

Al-Mustaqbal University
Collage Of Pharmacy



Computer Sciences III S1

Lecture 6

Introduction to MS Excel

Part 3

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Summary of the Last week

- Hiding & unhiding rows & columns.
- Selecting worksheets
- Navigating between worksheets
- Renaming worksheets
- Inserting & deleting worksheets
- Moving & copying worksheets
- Switching between MS Excel views
- Freezing & unfreezing panes
- Using templates

Learning Objectives

Understand and apply the following skills:

- How to enter a formula.
- How to edit a formula.
- How to use parentheses to change the operators precedence.
- How to copy/paste a formula.
- How to choose between the paste options (Paste, Values, Formulas, Formatting, and Paste Special).
- How to insert a function.
- How to use the count functions (Count, Countif, and Countifs).
- How to use the sum functions (Sum, Sumif, and Sumifs).
- How to use the logical functions (If, And, and Or).
- How to use the statistical functions (Average, Averageif, Median, Mode, Standard Deviation, Min, Max, Large, and Small).

Outlines

- Formulas and Functions
- Entering a Formula
- Editing a Formula
- Changing the Operators Precedence
- Copying/Pasting a Formula
- Paste Options
- Inserting a Function
- Count Functions (Count, Countif, Countifs)
- Sum Functions (Sum, Sumif, Sumifs)
- Logical Functions (If, And, Or)
- Statistical Functions (Average, Averageif, Median, Mode, Standard Deviation, Min, Max, Large, and Small).

Formulas and Functions

- A **formula** is an expression which calculates the value of a cell.
- **Functions** are predefined formulas, and are already available in Excel.
- For example, cell A3 below contains a formula which adds the value of cell A2 to the value of cell A1.

A3		fx			
		=A1+A2			
	A	B	C	D	E
1	2				
2	3				
3	5				
4					
5					

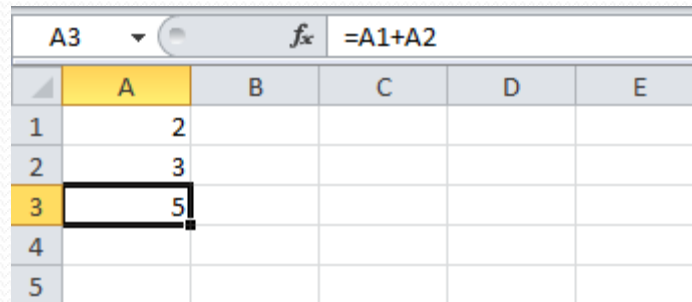
- For example, cell A3 below contains the **SUM function** which calculates the sum of the range A1:A2

A3		fx			
		=SUM(A1:A2)			
	A	B	C	D	E
1	2				
2	3				
3	5				
4					
5					

Entering a Formula

To enter a formula, execute the following steps.

1. Select a cell.
2. To let Excel know that you want to enter a formula, type an equal sign (=).
3. For example, type the formula A1+A2.

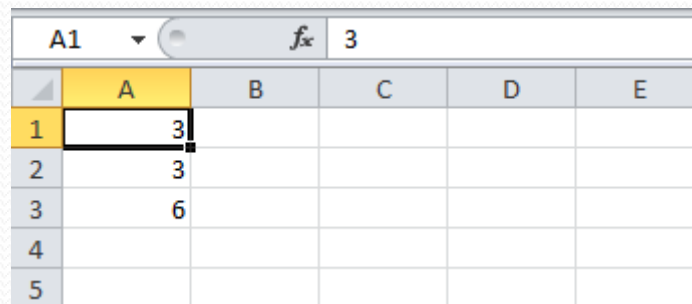


A screenshot of the Microsoft Excel interface. The active cell is A3, and the formula bar shows the formula `=A1+A2`. The spreadsheet grid shows the following values:

	A	B	C	D	E
1	2				
2	3				
3	5				
4					
5					

Tip: instead of typing A1 and A2, simply select cell A1 and cell A2.

