Enter.
5. Type **65** in cell C3.
6. Press Enter. Your cursor should be in cell C4.
7. Choose *Formulas* from the menu.
8. Click Sum in the Select A Function box.
9. Click OK. The Functions Arguments dialog box opens.
10. Type **C1:C3** in the Number1 field, if it does not automatically appear.
11. Click OK. Microsoft Excel sums cells C1 to C3.
12. Move to cell A4.
13. Type the word **Sum**.
14. Press Enter.

Calculating an Average:

You can use the AVERAGE function to calculate the average of a series of numbers.

1. Move your cursor to cell A6.
2. Type **Average**. Press the right arrow key to move to cell B6.
3. Type =AVERAGE (B1:B3).
4. Press Enter. The average of cells B1 to B3, which is 21, will appear.

Calculating Min:

You can use the MIN function to find the lowest number in a series of numbers.

1. Move your cursor to cell A7.
2. Type **Min**.
3. Press the right arrow key to move to cell B7.
4. Type = MIN(B1:B3).
5. Press Enter. The lowest number in the series, which is 12 appears.

Calculating Max:

You can use the MAX function to find the highest number in a series of numbers.

1. Move your cursor to cell A8.
2. Type **Max**.
3. Press the right arrow key to move to cell B8.
4. Type = MAX(B1:B3).
5. Press Enter. The highest number in the series, which is 27, appears.

Note: *You can also use the drop-down menu next to the Sum icon to calculate minimums and maximums.*

Calculating Count:

You can use the count function to count the number of items in a series.

1. Move your cursor to cell A9.
2. Type **Count**
3. Press the right arrow key to move to cell B9.
4. Click the down arrow next to the Sum icon.
5. Click Count.
6. Highlight B1 to B3.
7. Press Enter. The number of items in the series, which is 3 appears.

Filling Cells Automatically:

You can use Microsoft Excel to fill cells automatically with a series. For example, you can have Excel automatically fill in times, the days of the week or months of the year, years, and other types of series. Days of the week and months of the year fill in a similar fashion. The following demonstrates filling the days of the week:

1. Move to Sheet2.
2. Move to cell A1.
3. Type **Sun**.
4. Move to cell B1.
5. Type **Sunday**.
6. Highlight cells A1 to B1.
7. Bold cells A1 to B1.
8. Find the small black square in the lower right corner of the highlighted area. This is called the Fill Handle.
9. Grab the Fill Handle and drag with your mouse to fill cell A1 to B24. Note how the days of the week fill the cells in a series. Also, note that the Auto Fill Options icon appears in the bottom right side of the cell.

10. Click the Auto Fill Options icon.
11. Choose the Copy Cells radio button. The entry in cells A1 and B1 are copied to all the cells highlighted.
12. Click the Auto Fill Options icon again.
13. Choose the Fill Series radio button. The cells fill as a series from Sunday to Saturday again.
14. Click the Auto Fill Options icon again.
15. Choose the Fill without Formatting radio button. The cells fill as a series from Sunday to Saturday, but the entries are not bolded.
16. Click the Auto Fill Options icon again.
17. Choose the Auto Fill Weekdays radio button. The cells fill as a series from Monday to Friday.

Cell Addressing:

Microsoft Excel records cell addresses in formulas in three different ways, called *absolute*, *relative*, **and** *mixed*. The way a formula is recorded is important when you copy it.

1. Relative cell addressing

When you copy a formula from one area of the worksheet to another, Microsoft Excel records the position of the cell relative to the cell that originally contained the formula. The following exercises demonstrate:

1. Go to cell A7.
2. Type **1**. Press Enter.
3. Type **2**. Press Enter.
4. Type **3**. Press Enter.
5. Go to cell B7.
6. Type **7**. Press Enter.
7. Type **8**. Press Enter.
8. Type **9**. Press Enter.
9. Go to cell A10.

Now you can enter a formula via following exercise

1. You should be in cell A10.
2. Type =.
3. Use the up-arrow key to move to cell A7.
4. Type +.
5. Use the up-arrow key to move to cell A8.
6. Type +.
7. Use the up-arrow key to move to cell A9.
8. Press Enter.

