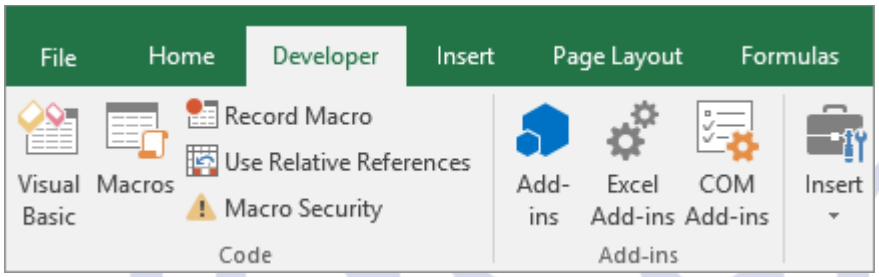
Excel Assignment 2

1. What is macro? Create a macro to store product detail.

If *you have tasks in microsoft excel that you do repeatedly, you can record a macro to automate those tasks. A macro is an action or a set of actions that you can run as many times as you want. When you create a macro, you are recording your mouse clicks and keystroke.*

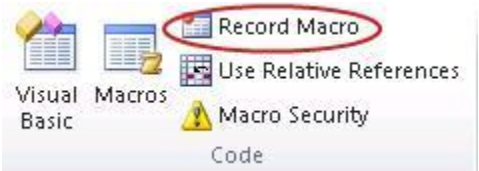
Before you record a macro :-

Macros and VBA tools can be found on the **Developer** tab, which is hidden by default, so the first step is to enable it. For more information, see Show the Developer tab**.**

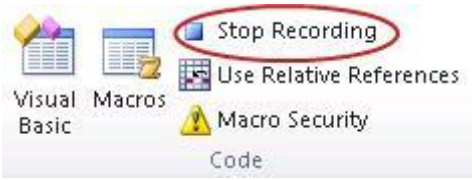


- **Record a macro** :-

    1. In the **Code** group on the **Developer** tab, click **Record Macro**.
    2. Optionally, enter a name for the macro in the **Macro name** box, enter a shortcut key in the **Shortcut key** box, and a description in the **Description** box, and then click **OK** to start recording.



    3. Perform the actions you want to automate, such as entering boilerplate text or filling down a column of data.
    4. On the **Developer** tab, click **Stop Recording**.



- **Take a closer look at the macro** :-

You can learn a little about the Visual Basic programming language by editing a macro.

To edit a macro, in the **Code** group on the **Developer** tab, click **Macros**, select the name of the macro, and click **Edit**. This starts the Visual Basic Editor.

See how the actions that you recorded appear as code. Some of the code will probably be clear to you, and some of it may be a little mysterious.

Experiment with the code, close the Visual Basic Editor, and run your macro again. This time, see if anything different happens

2. Explain Excel formatting.

Formatting in Excel means a trick that we can use to modify the data's appearance in a worksheet. We can format the data in various ways, like we can format the font of the cells or the table with the help of the styles and **format tab** present in the **Home tab.**

It's easier than ever to format worksheet (or sheet) data in Excel. There are various quick and easy ways to generate professional-looking worksheets that efficiently present our data. For example, we can utilize document themes to give our Excel spreadsheets a consistent design, style to apply predetermined formats, and other manual formatting capabilities to highlight essential data.

Formatting in Excel Example 1:

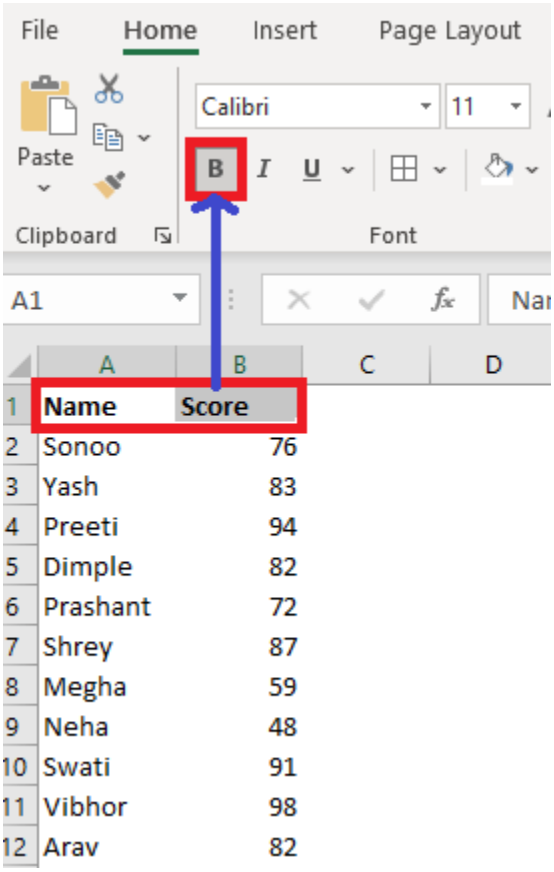
We have the below-mentioned disorganized data, which appears to be quite straightforward. Now we'll use Excel to format the data and show it in a readable fashion