4. Change the value of cell A1 to 3.



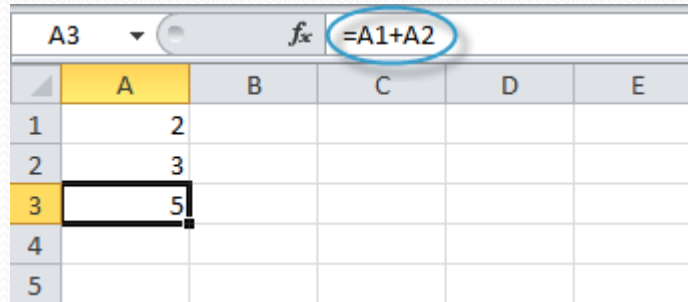
A screenshot of the Microsoft Excel interface. The active cell is A1, and the formula bar shows the value `3`. The spreadsheet grid shows the following values:

	A	B	C	D	E
1	3				
2	3				
3	6				
4					
5					

Excel automatically recalculates the value of cell A3. This is one of Excel's most powerful features!

Editing a Formula

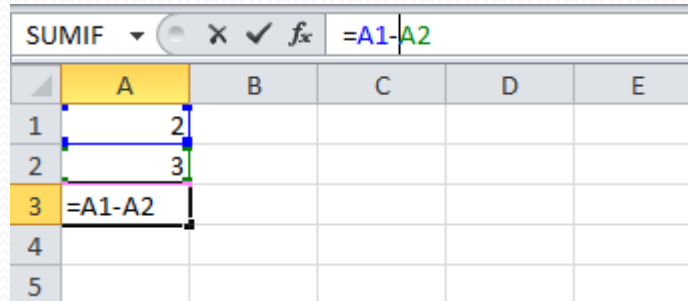
When you select a cell, Excel shows the value or formula of the cell in the formula bar.



	A	B	C	D	E
1	2				
2	3				
3	5				
4					
5					

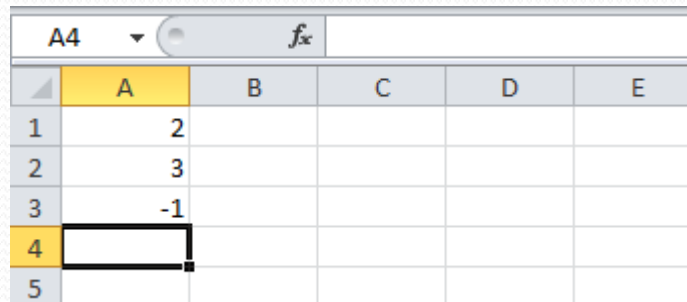
To edit a formula:

1. click in the formula bar and change the formula.



	A	B	C	D	E
1	2				
2	3				
3	=A1-A2				
4					
5					

2. Press **Enter**



	A	B	C	D	E
1	2				
2	3				
3	-1				
4					
5					

Operator Precedence

Excel uses a default order in which calculations occur. If a part of the formula is in parentheses, that part will be calculated first. It then performs multiplication or division calculations. Once this is complete, Excel will add and subtract the remainder of your formula. See the example below.

A4		fx =A1*A2+A3				
	A	B	C	D	E	
1	2					
2	2					
3	1					
4	5					
5						

First, Excel performs multiplication ($A1 * A2$). Next, Excel adds the value of cell A3 to this result.

Another example,

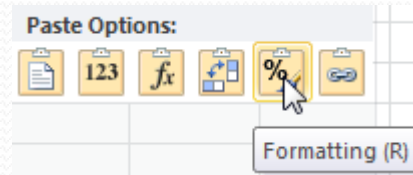
A4		fx =A1*(A2+A3)				
	A	B	C	D	E	
1	2					
2	2					
3	1					
4	6					
5						

First, Excel calculates the part in parentheses ($A2+A3$). Next, it multiplies this result by the value of cell A1.