9. Look at the Formula bar while in cell A10. Note that the formula you entered is recorded in cell A10.

Copying by Using the Menu:

You can copy entries from one cell to another cell. To copy the formula you just entered, follow these steps:

1. You should be in cell A10.
2. *Copy* the contents of cell. Moving dotted lines appear around cell A10, indicating the cells to be copied.
3. Press the Right Arrow key once to move to cell B10.
4. *Paste* here. The formula in cell A10 is copied to cell B10.
5. Press Esc to exit the Copy mode.

Compare the formula in cell A10 with the formula in cell B10 (while in the respective cell, look at the Formula bar). The formulas are the same except that the formula in cell A10 sums the entries in column A and the formula in cell B10 sums the entries in column B. The formula was copied in a *relative* fashion.

2. Absolute Cell Addressing

An *absolute* cell address refers to the same cell, no matter where you copy the formula. You make a cell address an absolute cell address by placing a dollar sign in front of both the row and column identifiers. You can do this automatically by using the F4 key. To illustrate:

1. Move the cursor to cell C10.
2. Type =.
3. Use the up-arrow key to move to cell C7.
4. Press F4. Dollar signs should appear before the C and before the 7.
5. Type +.
6. Use the up-arrow key to move to cell C8.
7. Press F4.
8. Type +.
9. Use the up-arrow key to move to cell C9.
10. Press F4.
11. Press Enter. The formula is recorded in cell C10.

Copying by Using the Keyboard Shortcut:

Now copy the formula from C10 to D10

Compare the formula in cell C10 with the formula in cell D10. They are the same. The formula was copied in an *absolute* fashion. Both formulas sum column C.

3. Mixed Cell Addressing

You use mixed cell addressing to reference a cell that is part absolute and part relative. You can use the F4 key.

1. Move the cursor to cell E1.
2. Type =.
3. Press the up-arrow key once.
4. Press F4.
5. Press F4 again. Note that the column is relative and the row is absolute.
6. Press F4 again. Note that the column is absolute and the row is relative.

Create conditional formulas:
- Create a conditional formula that results in a logical value (TRUE or FALSE)
- Create a conditional formula that results in another calculation or in values other than TRUE or FALSE

Formula	Description (Result)
=IF(A2=15, "OK", "Not OK")	If the value in cell A2 equals 15, then return "OK". (OK)
=IF(A2<>15, "OK", "Not OK")	If the value in cell A2 is not equal to 15, then return "OK". (Not OK)
=IF(NOT(A2<=15), "OK", "Not OK")	If the value in cell A2 is not less than or equal to 15, then return "OK". (Not OK)
=IF(A5<>"S", "OK", "Not OK")	If the value in cell A5 is not equal to "S", then return "OK". (Not OK)
=IF(AND(A2>A3, A2<A4), "OK", "Not OK")	If 15 is greater than 9 and less than 8, then return "OK". (Not OK)
=IF(AND(A2<>A3, A2<>A4), "OK", "Not OK")	If 15 is not equal to 9 and 15 is not equal to 8, then return "OK". (OK)
=IF(OR(A2>A3, A2<A4), "OK", "Not OK")	If 15 is greater than 9 or less than 8, then return "OK". (OK)
=IF(OR(A5<>"S", A6<>"W"), "OK", "Not OK")	If the value in cell A5 is not equal to "S" or "W", then return "OK". (Not OK)
=IF(OR(A2<>A3, A2<>A4), "OK", "Not OK")	If 15 is not equal to 9 or 15 is not equal to 8, then return "OK". (OK)

Lab Task:

1. Implement the count function to count values between 200 and 1000 in sheet.
2. Implement all the formulas in your work sheet.
3. Use auto-complete to fill in cells A3 to A8. Display even and odd number autofill.
4. Design a ***TEMPERATURE CONVERTER*** from Celsius to Fahrenheit and Fahrenheit to Celsius. Present the Converter with appropriate design. Formulas for conversion are as follows:

$$[°C] = ([°F] − 32) \cdot 5/9$$
$$[°F] = [°C] \cdot 9/5 + 32$$

Also report the weather conditions as HOT if the temperature exceeds 35°C, WARM if the temperature is between 20°C to 35°C and COLD if the entered temperature is below 20°C.

5. Draw the sine (sin θ) and cosine (cos θ) wave on single graph and format the graph accordingly. Take value of θ from 0 to 360 degree with the interval of 15. Also compare the values of sin and cos (by using conditional formulas) and tell at which angle these values are equal.