The following are the steps that must be followed when formatting data:

	A	B
1	Name	Score
2	Sonoo	76
3	Yash	83
4	Preeti	94
5	Dimple	82
6	Prashant	72
7	Shrey	87
8	Megha	59
9	Neha	48
10	Swati	91
11	Vibhor	98
12	Arav	82

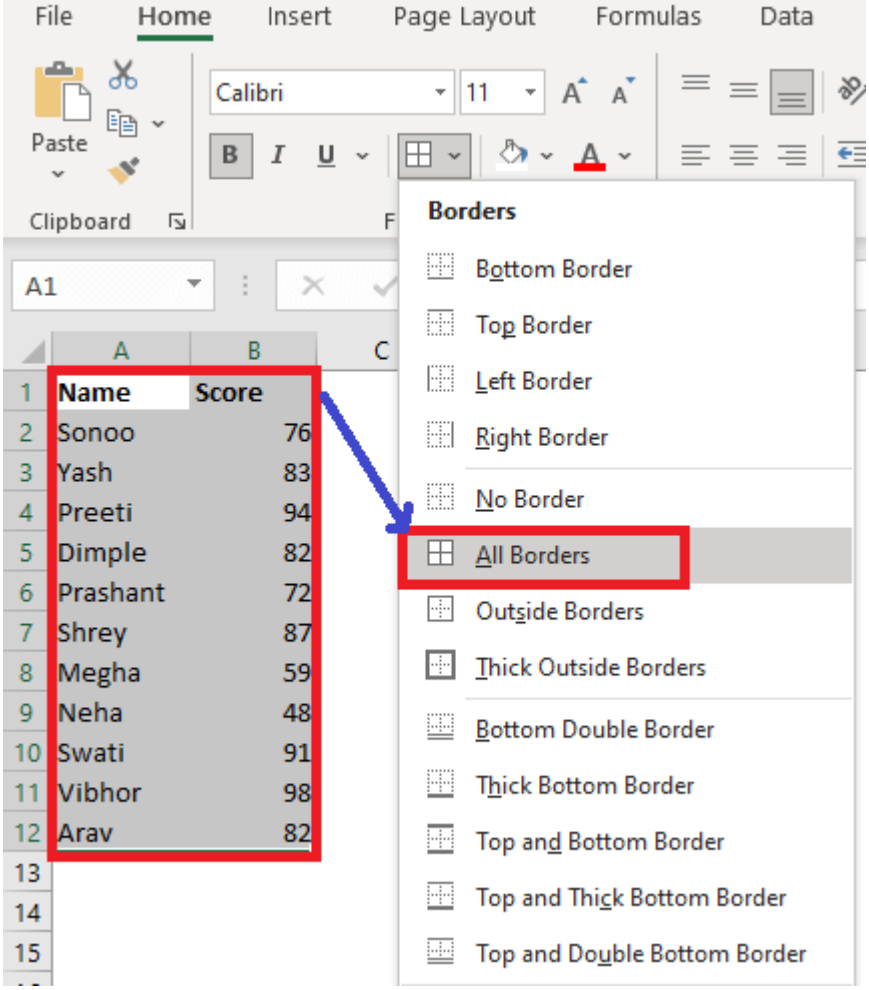
The following are the steps that must be followed when formatting data:

- First, we have to select the **header field** and make it **bold.**

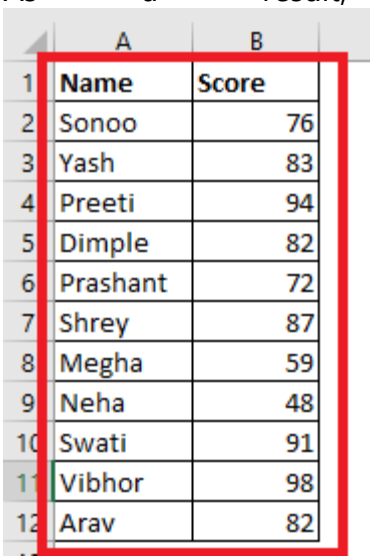


- .