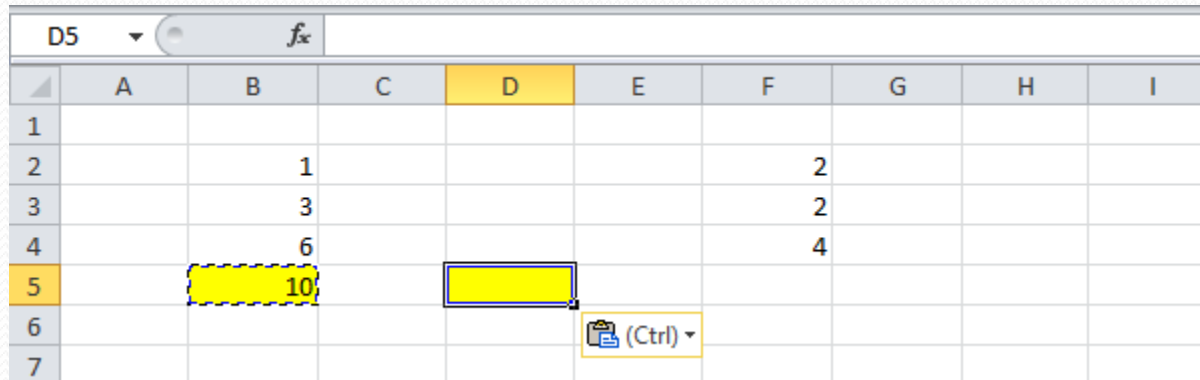
Paste Options – the Formatting Option

The **Formatting** option only pastes the **formatting**.

1. Select cell B5, right click, and then click **Copy** (or press **CTRL + c**).
2. Select cell D5, right click, and then click **Formatting** under 'Paste Options:'



Result



	A	B	C	D	E	F	G	H	I
1									
2		1				2			
3		3				2			
4		6				4			
5		10							
6									
7									

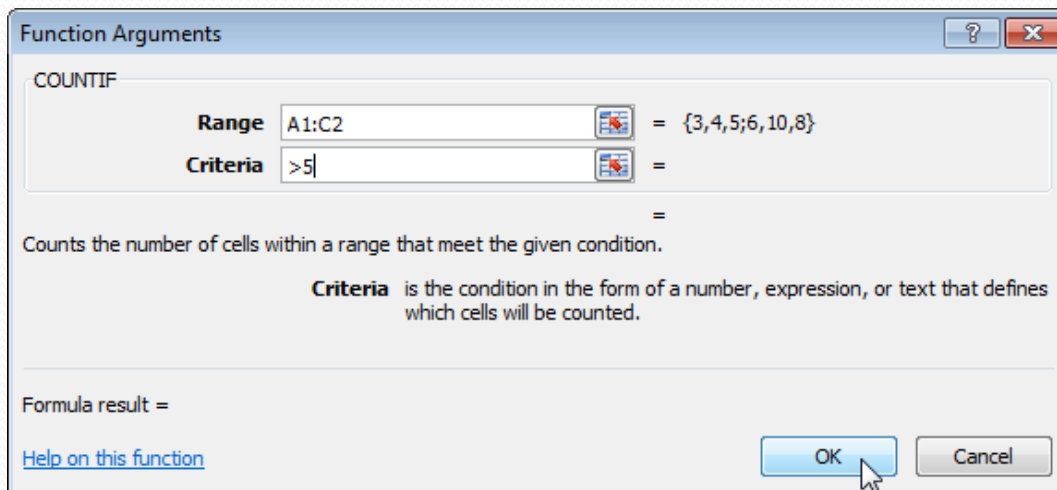
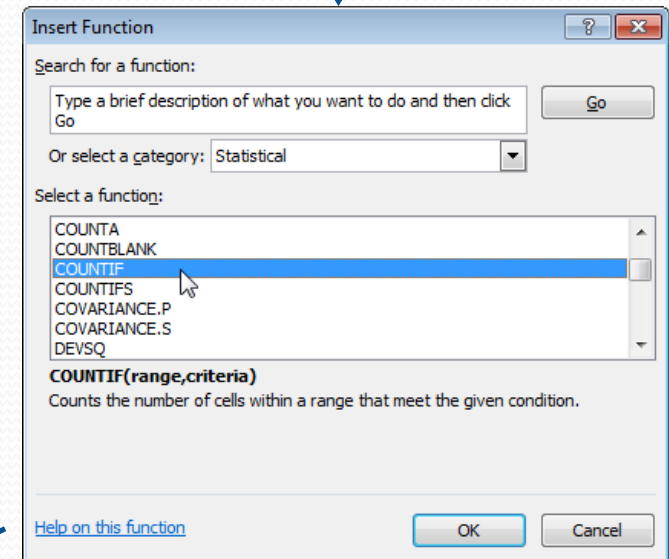
Note: the **Format Painter** copy/pastes formatting even quicker.