- Then, we will select the entire data and select the option named **"All Borders"** under the border.

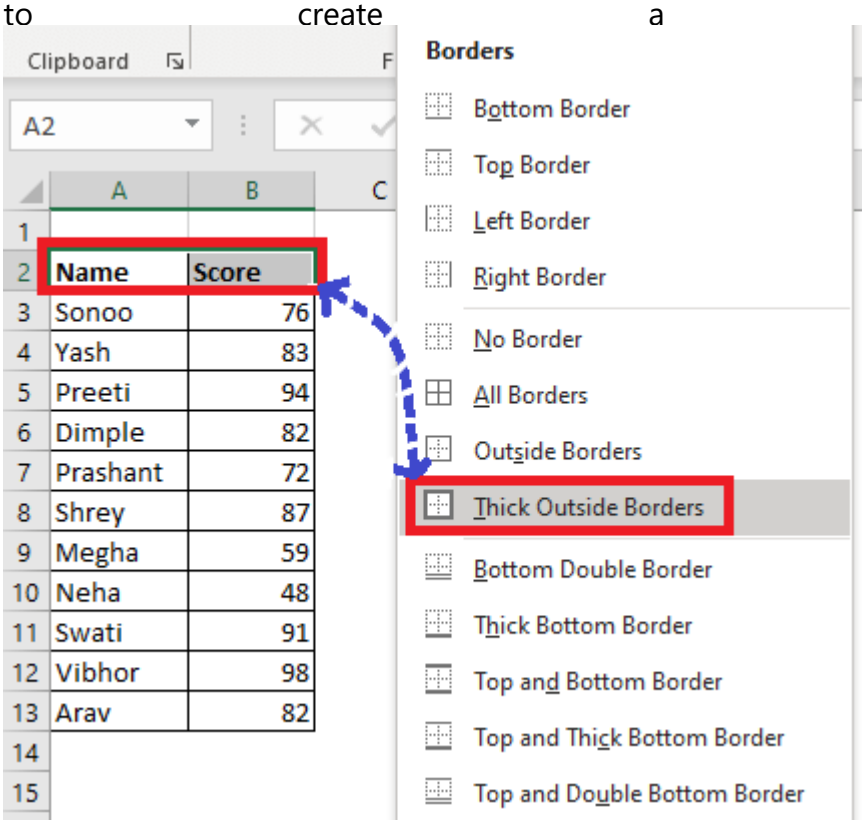


- As a result, the data will appear as follows:

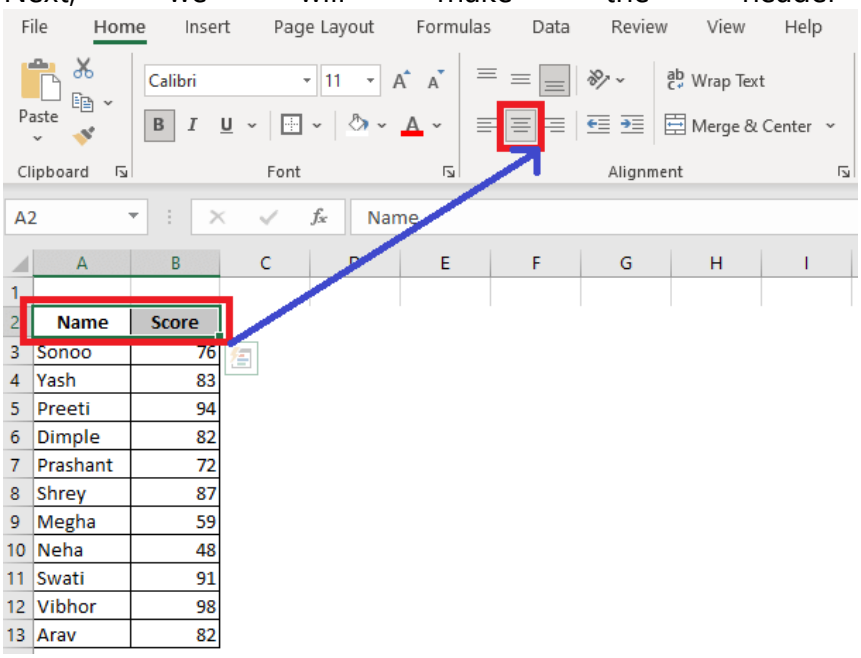


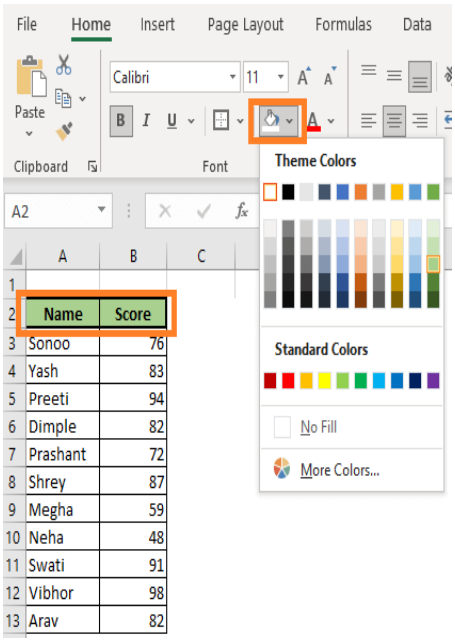
Name	Score
Sonoo	76
Yash	83
Preeti	94
Dimple	82
Prashant	72
Shrey	87
Megha	59
Neha	48
Swati	91
Vibhor	98
Arav	82

- Now, we will choose the header field and use the **"Thick box borders"** option under the border to create a thick border.



- Next, we will make the header Field in the **center.**





- Also, select a **background color** other than white. We'll use a light green color here.
- Now the data appears more presentable.

	A	B
1		
2	**Name**	**Score**
3	Sonoo	76
4	Yash	83
5	Preeti	94
6	Dimple	82
7	Prashant	72
8	Shrey	87
9	Megha	59
10	Neha	48
11	Swati	91
12	Vibhor	98
13	Arav	82

3. Perform data analysis using Excel. List various functions available to perform data analysis in excel

There are over 475 functions in Excel. This can make it overwhelming when you are getting started with data analysis.

This resource covers the **12 most useful Excel functions for data analysis**. These functions provide you with the tools to handle the majority of your Excel data analysis tasks.

1). If FUNCTION:-

If function can one put of two thing in a cell
The if funtion has three parts :
1) Logical test
2) Value if True
3) Value if false
for the 'Value if True ' and 'Value IF False ' , you can put number , (must be in double quotes,) formules , or cell ranges.

NAME	GENDER	AGE	ELIGIBILITY
Amala	Girl	29	eligible
Ananda	Girl	18	not eligible
Anjali	Girl	17	not eligible
Arjun	Boy	28	eligible
Deepa	Girl	16	not eligible
Deepak	Boy	34	eligible
Devil	Girl	27	eligible

IF FUNCTION :- =if(age>18,"eligible","not eligible")

2). SUMILS :-

The SUMILS Function , one of the math and trig Function, adds all of its aruguments that meet multiple criteria.

Syntax :-

SUMIFS(sum_range, criteria_range1,criteria1,[criteria_range2, criteria2],……)

=SUMILS(E13:E18,C13:C18,C13,D13:D18

EMPLOYEE	REGION	STATE	SALES(RS)
Ramesh	North	Karnataka	20000
Monika	South	Kerala	8000
Nitesh	South	Karnataka	11500
Surbhi	East	Tamil nadu	9000
Pawan	North	Kerala	18000
Bharti	East	Tamil nadu	9000

20000

3). COUNTIFS :-

The COUNTIFS Function is a premade Function in ex‹,
which counts cells in a range based on one or more true or false contions .

syntax:-

COUNTIFS(criteria_range1,criteria1,(criteria_range2,criteria2,....)

YEAR	PRODUCT	COST
2013	Oranges	12.25
2012	Bananas	10.15
2012	Apples	5.1
2013	Bananas	8.25
2013	Oranges	13.45
2011	Apples	7.95
2013	Pears	6

countifs(b14:b20,"=2013",c14:c20,"=oranges"

2

')

4). TRIM :-

The TRIM function is cateorized under excel text functions.
TRIM helps remove the extra spaces in data and thus clean up the cells in the worsheet.

NAMES	TRIM
kajal	kajal
Raavi	Raavi
Anu	Anu
Priya	Priya
Dolly	Dolly
Arav	Arav

5). CONCATENATE :-

USE CONCATENATRE , one of the text function , to join two or more text strings into one strings.