Inserting a Function

To insert a function, execute the following steps.

1. Select a cell.
2. Click the **Insert Function** button.
3. The **Insert Function** dialog box appears, search for a function or select a function from a category.
For example, choose **COUNTIF** from the Statistical category.
4. Click **OK**, the **Function Arguments** dialog box appears.
5. Click in the **Range** box and select the range A1:C2.
6. Click in the **Criteria** box and type >5.
7. Click **OK**.

	A	B	C	D	E
1	3	8	6		
2	10	5	4		
3					



Result. Excel counts the number of cells that are higher than 5.

	A	B	C	D	E
1	3	8	6	=COUNTIF(A1:C2,">5") 3	
2	10	5	4		
3					

Count Functions – the COUNTIFS Function

To count cells based on multiple criteria (for example, green and higher than 9), use the following **COUNTIFS** function.

	A	B	C	D	E	F	G	H	I
1	red	10							
2	green	1							
3	red	7							
4	green	20							
5	red	3							
6									
7		1							
8									

The formula bar for cell B7 shows: `=COUNTIFS(A1:A5,"green",B1:B5,">9")`

Sum Functions - the SUMIF Function

To sum cells based on one criteria (for example, higher than 9), use the following **SUMIF** function (two arguments).

	A	B	C	D	E	F	G	H	I
1		10							
2		1							
3		7							
4		20							
5		3							
6									
7		30							
8									

The image shows a spreadsheet interface. The formula bar at the top displays the formula `=SUMIF(B1:B5,">9")`. The spreadsheet grid shows columns A through I and rows 1 through 8. Column B contains the values 10, 1, 7, 20, and 3 in rows 1 through 5, respectively. Row 7, column B contains the value 30, which is the result of the SUMIF function. The formula bar also shows the active cell address B7.

Logical Functions - the IF Function

The **IF** Function checks whether a condition is met and returns one value if TRUE and another value if FALSE.

Select cell C2 and enter the following function.

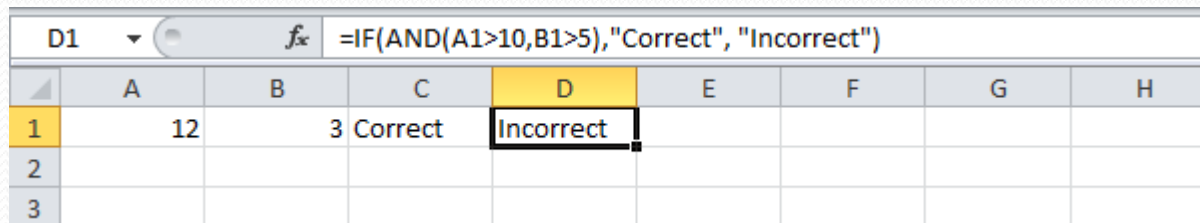
	A	B	C	D	E	F	G	H
1	12	3	Correct					
2								
3								

The IF function returns Correct because the value in cell A1 is higher than 10.

Logical Functions - the AND Function

The **AND** Function returns TRUE if all conditions are true and returns FALSE if any of the conditions are false.

Select cell D2 and enter the following formula.



	A	B	C	D	E	F	G	H
1	12	3	Correct	Incorrect				
2								
3								

The AND function returns FALSE because the value in cell B2 is not higher than 5. As a result, the IF function returns Incorrect.

Logical Functions - the OR Function

The **OR** Function returns TRUE if any of the conditions are TRUE and returns FALSE if all conditions are false.

Select cell E2 and enter the following formula.

E1 fx =IF(OR(A1>10,B1>5),"Correct", "Incorrect")								
	A	B	C	D	E	F	G	H
1	12	3	Correct	Incorrect	Correct			
2								
3								

The OR function returns TRUE because the value in cell A1 is higher than 10. As a result the IF function returns Correct.

General note: the AND and OR function can check up to 255 conditions

Statistical Functions – the AVERAGEIF Function

To average cells based on one criteria, use the following **AVERAGEIF** function.
For example, to calculate the average excluding zeros.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	0	7	8	6	5	9	8	7	4	8	0	3	5	6	8	
2																
3	6.46															
4																

Note: \neq means not equal to