SYNTAX :-

CONCATENATRE(text1,(text2)

FIRST NAME	LAST NAME	NAME
Peter	Parker	Peter Parker
Barry	Allen	Barry Allen
Harry	Potter	Harry Potter
Diana	Prince	Diana Prince
Tony	Stark	Tony Stark
Anna	Maria	Anna Maria

CONCATENATE(B12$" "&C12&")

6). LEFT / RIGHT FUNCTTION :-

This demonstration covers how to use the left and right function in excel. These are text functions.

In the LEFT function, you can pull a set number of characters out of cell into another cell starting at the leftmost point. The RIGHT function performs the same except starting at the rightmost point.

LEFT FUNCTION :-

NAME	LEFT
Sunny	Sun
Rajesh	Raj
Prateek	Pra
Raavi	Raa
Nanu	Nan
Chiya	Chi

RIGHT FUNCTION :-

NAME	RIGHT
Sunny	nny
Rajesh	esh
Prateek	eek
Raavi	avi
Nanu	anu
Chiya	iya

7). VLOOKUP FUNCTION :-

VLOOKUP stands for 'VERTICAL LOOKUP'.
It is a fuction that makes excel search for a certain value in a cloumn (the so called 'table array'), in order to return a value from a different column in the same row.

ORDER ID	PRODUCT	UNIT PRICE	QUANTITY
10247	Apples	1000	23
10248	Oranges	200	45
10249	Bananas	500	12
10250	Pears	300	32
10251	Grapes	200	34
10252	Cherry	400	15

vlookup(b15,b10:c16,2,false)

Grapes

FALSE - exact match
TRUE - approximate match

8). IFERROR :-

The IFERROR function in Excel is designed to trap and manager error in formula and calculations
More specifically , IFERROR checks a formula and if it evaluates to an error, return another value you specify otherwise, retures the result of the formula

	COLUME 1	COLUME 2	DIVISION	IFERROR	IFERROR
	350	10	35	10	10
	425	25	17	25	25
	745	0	#DIV/0!	0	ERROR
	824	8	103	8	8
	960	20	48	20	20
	146D		#VALUE!	0	ERROR
	328	15	21.866667	15	15
SUM:	3778	78	#DIV/0!	0	ERROR

9). VALUE FUNCTION :-

The Excel VALUE function converts text that appear in a recognized format(i.e a number , data, or time format) into a numerica value Normally, the value function is not needed in excel, because excel automatically convert text to numeric values.

S.NO	NUMBER	VALUE
1	5	5
2	309	309
3	1	1
TOTAL	310	315

10). UNIQUE FUNCTION :-

The excel UNIQUE function returns a list of unique values in a list or range. Values can be text, number, dates, times, etc The excel filter function filter a range of data based on supplied criteria, and extracts matching records.

SYNTAX :-

UNIQUE(array [by-col][exactly-once)

PROUCTS
HEADPHONE
MOBLE
CAMERAS
MOBLE
T.V
HEADPHONE
CAMERAS

UNIQUE
HEADPHONE
MOBLE
CAMERAS
T.V

11). SORT FUNCTION :-

The SORT function in excel sorts the contents of an array or range by columns or rows, in ascending or descending order.
SORT belong to the group of dynamic array function

FIRST NAME
Sena
Peter
Tony
Thor
Elsa
Erika
Aaron
Bob

FIRST name
Aaron
Bob
Elsa
Erika
Peter
Thor
Tony
Sena

12). FILTER FUNCTION :-

The FILTER function in excel is used to filter a range of data based on the criteria that you specify. The function belongs to the result of dynamic array function.
the result ia an array of values that automatically spills into a range of cells, starting from the cell where you enter a formula.

the categor

sales data for moblie phone	Column1	Column2	Column3
BRAND	MODELS	PRICE	COUNTRY
OPPO	OPPA RENO	18635	RUSSIA
OPPO	OPPA RENO	22128	INDIA
OPPO	OPPA RENO	18635	RUSSIA
APPLE	APPLE IPHONE	64000	CHINA
REALME	REALME XT	23315	INDIA
APPLE	APPLE IPHONE	64000	CHINA

BRAND	MODAL	PRICE	COUNTRY
OPPA	OPP0 RENO	18635	RUSSIA
OPPA	OPPO RENO	22128	INDIA
OPPA	OPPO RENO	18635	RUSSIA

4. List down excel functions and their examples.

- Text / string functions
- Logical functions
- Math functions
- Statistical functions
- Lookup and reference functions
- Financial functions
- Date functions
- Time functions
- UDF functions to count and sum cells by color

TEXT function

TEXT(value, format_text) is used to convert a number or a date into a test string in the specified format, where:

- **Value** is a numeric value you want to convert to text.
- **Format_text** is the desired format.

The following formulas demonstrate the Excel TEXT function in action:

`=TEXT(A1,"mm/dd/yyyy")` - convert a date in cell A1 into a text string in the traditional US date format, such as "01/01/2015" (month/day/year).

`=TEXT(A1,"€#,##0.00")` - converts a number in A1 into a currency text string such as "€3.00".

	A	B	C
1	Source data	Result	Formula
2	01-Jul-15	07/01/2015	=TEXT(A2,"mm/dd/yyyy")
3			
4	20	€20.00	=TEXT(A4,"€#,##0.00")

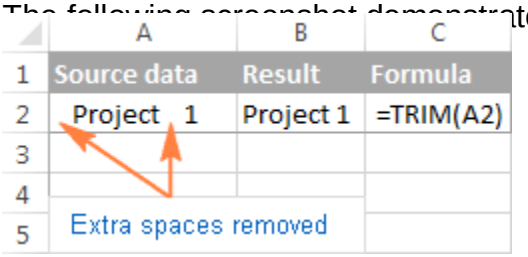
CONCATENATE function

ONCATENATE(text1, [text2], …) is designed to join several pieces of text together or combine values from several cells into a single cell. An analogues result can be achieved by using the Excel & operator, as demonstrated in the following screenshot.

	A	B	C	D
1	Source data		Result	Formula
2	Project	1	Project 1	=CONCATENATE(A2, " ", B2)
3			Project 1	=A2 & " " & B2

TRIM function

TRIM(text) removes leading, trailing spaces as well as excess spaces between words. Where **text** is either a text string or reference to the cell containing the text from which you want to remove spaces. The following screenshot demonstrates an example of usage:



SUBSTITUTE function

SUBSTITUTE(text, old_text, new_text, [instance_num]) replaces one set of characters with another in a specified cell or a text string. The syntax of the SUBSTITUTE function is as follows:

- **Text** - the original text string or reference to a cell where you want to substitute certain characters.
- **Old_text** - the characters you want to replace.
- **New_text** - the characters you want to replace the old text with.
- **Nth_appearance** - an optional parameter that specifies which occurrence of old_text you want to replace with new_text. If omitted, then every occurrence of the old text will be replaced with the new text.

For example, the following SUBSTITUTE formula replaces all commas in cell A1 with semicolons:

```
=SUBSTITUTE(A2, ",", ";")
```

	A	B	C
1	Source data	Result	Formula
2	Apples, oranges, lemons	Apples; oranges; lemons	=SUBSTITUTE(A2, ",", ";")

Logical functions in Excel

condition(s) and return the corresponding Microsoft Excel provides that evaluate a specified value. a handful of logical functions

AND, OR, XOR functions

`AND(logical1, [logical2], ...)` - returns TRUE if all of the arguments evaluate to TRUE, FALSE otherwise.

`OR(logical1, [logical2], ...)` - returns TRUE if at least one of the arguments is TRUE.

`XOR(logical1, [logical2],…)` - returns a *logical Exclusive Or* of all arguments. This function was introduced in Excel 2013 and is not available in earlier versions.

	A	B	C	D	E
1	Number 1	Number 2	AND	OR	XOR
2			=AND(A2=0, B2=0)	=OR(A2=0, B2=0)	=XOR(A2=0, B2=0)
3	1	0	FALSE	TRUE	TRUE
4	1	1	FALSE	FALSE	FALSE
5	0	0	TRUE	TRUE	FALSE

Logical functions formula examples:

- AND formula examples
- OR formula examples
- XOR formula examples

NOT function

NOT(logical) - reverses a value of its argument, i.e. if logical evaluates to FALSE, the NOT function returns TRUE and vice versa.

For instance, both of the following formulas will return FALSE:

```
=NOT(TRUE)
```

```
=NOT(2*2=4)
```

IF function

The Excel IF function is sometimes called a "conditional function" because it returns a value based on the condition that you specify. IF's syntax is as follows:

```
IF(logical_test, [value_if_true], [value_if_false])
```

An IF formula tests the condition(s) expressed in the **logical_test** argument and returns one value (**value_if_true**) if the condition is met and another value (**value_if_false**) if the condition is not met.

For example, the formula `=IF(A1<>"", "good", "bad")` returns "good" if there's any value in cell A1, "bad" otherwise.

And here's an example of the nested

	A	B	C
1	Exam score	Result	Formula
2	100	Brilliant	=IF(A2>80, "Brilliant", IF(A2>50, "Good", IF(A2>30, "Fair", "Poor")))
3	80	Good	
4	50	Fair	
5	30	Poor	

IF formula that "deciphers" the exam score in cell A2:

```
=IF(A2>80, "Brilliant", IF(A2>50, "Good", IF(A2>30, "Fair", "Poor")))
```

IF formula examples:

- IF formulas for numbers, text, dates, blank cells
- IF statement with multiple AND/OR conditions
- Nested IF functions in Excel
- IF function in array formulas
- Using IF with other Excel functions

IFERROR and IFNA functions

Both functions are used to check if a certain formula evaluates to an error, and if it does, the MS Excel functions return a specified value instead.

IFERROR(value, value_if_error) - checks if the formula or expression evaluates to an error. If it does, the formula returns the value supplied in the **value_if_error** argument, otherwise, the result of the formula is returned. This function handles all possible Excel errors, including VALUE, N/A, NAME, REF, NUM, and others. It is available in Excel 2007 and higher.

IFNA(value, value_if_na) - introduced in Excel 2013, it works similarly to IFERROR, but handles #N/A errors only.

The following examples demonstrate the simplest IFERROR formula:

	A	B	C	D
1	Number 1	Number 2	Nimber 2 / Number 1	Formula
2	1	2	2	=IFERROR(B2/A2, "You cannot divide by 0!")
3	0	1	You cannot divide by 0!	

IFERROR / IFNA formula examples:

- Using the IFERROR and IFNA functions in Excel
- Excel VLOOKUP with IFERROR / ISERROR

Excel math functions

Excel has a ton of basic and advanced functions to perform mathematical operations, calculate exponentials, logarithms, factorials and the like. It would take several pages just to publish the functions list. So, let us discuss only a few basic math functions that may prove useful for solving your daily tasks.

Finding the sum of cells

Four essential Excel functions to add up the values of cells in a specified range follow below.

SUM function

SUM(number1,[number2],…) returns the sum of its arguments. The arguments can be numbers, cells references or formula-driven numeric values.

For example, the simplest math formula `=SUM(A1:A3, 1)` adds up the values in cells A1, A2 and A3, and then adds 1 to the result.

SUM formula examples:

- SUM function to sum a column In Excel
- Excel SUM in array formulas

SUMIF and SUMIFS functions (conditional sum)

Both functions add up the cells in a specified range that meet a certain condition. The difference is that SUMIF can evaluate only a single criteria, while SUMIFS, introduced in Excel 2007, allows for multiple criteria. Please pay attention that the order of arguments is different in each function:

```
SUMIF(range, criteria, [sum_range])
```

```
SUMIFS(sum_range, criteria_range1, criteria1, [criteria_range2, criteria2], …)
```

- **range** / **criteria_range** - the range of cells to be evaluated by the corresponding criteria.
- **criteria** - the condition that must be met.
- **sum_range** - the cells to sum if the condition is met.

The following screenshot gives an idea of how the SUMIF and SUMIFS functions can be used on real-life data:

	A	B	C	D	E	F
1	Product	Sales	Salesman	**Apples sales**	$100	=SUMIF(A2:A6, "apples", B2:B6)
2	Apples	$30	Seller 1			
3	Oranges	$50	Seller 2	**Apples, Seller 1 sales**	$60	=SUMIFS(B2:B6, A2:A6, "apples",
4	Apples	$30	Seller 1			C2:C6, "seller 1")
5	Oranges	$20	Seller 1			
6	Apples	$40	Seller 2			

SUMIF and SUMIFS formula examples:

- SUMIF in Excel - formulas to conditionally sum cells
- Sum cells with multiple criteria

SUMPRODUCT function

SUMPRODUCT(array1,array2, …) is one of the few Microsoft Excel functions that handle arrays. It multiplies the supplied array components and returns the sum of the products.

The essence of the SUMPRODUCT function may be difficult to grasp, and hopefully the following examples will shed some light on its major uses.

SUMPRODUCT formula examples:

- SUMPRODUCT formula for a case-sensitive Vlookup
- Count duplicates between two columns
- Sum cells with multiple criteria

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Rounding functions

There exist a variety of functions to round off numbers in Excel, and our Excel Rounding Tutorial makes a good job explaining how to use those functions based on your criteria. Please click on the function's name to learn its syntax and examples of uses.

- ROUND - round the number to the specified number of digits.
- ROUNDUP - round the number upward to the specified number of digits.
- ROUNDDOWN - round the number downward to the specified number of digits.
- MROUND - rounds the number upward or downward to the specified multiple.
- FLOOR - round the number down to the specified multiple.
- CEILING - round the number up to the specified multiple.

Statistical functions in Excel

Among a variety of highly specific Excel statistical functions, there are a few ones that everyone can understand and leverage for professional data analysis.

Finding the largest, smallest and average values

MIN(number1, [number2], …) - returns the minimal value from the list of arguments.

MAX(number1, [number2], …) - returns the maximum value from the list of arguments

AVERAGE(number1, [number2], …) - returns the average of the arguments.

SMALL(array, k) - returns the k-th smallest value in the array.

LARGE(array, k) - returns the k-th largest value in the array.

The following screenshot demonstrates the basic statistical functions in action.

	A	B	C	D	E
1	Numbers		Min:	1	=MIN(A2:A9)
2	1				
3	9		Max:	10	=MAX(A2:A9)
4	2				
5	5		Average:	5.75	=AVERAGE(A2:A9)
6	7				
7	4		2nd smallest:	2	=SMALL(A2:A9, 2)
8	10				
9	8		3rd largest:	8	=LARGE(A2:A9, 3)

Counting cells

Below is a list of Excel functions that let you count the cells containing a certain data type or based on the condition(s) that you specify.

COUNT(value1, [value2], …) - returns the number of numerical values (numbers and dates) in the list of arguments.

COUNTA(value1, [value2], …) - returns the number of non-empty cells in the list of arguments. It counts cells containing any information, including error values and empty text strings ("") returned by other formulas.

COUNTIF(range, criteria) - counts the number of cells within the range that meet the specified criteria.

COUNTIFS(criteria_range1, criteria1, [criteria_range2, criteria2]…) - counts the number of cells that meet all of the specified criteria.

The following screenshot demonstrates the counting cells functions in action:

	A	B	C	D	E
1	Data		**Numerical values:**	5	=COUNT(A2:A9)
2	1				
3	10		**Non-empty cells:**	6	=COUNTA(A2:A9)
4					
5	5		**Empty cells:**	2	=COUNTBLANK(A2:A9)
6	text				
7			**>5**	3	=COUNTIF(A2:A9, ">5")
8	01/01/2015				
9	8		**>5 and <10**	1	=COUNTIFS(A2:A9, ">5", A2:A9, "<10")

Excel lookup and reference functions

These MS Excel functions comes in handy when you need to find certain information in a table based on a value in one column, or return a reference to a certain cell.

VLOOKUP function

The VLOOKUP function looks for a specified value in the first column and pulls the matching data from the same row in another column. It requires the following arguments:

```
VLOOKUP (lookup_value, table_array, col_index_num,
[range_lookup])
```

- **lookup_value** - the value to search for.
- **table_array** - two or more columns of data.
- **col_index_num** - the number of the column to pull the data from.
- **range_lookup** - determines whether to search with exact match (FALSE) or approximate match (TRUE or omitted).

For example, the formula `=VLOOKUP("apples", A2:C10, 3)` searches for "apples" in cells A2 through A10 and returns a matching value from column C:

INDEX function

INDEX(array, row_num, [column_num]) - returns a reference to a cell within array based on the row and column numbers that you specify.

Here is a simple INDEX formula: `=INDEX(A1:C10, 3 ,4)` that searches in cells A1 through C10 and returns a value at the intersection of the 3rd row and 4th column, which is cell D3.

MATCH function

MATCH(lookup_value, lookup_array, [match_type]) - searches for lookup_value in lookup_array, and then returns the relative position of that item in the range.

INDIRECT function

INDIRECT(ref_text, [a1]) - returns a cell or range reference specified by a text string.

Here's an example of the simplest INDIRECT formula to get the general idea:

	A	B	C	D
1	Source data		Formula	Result
2	15	A2	=INDIRECT(B2)	15

5. How to add annotation to a cell in excel

Right-click the cell and then click Insert Comment (or press Shift+F2). If you're using Excel for Office 365, right-click the cell and choose New Note. Type your annotation text. Click outside the cell.